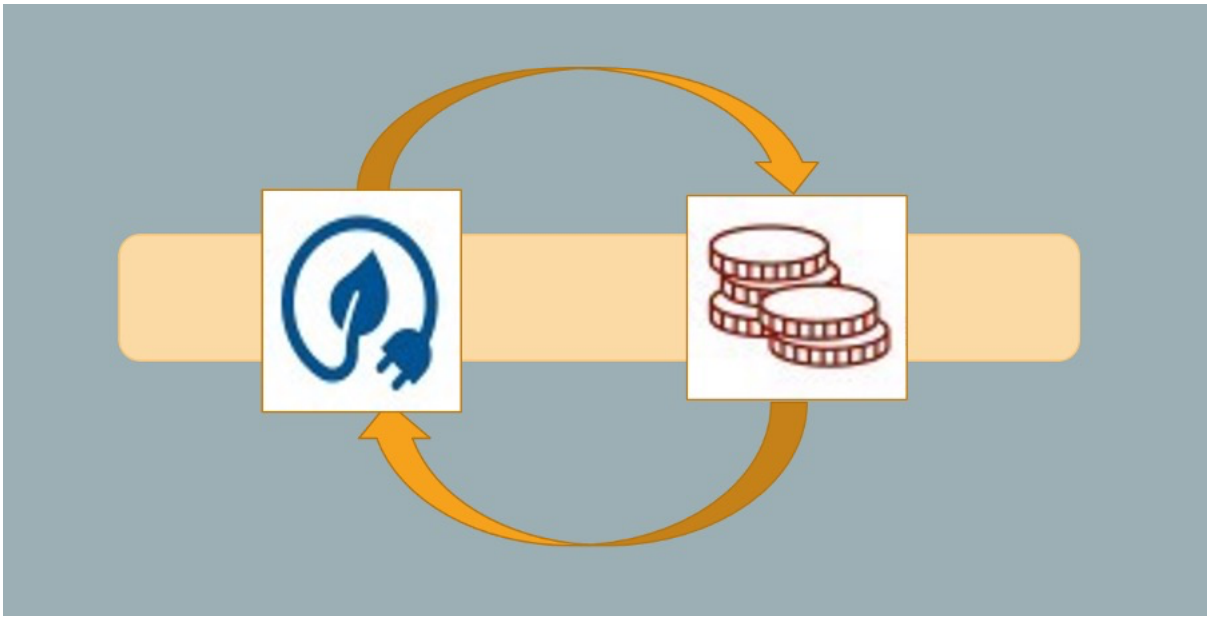
Comparison of two sustainability frameworks: The EU Taxonomy and the recast renewable energy directive (RED2)

Findings of the comparison and recommendations for practical implementation and further harmonization



Prepared by:
Jinke van Dam
Jinke van Dam Consulting
Final report: 17 February 2021

Voorwoord

Dit rapport is het resultaat van een vergelijking tussen de Richtlijn Hernieuwbare Energie (RED2) en de EU Taxonomie. De werkzaamheden zijn uitgevoerd door Jinke van Dam Consulting in de periode van december 2020 tot en met januari 2021, in opdracht van Rijksdienst voor Ondernemend Nederland (RVO).

We willen *benadrukke*n dat de bevindingen in dit rapport zijn gebaseerd op het *concept van de Gedelegeerde Verordeningen van de EU-Taxonomie*, die eind 2020 werden gepubliceerd en begin 2021 nog onder consultatie zijn. De criteria in de definitieve Gedelegeerde Verordeningen zullen daarom naar verwachting aangepast zijn, wat ook van invloed is op de bevindingen in dit rapport over de overeenkomsten en verschillen tussen de twee kaders. Daarnaast moeten, bij het schrijven van dit rapport, de Uitvoeringsbesluiten om de operationele leidraad vast te stellen voor het aantonen van naleving van de duurzaamheidscriteria voor biomassa uit ook nog worden gepubliceerd onder de RED2. Het is nog onduidelijk in hoeverre deze criteria al dan niet in overeenstemming zullen zijn met de criteria in de EU-taxonomie voor economische activiteiten in de bossensector.

Ondanks deze nog te verwachten aanpassingen in beide kaders, concluderen wij dat de belangrijkste bevindingen in dit rapport geldig zijn en blijven, en waardevol zijn om te delen met een bredere groep van belanghebbenden.

De gedetailleerde vergelijkingen tussen beide kaders (bijlage 1), die de bevindingen in dit hoofdrapport ondersteunen, is op verzoek verkrijgbaar via het volgende e-mailadres: gave@rvo.nl. Ook voor verdere vragen of opmerkingen kunt u dit e-mailadres gebruiken.

Dankwoord

We willen Daniel Poolen (Rabobank), Claire Gillig-Brouwer en Joop Hessels (ABN AMRO) bedanken voor het delen van hun inzichten over de Taxonomie, en de mogelijke consequenties ervan op de activiteiten en investeringsbeslissingen in de financiële sector.

Preface

This report is the result of a comparison between the Renewable Energy Directive (RED) and the EU Taxonomy. The activities are carried out by Jinke van Dam Consulting in the period from December 2020 to January 2021, on request by the Netherlands Enterprise Agency (RVO).

We would like to *emphasize* that the findings in this report are based on the *Draft Delegated Regulations* of the EU Taxonomy, which were published end of 2020 and are still under public consultation in the beginning of 2021. The criteria of the final Delegated Regulations will therefore likely be adapted, which will also influence the observations in this report about the similarities and differences between the two frameworks. At the writing of this report, the Implementing acts to establish the operational guidance on the evidence for demonstrating compliance with the sustainability criteria on forest biomass also still have to be published under the RED2. It is still unclear to what extent these criteria will be aligned with the requirements in the EU Taxonomy on forest-related economic activities, or not.

Despite these still expected changes in both frameworks, we conclude that the main findings in this report hold and remain valid and valuable to share with a broader group of stakeholders.

The in-depth comparison (Annex 1), supporting the observations in this main report, is available upon request via the following e-mail address: gave@rvo.nl. You can also use this e-mail address for further questions or comments.

Acknowledgments

We would like to thank Daniel Poolen (Rabobank), Claire Gillig-Brouwer and Joop Hessels (ABN AMRO) for sharing their insights on the Taxonomy, and its possible impact on the activities and investment decisions in the financial sector.

Executive summary

This report describes the similarities and differences between the EU Taxonomy and the RED2 for a number of aspects. Both the RED2 and the EU Taxonomy aim to contribute to the European Green Deal.

The **EU Taxonomy** is a classification tool aimed at investors, companies and financial institutions to define environmental performance of economic activities and sets requirements for those activities to be considered sustainable. The Taxonomy Regulation entered into force in 2020. The comparison in this report is further based on the **draft** Delegated Regulation of the Taxonomy (published in November 2020), which specifies the technical screening criteria under which economic activities qualify as 'substantially contributing to climate change mitigation and/or adaptation' and to determine whether these activities meet the 'do not significant harm' (DNSH) criteria and the minimum social safeguards.

The leading European legislative framework for promoting the use of renewable energy, including bioenergy, has been the Renewable Energy Directive (RED) since 2009, which is succeeded by the **RED2** (published in 2018, and to be implemented in national legislation and regulations in 2021). The RED2 contains a sustainability framework for biomass that is used for energy production, both for biomass from agriculture and forestry and for residual flows. At the writing of this report, the Implementing acts to establish the operational guidance on the evidence for demonstrating compliance with the sustainability criteria on forest biomass still have to be published under the RED2.

The Taxonomy requirements apply to financial institutions subject to the Sustainable Finance Disclosure Regulation (SFDR), undertakings subject to the Non-Financial Reporting Directive (NFRD) and to Member States and/or the European Union. The RED2 applies to economic operators producing electricity or heat out of bioliquids or biomass fuels, producing biogas for the grid or supplying fuels to the transport market - to count towards i.e., renewable energy targets. Both frameworks have international influence, outside Europe.

Comparing to which products or economic activities the sustainability criteria apply

The **Taxonomy** criteria apply to so-called economic activities. The Taxonomy distinguishes between three types of economic activities: (i) Low carbon activities; (ii) transition activities and (iii) enabling activities. Transition activities are activities with high carbon activities that can make a big contribution towards lowering GHG emissions; they have a pathway towards zero emissions. Bioenergy is considered a transitional activity.

Under the **RED2**, the sustainability and the GHG emissions saving criteria apply to energy from biofuels, bioliquids and biomass fuels, and their biomass origin being waste and residues biomass, agricultural biomass or forest biomass. Biomass supply chains may for example involve the cultivation or harvesting of forestry or perennial crops or include processing steps. The Taxonomy applies to some of these economic activities, e.g., when a fund is investing in a bioenergy installation or when a company invests in improved forest management.

The Frameworks, its objectives and sustainability criteria

Under the **Taxonomy**, an economic activity shall qualify as environmentally sustainable when it:

- Contributes substantially to one or more of the in total six environmental objectives[1]
- Do not significantly harm (DNSH) any of the environmental objectives
- Is carried out in compliance with the minimum safeguards[2]
- Complies with the technical screening criteria that have been established by the Commission.

The technical screening criteria (in draft) are now available for climate change mitigation and adaptation. Criteria for the other four objectives will follow. This means that in the future an economic activity can also decide to contribute for example significantly to biodiversity or to the circular economy.

[1] These are: (1) Climate change mitigation, (2) climate change adaptation, (3) the sustainable use and protection of water and marine resources, (4) the transition to a circular economy, (5) pollution prevention and control and (6) the protection and restoration of biodiversity and ecosystems

[2] e.g., the OECD Guidelines on Multinational Enterprises and the UN Guiding Principles on Business and Human Rights.

In the **RED2**, Article 29 lays down the sustainability and GHG emissions saving criteria for biofuels, bioliquids and biomass fuels. For example, forest biomass has to meet various criteria, with the aim to minimise the risk of using forest biomass derived from unsustainable production, and to ensure that carbon stocks and sinks levels in the forest are maintained or strengthened over the long term.

Key observations based on the comparison of the sustainability criteria between both frameworks:

- In overall, it can be concluded that the Taxonomy covers a broader range of sustainability issues than the RED2. Consequently, the RED2 is systematically, and for all economic activities, not aligned with the Taxonomy on the following issues: climate adaptation, proof of additionality (for forest related activities), water, pollution (including emission levels, use of fertilizers or other agrochemicals) and social safeguards.
- Other sustainability issues (e.g., GHG reduction, biodiversity) are covered by both frameworks. Still, criteria are not always aligned because one of the two (in most cases the Taxonomy) has more stringent requirements.
- Some of the criteria and terms in the Taxonomy need further guidance or clarification as they are open for interpretation and ambiguous.
- Data and proof for verification differ per sustainability issue. Especially for the forest and agriculture related activities, both frameworks require a plan, management system or analysis as proof of verification for some of the criteria. The main difference between the two frameworks is the level of detail in what requirements should be met, and what information should be provided.
- Both frameworks make use of policies as proxy for verification. Under the Taxonomy, especially the DNSH criteria for bioenergy production rely strongly on EU legislation and policies. For forest related activities, both the RED2 and the Taxonomy make use of an option (a) and (b) to proof compliance with the sustainability criteria for forest biomass, where option (a) refers to the use of applicable laws and related monitoring and enforcement systems. Unfortunately, the options (a) and (b) are only partially comparable and requirements between the two frameworks are not aligned.
- Under the Taxonomy, the number of criteria and sub-criteria that an economic activity must meet differs substantially between the different sectors. The technical screening criteria are for example much more complex for the agriculture or forestry sector than for the energy sector.
- Especially for bioenergy related activities (categorized as transitional activity), reviews in the Taxonomy technical screening criteria can be expected; at least every three years.

To be 'taxonomy aligned' the Taxonomy requires that all technical screening criteria are met. This means that non-compliance with one of the criteria (for example because of lack of clarity or complexity) has direct impact on the conclusion whether an activity is aligned or not. Note that not 'taxonomy aligned' is not the same as being non-sustainable.

Demonstrating compliance (or negligible risk) and the role of independent auditing

For demonstrating compliance with the criteria, the **Taxonomy** largely relies on Due Diligence (especially for the DNSH criteria). The Delegated Regulation (Annexes) mentions for some of the technical screening criteria the specific requirement of independent third-party verification. For proving compliance with the sustainability criteria, economic operators under the **RED2** can make use of voluntary certification schemes and of national schemes, when recognized by the European Commission.

Reporting and taxonomy disclosure obligations

The **Taxonomy** regulation has disclosure obligations that encourage the reporting of progress towards meeting the criteria as well as reporting on their achievement. The disclosure requirements differ between financial and non-financial companies. For non-financial companies, the taxonomy disclosure obligations apply to companies already required to provide a so-called 'non-financial statement' under the NFRD. For financial market participants offering financial products, the taxonomy disclosure obligations supplement the rules on sustainability-related disclosures as laid down in the SFDR. For companies not falling under the NFRD, the Taxonomy Regulation and the disclosure obligation is a voluntary process, but financial institutions may request data from client companies to meet their own obligations.

The **RED2** mentions that Member States must require economic operators to show that the sustainability and GHG emissions saving criteria have been fulfilled and that this information is reliable when biofuels, bioliquids and biomass fuels are to be taken into account for counting towards the Union target and other purposes. The RED2 also sets monitoring and reporting obligations for Member States, voluntary schemes and for the European Commission itself, for example to report on the production impact of biofuels, bioliquids and biomass fuels, with specific attention to food prices

Verification and monitoring of information and disclosure obligations and consequences of non-compliance

Under the **Taxonomy** regulation, competent national authorities have to monitor compliance with the disclosure obligation itself but there is (yet) no requirement to seek external verification or assurance of the content of them. NFRD requirements on verification may change, the NFRD Regulation is adopted in 2021.

The **RED2** has, in comparison, more requirements on supervising and controlling the information submitted by economic operators, to ensure that this information is robust and reliable. Member States have a supervising role in the operation of certification bodies, which also need to be accredited (and controlled) by accreditation bodies or other private supervisory bodies.

Consequences for practical implementation

The EU taxonomy can be an important enabler to scale up sustainable investment, to implement the European Green Deal, and strengthen sustainable finance by bringing consistency and transparency to the industry. In order to really help finance of sustainable growth, it is however essential that financial institutions and companies, including producers and users of bioenergy, have a clear picture of what is regarded as a 'taxonomy aligned' activity (or not) and what is required to proof that. Implementation should also be feasible. A good balance between ambition, complexity and feasibility is therefore essential.

Key observations and challenges for practical implementation:

- There is a challenge to categorize and classify economic activities correctly: Complexity of this categorization may lead to risk of errors of inconsistent application of the EU Taxonomy.
- Due to different data needs and complexities per economic activity, there is a risk that the more complex economic activities may not receive easily the label 'taxonomy aligned'. This may potentially lead to adverse (financial) consequences.
- Many potential users of the EU Taxonomy have portfolios with worldwide economic activities, so also outside Europe. This gives Taxonomy users on one hand the possibility to make global sustainability impact. On the other hand, given the urgent need of ongoing investments in for example forest restoration[3] or clean energy worldwide, it is important that these types of investments are not hampered because investment criteria or reporting requirements become unfeasible because of for example missing data.
- The sustainability requirements in the RED2 and the Taxonomy have a different scope (consignment versus economic activity level). It is important to gain insight into how these different scopes relate to each other and what the potential consequences are for verification. On top of that, it is not always clear whether the Taxonomy criteria can or should be assessed at economic activity level, or at the project or company level.
- Demonstrating compliance with certain sustainability criteria for already existing activities is at times complex for some of the Taxonomy criteria. It becomes even more complicated to prove compliance when the activity is not yet taking place (while the investment may already be made)

Clearly, rules and classifications are needed to scale up sustainable investment and to prevent greenwashing. At the same time, a balance needs to be found to ensure that the Taxonomy criteria are also feasible to reach the 'critical mass', to be effective on the long term and to avoid unintended consequences.

Bioenergy as economic (transition) economic activity: practical implications

Bioenergy production is considered a transitional economic activity. In practice this means that current (planned) bioenergy installations may need to adapt their processes over time to be able to meet more stringent

[3] For ecosystem restoration at scale, with a target of 350 million hectares of restored land, investments of about US$837 billion are needed between now and 2030 (UNCCD, 2010).

criteria in the future, and to be carbon neutral in 2050. As investments are often done for over a longer time period (for example, a term of 20 years), lack of clarity on how the criteria will be adjusted in the future – and when, and how this may impact their implementability (also on the longer term), can possibly lead to a reluctance to invest. Next to that, there are also indirect implications. The classification of bioenergy as "transitional activity" would also disqualify 'research, development and innovation[4]' (an enabling activity) on bioenergy.

Recommendations

To promote sustainable finance for bioenergy, it is important that financial institutions and producers and users of biomass and bioenergy can effectively implement the EU Taxonomy. This means that it should in practice be feasible to implement the EU Taxonomy, without losing credibility of the classification system and the level of sustainability that is at least required.

Recommendations for practical implementation are given on:

- Communication and building awareness: e.g., create awareness amongst key Taxonomy users investing and involved in bioenergy about the Taxonomy requirements, now and in the future, and what that implies for their internal processes.
- Getting prepared: provide support and share lessons: consider a first survey amongst stakeholders active in the bioenergy sector to get further insight in the level of "taxonomy alignment", the challenges in practical implementation of the Taxonomy, and possible solutions.
- Development of tools and guidance, e.g., common templates, comparability assessment, tools that facilitate analysis.
- Promote adoption of the Taxonomy by smaller companies (that do not fall under the NFRD)
- Give clarity on changes due to revisions and adoptions and keep stakeholders well informed: it is crucial that the transition pathway is clear and scientifically based.
- Clarification on the EU Taxonomy: e.g., on the criteria and definitions used in the EU Taxonomy so to ensure that they are unambiguous, practicable and feasible to apply
- Clarification on the RED2: e.g., about the content of the Implementing Act on operational guidance for energy from forest biomass, as the Taxonomy makes direct reference to it.

Recommendations for further harmonization of the taxonomy

The feasibility of implementation of the EU Taxonomy will be much improved when Taxonomy users can rely on external verification sources and can use 'proxies' such as EU policies, permits, standards or external auditing procedures or certification schemes. By doing so, EU Taxonomy users can narrow down the required data collection to what is potentially different and/or supplementary needed.

The following external verification sources can be further harmonized with the EU Taxonomy:

- EU policies and legislation, including the RED2
- National policies and legislation in EU Member States, for example the SDE+ requirements or the Warmtewet 2.0 in the Netherlands
- National policies and legislation in producing countries
- International standards and taxonomies; support global alignment for the purpose of facilitating trade flows and economic development
- Certification schemes: For example, explore the introduction of specific modules or labels which represent that activities are "taxonomy aligned".
- Verification protocols
  Permits, e.g., align the requirements for emission levels or an EIA with the Taxonomy.
- Internal sustainability policies and performance standards

[4] Technical screening criteria 1 to contribute significantly to climate change mitigation mentions that "the activity researches, develops or provides innovation for technologies, products or other solutions that are dedicated to enable one or more economic activities for which the technical screening criteria have been set out in this Annex, with the exception of activities considered as transitional and enabling activities"

Main report

1. Introduction

In May 2018, the European Commission presented a legislative proposal on financing sustainable growth. With this, the Commission wants to better regulate the market for sustainable finance. The aim of the European Commission is to place environmental, social and governance (ESG) considerations at the heart of the financial system. The EU legislative proposal consists of four parts, including a harmonized classification system ("taxonomy") to determine what qualifies as sustainable economic activity. The “Taxonomy Regulation” was published on June 22, 2020 and entered into force on July 12, 2020.

The draft Delegated Regulation and its two Annexes were published in November 2020 and further specify the technical screening criteria under which economic activities qualify as ‘substantially contributing to climate change mitigation and/or adaptation’ and to determine whether these activities meet the ‘do not significant harm’ (DNSH) criteria and the minimum social safeguards. The Delegated Regulation deviates in some respects from the TEG final report (TEG, 2020) from March 2020 in order to be more in line with the criteria in the Taxonomy Regulation and is still under public consultation at the writing of this report.

Requirements for energy production based on biomass (electricity, heat, transport fuels) are also covered by this taxonomy.

The leading European legislative framework for promoting the use of renewable energy, including bioenergy, has been the Renewable Energy Directive (RED) since 2009, which is succeeded by the RED2 (published in 2018, and to be implemented in national legislation and regulations in 2021). The RED2 contains a sustainability framework for biomass that is used for energy production, both for biomass from agriculture and forestry and for residual flows. Implementing acts to establish the operational guidance on the evidence for demonstrating compliance with the sustainability criteria on forest biomass is expected in the beginning of January 2021 (but was not yet available at the time of writing of this report).

Worldwide, the world invested $282.2 billion in new renewable energy capacity (excluding large hydro) in 2019. Nine percent of that amount (9.7 billion) was directed towards biomass and waste-to-energy investments (FS-UNEP, 2020). In order to really help finance of sustainable growth, it is essential that financial institutions and producers and users of bioenergy have a clear picture of what is regarded as sustainable activity (or not) by the European policy framework.

It is therefore important to have a good understanding where the EU Taxonomy and the RED2 are consistent with each other, and where there may be differences. In addition, it is important to understand the reason of these differences and how they translate into practice.

1.1 Objective and scope of this report

This report describes the similarities and differences between the EU Taxonomy and the RED2 for a number of aspects. Based on these findings, the report describes the possible consequences for, for example, investments or obtaining financing of biomass for energy-related projects.

The forms of bioenergy that fall within the scope of this project are:

- Solid biomass for the production of electricity and heat
- Biogas for the production of electricity and heat
- Liquid and gaseous biofuels for transport.

1.2 Readership

This report consists of 9 chapters plus annexes. Chapter 2 gives a general description of the EU Taxonomy and the RED2, including for example a description on the geographic scope. Chapter 3 explains to which products or economic activities the sustainability criteria of the RED2 and the EU Taxonomy apply.

Chapter 4 discusses the objectives and sustainability criteria that are included in the two frameworks, and how they compare. More detailed information about this comparison, presented per economic activity, is also

included in Annex 1 (the in-depth comparison is a separate Annex and available upon request via the following e-mail address: gave@rvo.nl)

Chapter 5 further explains what the two frameworks require to demonstrate compliance (or negligible risk) with the sustainability criteria, and the role of independent auditing.

The next chapter 6 focuses on the reporting and taxonomy disclosure obligations that are included in the two frameworks, while chapter 7 discusses the verification requirements for the disclosure and reporting obligations, and consequences of non-compliance.

Finally, chapter 8 summarizes the key findings and potential consequences for practical implementation while recommendations for practical implementation and further harmonization are given in chapter 9.

2. General description of the frameworks

2.1 What is the EU Taxonomy?

In its communication of 8 March 2018, the Commission published its action plan on financing sustainable growth. One of the objectives set out in that action plan is to reorient capital flows towards sustainable investment in order to achieve sustainable and inclusive growth. The establishment of a unified classification system, or so-called Taxonomy, is part of this action plan (EC, 2020). The Taxonomy Regulation (TR) was agreed at the political level in December 2019, and creates the legal basis for this (TEG, 2020).

The EU Taxonomy is a classification system for environmentally sustainable economic activities that contribute to EU environmental related policy objectives. It is also an implementation tool that shows what part of revenue and investments in a company contribute to environmental policy objectives (Poolen, 2020).

The ***draft*** Delegated Regulation, and its Annexes have been published end of 2020, building on the recommendations from the EU Technical Expert Group on Sustainable Finance (TEG, 2020), and are in public consultation with the writing of this report.

A permanent expert group of the European Commission has been established under Article 20 of the Taxonomy Regulation: The Platform on Sustainable Finance. This Platform will assist the Commission in developing its sustainable finance policies, notably the further development of the EU taxonomy (EC, 2020).

2.1.1 The EU Taxonomy in relation with the Green Deal

The Taxonomy Regulation is an important enabler for scaling up sustainable investment and therefore implementing the European Green Deal as part of the EU's response to the climate and environmental challenges. The uniform criteria help companies and investors to determine which economic activities can be considered environmentally sustainable and aims to increase transparency and limit the risk of greenwashing (EC, 2020c).

Requirements for marketing financial products or corporate bonds as environmentally sustainable investments[5] also aim to enhance investor confidence and awareness of the environmental impact of those financial products or corporate bonds, to create visibility and to and to limit the risk of greenwashing[6] (EC, 2020c), (TEG, 2020).

Member States and the Union will also apply the Taxonomy criteria to determine whether an economic activity qualifies as environmentally sustainable, for example with respect to financial products or corporate bonds that are made available as environmentally sustainable (EC, 2020). Standards, labels, funds and products from the Member States and the Union already relate to, or align with, the EU Taxonomy classification – and will increasingly do so, see also Box 1.

Box 1: Examples of labels, funds and Standards that already relate to, or aim to align with, the EU Taxonomy classification (EBF and UNEP-FI, 2021)

- The proposed draft model of the EU Green Bond Standard links the use of proceeds of EU Green Bonds to the EU Taxonomy Regulation. Though use of the EU Green Bond Standard[7] is (so far) voluntary, issuers of Green Bond(s) that wish to adopt the label 'EU Green Bond' are required to align the use of proceeds to the EU Taxonomy.
- There are different sustainable finance labels on the EU market, (e.g., various Green labels or ESG-led labels). It is expected that these labels will relate to, or align with, the EU Taxonomy classification. Note that EU Member States are now required by the EU Taxonomy Regulation to use the EU Taxonomy when creating (new) labelling schemes for green investment products and corporate bonds.
- The European Commission is currently developing the EU Ecolabel criteria for retail financial products, such as equity funds, bonds funds and saving accounts. The EU Ecolabel uses the EU Taxonomy as the basis for its criteria and is only awarded when a minimum threshold of taxonomy eligible activities is reached.

[5] This includes requirements set by Member States and the Union to allow financial market participants and issuers to use national labels

[6] In the context of this Regulation, greenwashing refers to the practice of gaining an unfair competitive advantage by marketing a financial product as environmentally friendly, when in fact basic environmental standards have not been met (EC, 2020)

[7] The European Commission held a public consultation on the potential adoption of the EU GBS. After evaluation of the public feedback and an internal impact assessment, the EC has been tasked to make a legal proposal for an EU GBS by June 2021 (EBF and UNEP-FI, 2021).

- In 2019, the European Investment Bank announced an ambition to reach 50% climate action and environmental sustainability financing by 2025. The EIB Group (EIBG) committed to invest EUR 1 trillion in these financing areas by 2030. Delivering on this commitment requires a clear set of definitions to track performance and robust systems for monitoring and reporting. The EIB is aligning its tracking methodology to the EU Taxonomy.
- The European Investment Fund (EIF) will provide support for green projects. Through InvestEU, the EIB is likely to be an implementation partner for 75% of EU guarantees. In addition, the Commission plans to launch a climate-tracking methodology, which will benchmark financing operations against the InvestEU programme. It plans also to put in place 'sustainability proofing', under which projects above a certain size must assess their environmental, climate and social impacts. The initiatives will make appropriate use of the EU Taxonomy.

2.1.2 Expected next steps and further developments

Expected further developments under the **Taxonomy Regulation** include (Poolen, 2020):

- 31 December 2020: Definitive definition of technical screening criteria for climate mitigation and adaptation *(delayed)*
- 31 December 2021: Establish technical screening criteria for all other environmental objectives
- 31 December 2021: First publication for companies and participants in financial markets on the Taxonomy-based activities based on climate mitigation and adaptation
- 31 December 2022: Publication for companies and participants in financial markets of activities tailored to the Taxonomy based on all environmental objectives. Over time, the TR will be supplemented by delegated acts which contain detailed technical screening criteria (TEG, 2020).
- Review of the technical screening criteria: at least every 5 years…The Commission shall review the technical screening criteria for 'transitional' economic activities at least every three years (Art, 19, EC, 2020).

Next to that, there is ongoing work by the Platform on Sustainable Finance (Poolen, 2020):

- Ease-of-use and implementation
- Social taxonomy for socially focused products
- Brown taxonomy for negative/ polluting activities
- Neutral taxonomy for environmental neutral activities (e.g., health or education)

2.2 What is (recast) Renewable Energy Directive (RED2)?

In December 2018, **the RED2** – the recast Renewable Energy Directive 2018/2001/EU - entered into force, as part of the 'Clean energy for all Europeans' package. The recast directive moves the legal framework to 2030 and sets a new binding renewable energy target for the EU for 2030 of at least 32%, with a clause for a possible upwards revision by 2023 and comprises measures for the different sectors to make it happen (EC, 2020e).

This Directive establishes a common framework for the promotion of energy from renewable sources. Next to setting a binding target for the overall share of energy from renewable sources, it also lays down rules on financial support for electricity from renewable sources, on self-consumption of such electricity, on the use of energy from renewable sources in the heating and cooling sector and in the transport sector, on regional cooperation between Member States, and between Member States and third countries, on guarantees of origin, on administrative procedures and on information and training.

The RED2 also establishes sustainability and greenhouse gas emissions saving criteria for biofuels, bioliquids and biomass fuels. **This report focuses on the latter: the sustainability and greenhouse gas emissions saving criteria for biofuels, bioliquids and biomass fuels** (EC, 2018)**.**

2.2.1 The RED2 in relation with the Green Deal

With the European Green Deal, the EU is increasing its climate ambition and aims to become the first climate-neutral continent by 2050. To deliver on this, the Commission has pledged to make existing legislation fit for 55% emission reduction by 2030 (EC, 2020e); the upcoming evaluation of the RED2[8] (see below) will assess how

[8] See also: https://ec.europa.eu/info/law/better-regulation/have-your-say/initiatives/12553-Revision-of-the-Renewable-Energy-Directive-EU-2018-2001

far EU renewable energy rules (Directive 2018/2001/EU) can contribute to this higher EU climate ambition, and the reduction target will be adjusted in the RED2, so it is aligned with the Green Deal.

2.2.2 Expected next steps and further developments

Under the RED2, further expected developments are amongst others (EC, 2018):

- On 25 June 2019 and every two years thereafter: review[9] by the Commission of the list of feedstocks set out in Parts A and B of Annex IX (Article 28, RED2, 2018)
- Review of the RED2[4] in 2021 to assess in how far EU renewable energy rules (Directive 2018/2001/EU) can contribute to a higher EU climate ambition and to explore how to accelerate the transition to a more integrated energy system as outlined in the energy system integration & hydrogen strategies.
- 31 January 2021: implementing acts to establish the operational guidance on the evidence for demonstrating compliance with the sustainability criteria on forest biomass (Art.29.6 and 29.7), (EC, 2018). Besides, the Commission shall, if appropriate, submit a legislative proposal to amend the criteria laid down in paragraphs 6 and 7 for the period after 2030 (EC, 2018).
- September 2023: review by the Commission on the criteria for certification of low indirect land-use change-risk biofuels, bioliquids and biomass fuels (in the Delegated Act) and for determining the high indirect land-use change-risk feedstocks[10]. From 31 December 2023 until 31 December 2030 at the latest, that limit shall gradually decrease to 0 % (EC, 2018).
- 31 December 2025: assessment whether the obligation relating to advanced biofuels and biogas produced from feedstock listed in Part A of Annex IX effectively stimulates innovation and ensures GHG savings in the transport sector (Article 28, RED2, 2018)
- 31 December 2026: assessment whether the sustainability criteria on forest biomass (Art.29.6 and 29.7) effectively minimise the risk of using forest biomass derived from unsustainable production and address LULUCF criteria, on the basis of the available data (EC, 2018).

2.3 Who has to demonstrate compliance?

The taxonomy Regulation applies to (EC, 2020):

1. Measures adopted by Member States or by the Union that set out requirements for financial market participants or issuers in respect of financial products or corporate bonds that are made available as environmentally sustainable.
2. Financial institutions/ market participants that make available financial products (and are subject to the Sustainable Finance Disclosure Regulation[11] (the SFDR).
3. Undertakings (i.e., large companies) which are subject to the obligation to publish a non-financial statement pursuant to Article 19a or Article 29a of Directive 2013/34/EU – under the Non-Financial Reporting Directive (NFRD), (TEG, 2020).

Note that the proposed draft proposal for an EU 'Green Bond Standard' also links the use-of-proceeds of EU Green Bonds[12] directly to the EU Taxonomy Regulation (TEG, 2020b).

Establishing criteria for environmentally sustainable economic activities may also encourage other economic operators not covered by this Regulation, on a voluntary basis, to publish and disclose information on their websites regarding the environmentally sustainable economic activities they carry out (EC, 2020).

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[9] Such delegated acts shall be based on an analysis of the potential of the raw material as feedstock for the production of biofuels and biogas for transport, taking into account all of the following: (a) the principles of the circular economy and of the waste hierarchy established in Directive 2008/98/EC; (b) the Union sustainability criteria laid down in Article 29(2) to (7); (c) the need to avoid significant distortive effects on markets for (by-)products, wastes or residues; (d) the potential for delivering substantial greenhouse gas emissions savings compared to fossil fuels based on a life- cycle assessment of emissions; (e) the need to avoid negative impacts on the environment and biodiversity.

[10] This will include a trajectory to gradually decrease the contribution of high indirect land-use change-risk biofuels, bioliquids and biomass fuels produced from feedstock for which a significant expansion of the production into land with high-carbon stock is observed.

[11] The Sustainable Finance Disclosure Regulation (SFDR) introduced various disclosure-related requirements for financial market participants and financial advisors at entity, service and product level. It aims to provide more transparency on sustainability within the financial markets in a standardised way, thus preventing greenwashing and ensuring comparability.

[12] Green bonds represent a still limited but growing share of the total bond market with issuance of approximately EUR255bn in 2019 (53% higher than 2018) and expected to reach about EUR323bn in 2020

Under the RED2, Member States shall require **economic operators** to show that the sustainability and greenhouse gas (GHG) emissions saving criteria for biofuels, bioliquids and biomass fuels - as laid down in Article 29(2) to (7) and (10) - have been fulfilled to (EC, 2018):

- Count towards the renewable energy targets
- Measure compliance with renewable energy obligations
- To be eligible for financial support for the consumption of biofuels, bioliquids and biomass fuels.

An economic operator is a business that produces electricity or heat from bioliquids or biomass fuels, produces biogas for the grid, or supplies fuels to the transport market. Economic operators have to demonstrate that they, the production and the chain of custody (thus the upstream supply chain), comply to the requirements. The scope of the sustainability contains therefore farms/plantations, first gathering/collecting points, traders/warehouses, conversion units (mills, refineries, processing plants), transport and market players (those who bring sustainable biofuels, bioliquids or biomass fuels into the market), (ECA, 2016).

2.4 Geographic scope

Under the taxonomy Regulation, the disclosure obligations for financial market participants apply to anyone offering financial products in the EU, regardless of where the manufacturer of such products is based. Furthermore, the disclosure obligations under Article 8 of the Taxonomy Regulation apply to entities subject to the scope of the NFRD and to all their activities regardless of their location[13] (EC, 2020f). The EU Taxonomy has, however, substantial international influence, as also illustrated by the example in Box 2.

Box 2: LAGREEN as first Green Bond in Latin America

The European Union's Latin America Investment Facility (LAIF), the German Cooperation Ministry (BMZ) and the German Development Bank (KfW) have signed in December 2020 an agreement on a €15 million EU contribution to the Latin American Green Bond Fund, known as LAGREEN. LAGREEN is the first green bonds fund in Latin America. To comply with the highest sustainability-related requirements, on a best effort basis LAGREEN will aim at aligning with EU taxonomy and the future EU Green Bond Standard[14].

Under the RED2, the sustainability and the GHG emissions saving criteria apply irrespective of the geographical origin of the biomass (see Art.29.1). Information about the geographic origin and feedstock type of biofuels, bioliquids and biomass fuels per fuel supplier has to be made available to consumers and this information must be updated on an annual basis (Art. 30.3), (EC, 2018).

2.5 Key observations

Both the RED2 and the EU Taxonomy aim to contribute to the Green Deal, which is an umbrella policy framework for moving amongst others towards a climate-neutral Europe.

Both policy frameworks are under development. The Delegated Regulation of the Taxonomy is still (at the writing of this report) in draft, while the Implementing acts to establish the operational guidance on the evidence for demonstrating compliance with the sustainability criteria on forest biomass still have to be published under the RED2.

This creates on one hand a lack of clarity about how the final frameworks will look like - and in how far they are comparable (or not). Future adjustments and evaluations provide, on the other hand, also an opportunity to address bottlenecks in implementation or unambiguity.

Compared to the RED2, the EU Taxonomy applies to a broader group of companies and financial institutions (see Table 1). In contrast to RED2, the EU taxonomy applies only to large companies, although the Taxonomy also has indirect influence (for example through financial institutions) on smaller companies. Both frameworks have international influence, outside Europe.

[13] This approach is not different to other corporate or financial product disclosure obligations already in place in the EU
[14] See: https://ec.europa.eu/international-partnerships/news/team-europe-new-green-bond-fund-latin-america_en

Table 1: Comparing the Taxonomy and RED2: To whom do the requirements apply and the geographic scope

	Taxonomy Regulation	RED2
Who has to demonstrate compliance**?**	Financial institutions subject to the SFDR Undertakings subject to the NFRD Member States and/or the Union	Economic operators producing electricity or heat from bioliquids or biomass fuels, producing biogas for the grid or supplying fuels to the transport market - to count towards i.e., renewable energy targets
What is the geographic scope?	Although the Taxonomy applies technically to financial products and companies in the EU, it has international influence as the Taxonomy applies to the economic activities of the products and companies, which also operate outside Europe.	Worldwide: Sustainability criteria apply irrespective of the geographic origin.

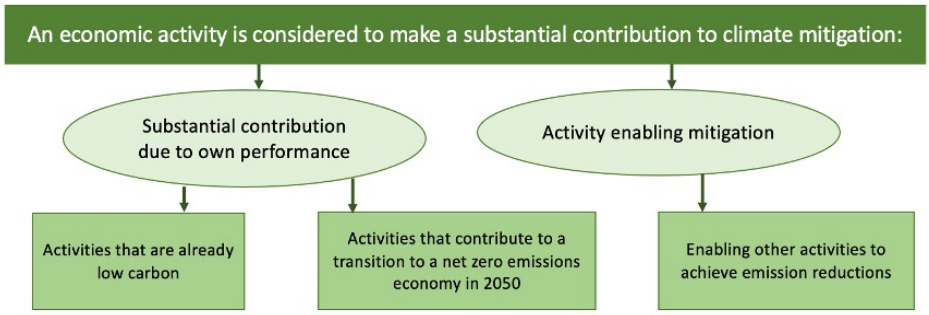
3. Comparing to which products or economic activities the sustainability criteria apply

Under the Taxonomy Regulation, the criteria apply to so-called '*economic activities*'. The Taxonomy distinguishes between **three types of economic activities** (Poolen, 2020):

1. Low carbon activities: low or zero carbon activities
2. Transition activities: high carbon activities that can make a big contribution. These have a pathway towards zero emissions
3. Enabling activities: make low carbon and transition activities possible.

In addition to the use of climate-neutral energy and more investments in already low-carbon activities and sectors, the transition requires also substantial reductions in GHG emissions in other economic activities and sectors for which there are not technologically and economically feasible low-carbon alternatives: the so-called transitional activities. Transitional activities qualify as contributing substantially to climate change mitigation under specific conditions. The technical screening criteria of transitional activities are therefore developed in such way, and adjusted at regular intervals, to ensure that these activities have a credible transition path towards climate-neutrality (EC, 2020).

Figure 1: Pathways how an economic activity is considered to make a substantial contribution to climate mitigation showing low carbon, transition and enabling activities (adapted from TEG, 2020a).



The Taxonomy includes **a range of economic activities for different sectors,** which are structured around the EU's NACE[15] industry classification system. The Taxonomy includes technical screening criteria for each economic activity. Further work is still required to extend the list with other economic activities that also substantially contribute to climate change mitigation or adaptation but do not yet have technical screening criteria (TEG, 2020).

It is important to realize that the Taxonomy disclosure obligations (see also chapter 6) apply to companies (falling under the NFRD) and to financial market participants offering financial products. Most times, these companies / financial products will relate to several economic activities, as also illustrated in Box 3.

Box 3: An illustrative example to classify and assess a financial product according to business activities, from: (EBF and UNEP-FI, 2021)

A general purpose loan to a single client entity may be used to finance forest expansion, forestry product manufacturing, as well as bioenergy and co-generation from forestry products. This loan will trigger the assessment for several business activities: (i) production of electricity from bioenergy; (ii) cogeneration of heat/ cool and power from bioenergy; and (iii) production of heat/cool from bioenergy. In addition, the loan will require that the client's business is divided in a way that is not easily supported by bank's existing data processes.

Under the RED2, the sustainability and the GHG emissions saving criteria apply to energy from biofuels, bioliquids and biomass fuels, and their biomass origin being (EC, 2018):

- Waste and residues biomass
- Agricultural biomass

[15] Nomenclature des Activités Économiques dans la Communauté Européenne

- Forest biomass

3.1 Comparing the two frameworks for Forestry and agriculture

For the Taxonomy regulation, this report looks at the following economic activities for the forestry and agricultural sector (see also annex 1[16]):

- Afforestation
- Rehabilitation, reforestation
- Reforestation
- Existing forest management
- Conservation forest
- Growing of perennial crops
- Growing of non-perennial crops

Under the RED2, biomass is defined as "the biodegradable fraction of products, waste and residues from biological origin from agriculture, including vegetal and animal substances, from forestry and related industries, including fisheries and aquaculture, as well as the biodegradable fraction of waste, including industrial and municipal waste of biological origin" (EC, 2018). The product categories and definitions used under the RED2 are further shown in Table 2.

Table 2: product categories and definitions used under the RED2; linked with the economic activities under the Taxonomy (as far as analysed and included in this report).

Product categories and definitions under the RED2	Economic activities under the Taxonomy regulation
Agricultural biomass	**Agricultural sector**
Agricultural biomass: biomass produced from agriculture (EC, 2018). Food and feed crops: starch-rich crops, sugar crops or oil crops produced on agricultural land as a main crop excluding residues, waste or lignocellulosic material and intermediate crops (e.g., catch crops, cover crops, provided that the use of such intermediate crops does not trigger demand for additional land (EC, 2018). Starch-rich crops: crops comprising mainly cereals, regardless of whether the grains alone or the whole plant[17] (EC, 2018). Agricultural residues: residues that are directly generated by agriculture and do not include residues from related industries or processing (EC, 2018).	**Economic activity: Growing of non-perennial crops[18]:** Growing of plants that do not last for more than two growing seasons, including for the purpose of seed production (EC, 2020a).
Perennial crops: multi-annual crops, the stem of which is usually not annually harvested such as short rotation coppice and oil palm (Annex VIII, EC, 2018).	**Economic activity: Growing of non-perennial crops[19]:** Growing of plants that do not last for more than two growing seasons, including for the purpose of seed production (EC, 2020a).
Forest biomass	**Forestry sector**
Forest biomass means biomass produced from forestry (EC, 2018). Forestry residues means residues that are directly generated by forestry and that do not include residues from related industries or processing (EC, 2018).	**Economic activity: Afforestation[20]:** Establishment of forest through planting or deliberate seeding on land that, until then, was under a different land use or not used. Afforestation implies a transformation of land use from non-forest to forest, in accordance with the FAO definition of afforestation[21], where forest means a land matching the forest definition used in the national greenhouse

[16] The in-depth comparison (Annex 1), supporting the observations in this main report, is available upon request via the following e-mail address: gave@rvo.nl
[17] such as in the case of green maize, are used; tubers and root crops, such as potatoes, Jerusalem artichokes, sweet potatoes, cassava and yams; and corm crops, such as taro and cocoyam
[18] Activity is classified under NACE code A1.1 in accordance with the statistical classification of economic activities established by Regulation (EC) No 1893/2006
[19] Activity is classified under NACE code A1.1 in accordance with the statistical classification of economic activities established by Regulation (EC) No 1893/2006
[20] The activity is classified under NACE code A2 in accordance with the statistical classification of economic activities established by Regulation (EC) No 1893/2006. Activities are limited to NACE II 02.10, i.e., silviculture and other forestry activities, and 02.30, i.e., gathering of wild growing non-wood products
[21] Establishment of forest through planting or deliberate seeding on land that, until then, was under a different land use, implies a transformation of land use form non-forest to forest (FAO Global Resources Assessment 2020. Terms and definitions

Lignocellulosic material means material composed of lignin, cellulose and hemicellulose, such as biomass sourced from forests, woody energy crops and forest-based industries' residues and wastes (EC, 2018).	gas inventory, or where not available, is in accordance with the FAO definition of forest[22] (EC, 2020a). **Economic activity: Rehabilitation and restoration of forests[23]:** The activity meets the definitions of rehabilitation and restoration of forests established by national law. Where national law does not contain such a definition, the activity meets a definition with broad agreement in the peer-reviewed scientific literature for specific countries. The activity implies no change of land use and occurs on degraded land matching the forest definition used in the national GHG inventory, or where not available, is in accordance with the FAO definition of forest (EC, 2020a). **Economic activity: Reforestation[24]:** The activity meets the definition of reforestation established by national law. Where national law does not contain such a definition, the activity meets the FAO definition of reforestation[25] or the FAO definition of naturally regenerating forest[26]. The activity implies no change of land use and occurs on degraded land matching the definition of forest used in the national GHG inventory, or where not available, is in accordance with the FAO definition of forest. For the purposes of Regulation 2020/853, the category 'reforestation' applies in cases following extreme events (such as fires), and not as part of normal, legally binding obligation to reforest after harvesting (EC, 2020a). **Economic activity: Improved forest management[27]:** The activity meets the definition of improved forest management set out in national law. Where national law does not contain such a definition, the activity refers to management interventions in forests done for the purpose of climate change mitigation, demonstrated through a climate benefit analysis. The activity assumes no change in land use and occurs on land matching the definition of forest used in the national GHG inventory, or where not available, in accordance with FAO's definition of forest (EC, 2020a). **Economic activity: Conservation forestry[28]:** activity covers forest management activities with the objective of preserving one or more habitats or species. The activity assumes no change in land category and occurs on land matching the forest definition used in the national GHG inventory, or where not available, in accordance with FAO's definition of forest (EC, 2020a).
Residues	
Residue means a substance that is not the end product(s) that a production process directly seeks to produce; it is not a primary aim of the production process and the process has not been deliberately modified to produce it (EC, 2018).	n.a.

[22] Land spanning more than 0,5 hectares with trees higher than 5 meters and a canopy cover of more than 10%, or trees able to reach these thresholds in situ. It does not include land that is predominantly under agricultural or urban land use, FAO Global Resources Assessment 2020

[23] Activity is classified under NACE code A2 in accordance with the statistical classification of economic activities established by Regulation (EC) No 1893/2006. Activities are limited to NACE II 02.10, i.e., silviculture and other forestry activities, and 02.30, i.e., gathering of wild growing non-wood products.

[24] Activity is classified under NACE code A2 in accordance with the statistical classification of economic activities established by Regulation (EC) No 1893/2006. Activities are limited to NACE II 02.10, i.e., silviculture and other forestry activities, and 02.30, i.e., gathering of wild growing non-wood products.

[25] Re-establishment of forest through planting and/or deliberate seeding on land classified as forest.
FAO Global Resources Assessment 2020. Terms and definitions. http://www.fao.org/3/I8661EN/i8661en.pdf

[26] ("Forest predominantly composed of trees established through natural regeneration"

[27] Activity is classified under NACE code A2 in accordance with the statistical classification of economic activities established by Regulation (EC) No 1893/2006. Activities are limited to NACE II 02.10, i.e., silviculture and other forestry activities, and 02.30, i.e., gathering of wild growing non-wood products.

[28] The activity is classified under NACE code A2 in accordance with the statistical classification of economic activities established by Regulation (EC) No 1893/2006. Activities are limited to NACE II 02.10, i.e., silviculture and other forestry activities, and 02.30, i.e., gathering of wild growing non-wood products.

3.2 Comparing the two frameworks for: Electricity, gas, steam and air conditioning supply

For the Taxonomy regulation, this report looks at the following economic activities for the 'electricity, gas, steam and air conditioning supply' sector. How they contribute to the different environmental objectives can be found in Annex 1[29]:

- Production of electricity from bioenergy (biogas, biomass and biofuels)
- Manufacture of biogas or biofuels
- Co-generation of heat/cool and power from bioenergy (biomass, biogas, biofuels)
- Production of heat/cool and power from bioenergy (biomass, biogas, biofuels)

Table 3: product categories and definitions used under the RED2, linked with the economic activities under the Taxonomy (as far as analysed and included in this report).

Product categories and definitions under the RED2	Economic activities under the Taxonomy regulation
Biogas means gaseous fuels produced from biomass (EC, 2018) Bioliquids means liquid fuel for energy purposes other than for transport, including electricity and heating and cooling, produced from biomass (EC, 2018) Biomass fuels means gaseous and solid fuels produced from biomass (EC, 2018).	**Electricity generation from bioenergy[30]:** Construction and operation of electricity generation installations that produce electricity from biomass, biogas and biofuels. The activity is a transitional activity as referred to in Article 10(2) of Regulation (EU) 2020/852 where it complies with the technical screening criteria specified in this Section (EC, 2020a). **Cogeneration of heat/cool and power from bioenergy[31]:** Construction and operation of installations used for cogeneration of heat/cool and power from biomass. The activity is a transitional activity[32] **Production of heat/ cool from bioenergy[33]:** Construction and operation of facilities that produce heat/cool from biomass. The activity is a transitional activity (24) (EC, 2020a).
Biogas means gaseous fuels produced from biomass (EC, 2018) Bioliquids means liquid fuel for energy purposes other than for transport, including electricity and heating and cooling, produced from biomass (EC, 2018) Biofuels means liquid fuel for transport produced from biomass (EC, 2018). Advanced biofuels mean biofuels that are produced from the feedstock listed in Part A of Annex IX (EC, 2018). Renewable liquid and gaseous transport fuels of non-biological origin means liquid or gaseous fuels which are used in the transport sector other than biofuels or biogas, the energy content of which is derived from renewable sources other than biomass (EC, 2018).	**Manufacture of biogas and biofuels for use in transport[34] :** Manufacture of biogas or biofuels for use in transport. The activity is a transitional activity as referred to in Article 10(2) of Regulation (EU) 2020/852 where it complies with the technical screening criteria set out in this Section (EC, 2020a).
Specific categories	
Low indirect land-use change-risk biofuels, bioliquids and biomass fuels means biofuels, bioliquids and biomass fuels, the feedstock of which was produced within schemes which avoid displacement effects ...[...]... through improved agricultural practices as well as through the cultivation of crops on areas which were previously not used for cultivation of crops, and which were produced in accordance with the sustainability criteria ...[...]...laid down in Article 29 (EC, 2018). Recycled carbon fuels mean liquid and gaseous fuels that are produced from liquid or solid waste streams of non- renewable origin which are not suitable for material recovery in accordance with Article 4 of Directive 2008/98/EC, or from waste processing gas and exhaust gas of non-renewable origin which are produced as an unavoidable and unintentional consequence of the production process in industrial installations (EC, 2018).	

[29] The in-depth comparison (Annex 1), supporting the observations in this main report, is available upon request via the following e-mail address: gave@rvo.nl.
[30] The activity is classified under NACE code D35.11 - see Regulation (EC) No 1893/2006.
[31] The activity is classified under NACE codes D35.11 and D35.30 – see Regulation (EC) No 1893/2006.
[32] as referred to in Article 10(2) of Regulation (EU) 2020/852 where it complies with the technical screening criteria set out in this Section (EC, 2020a).
[33] The activity is classified under NACE code D35.30 - see Regulation (EC) No 1893/2006.
[34] The activity is classified under NACE code D35.21 - see Regulation (EC) No 1893/2006.

3.3 Comparing the two frameworks for: Waste, water, sewerage and remediation

For the Taxonomy regulation, this report looks at the following economic activities. How they contribute to the different environmental objectives can be found in Annex 1[35]:

- Anaerobic digestion of sewage sludge
- Anaerobic digestion of bio-waste
- Composting of biowaste
- Landfill gas capture and utilization

GHG emissions in the Union stemming from the water, sewerage, waste and remediation sector are relatively small. The Regulation (EC, 2020c) mentions that this sector has, nevertheless a great potential to contribute to reduce GHG emissions in other sectors. Activities involving anaerobic digestion as well as composting of separately collected bio-waste which avoid landfilling of bio-waste are particularly important for reducing methane emissions. The technical screening criteria for waste activities recognise those activities as substantially contributing to climate change mitigation, provided that they implement certain best practices (EC, 2020c).

Table 4: product categories and definitions used under the RED2, linked with the economic activities under the Taxonomy (as far as analysed and included in this report).

Product categories and definitions under the RED2	Economic activities under the Taxonomy regulation
Biowaste means biowaste as defined in point (4) of Article 3 of Directive 2008/98/EC (EC, 2018). ANNEX IX: Feedstocks for the production of biogas ..[..[.. may be considered twice their energy content: sewage sludge (EC, 2018)	**Anaerobic digestion of sewage sludge[36]:** Construction and operation of facilities for the treatment of sewage sludge by anaerobic digestion with the resulting production and utilisation of biogas or chemicals (EC, 2020a).
Energy from renewable sources or 'renewable energy' means energy from renewable non-fossil sources, namely wind, solar ...[..].. biomass, landfill gas, sewage treatment plant gas, and biogas (EC, 2018). Waste' means waste as defined in point (1) of Article 3 of Directive 2008/98/EC, excluding substances that have been intentionally modified or contaminated in order to meet this definition (EC, 2018).	**Landfill gas capture and utilization[37]:** Installation and operation of infrastructure for landfill gas capture and utilisation in permanently closed landfills using new or supplementary dedicated technical
Biowaste means biowaste as defined in point (4) of Article 3 of Directive 2008/98/EC (EC, 2018) *To be used for energy purposes (when falling under the scope of the RED).*	**Composting of bio-waste[38]:** 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. Bio-waste is defined in Article 3, point 4, of Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on waste and repealing certain Directives (OJ L 312, 22.11.2008, p.3), (EC, 2020a). **Anaerobic digestion of bio-waste [(31)]:** 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 (EC, 2020a).

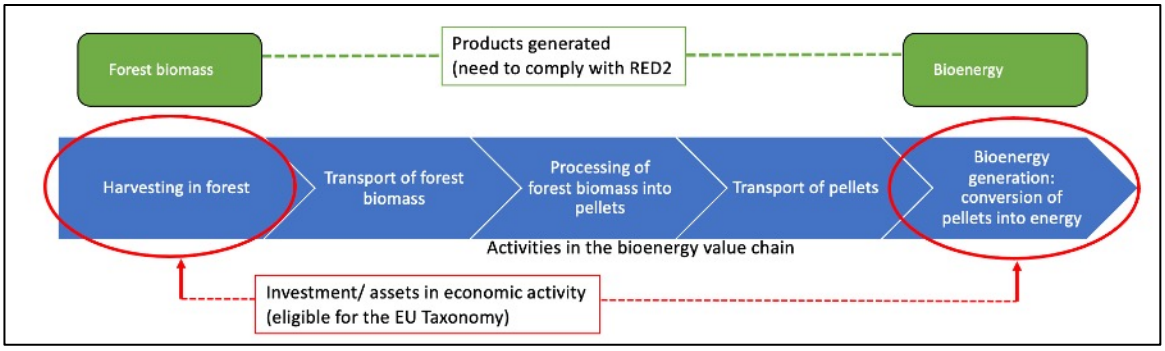
3.4 Key observations

Bioenergy supply chains involve a wide variety of feedstocks, conversion pathways and different end-products that can be produced at a range of scales. Biomass supply chains may involve the cultivation or harvesting of forestry or perennial crops; and include processing, storage, conversion and transportation steps, see also

Figure 2. At the end, biofuels, bioliquids and biomass fuels are used for electricity, heating, cooling or as fuel for transport.

[35] The in-depth comparison (Annex 1), supporting the observations in this main report, is available upon request via the following e-mail address: gave@rvo.nl.
[36] The activity is classified under NACE codes E37.00 and F42.99 - see Regulation (EC) No 1893/2006.
[37] The activity is classified under NACE code E38.21 i- see Regulation (EC) No 1893/2006.
[38] The activity is classified under NACE codes E38.21 and F42.99 - see Regulation (EC) No 1893/2006.

Figure 2: Interlinkages between economic activities in the bioenergy value chain (falling potentially under the taxonomy) and the products (falling under the scope of RED2)



The Taxonomy applies to some of the above-mentioned economic activities, e.g., when a fund is investing in a bioenergy installation or when a company invests in improved forest management. Furthermore, a financial product (loan, investment) or a company (e.g., a holding) can also be active in multiple economic activities. The scope of the RED2 includes the sourcing material and the end-products, which are produced during these activities.

Table 5: Key characteristics and differences in categorization of economic activities and products under the RED2 and the Taxonomy

Topic compared:	Taxonomy Regulation	RED2
To what do the sustainability requirements apply?	Economic activities (described per sector)	Products, i.e., biofuels, bioliquids and biomass fuels
For Forestry and agriculture:	Economic activities for the forestry and agricultural sector in general (independent of its end-use). Especially for forestry, there are multiple economic activities.	Distinction between forest and agriculture biomass – with specific categorization and definitions for e.g., food and feed crops. Residues are a separate category under RED2.
For Electricity, gas, steam and air conditioning supply:	Categorized (amongst others) to economic activities that produce or generate bioenergy. Bioenergy is considered a transitional activity.	Products: Biofuels, bioliquids and biomass fuels
For waste, water, sewerage and remediation:	This includes the economic activity of e.g., anaerobic digestion of bio-waste, and how it is produced.	Bio-waste is, as biomass source, a sourcing material used to generate bioenergy

3.4.1 Indirect side effects to other economic activities

Under the RED2, economic operators have to demonstrate that they comply with the sustainability requirements. As an economic operator must be certified by an EU recognized scheme (see Chapter 5), this implies that the entire value chain in question must also be certified. The chain of custody (safeguarding sustainability and transferring data through the supply chain) makes it possible for the economic operator to demonstrate compliance with the sustainability at the end of the supply chain.

For the Taxonomy regulation, the implementation of Due Diligence obligations (for e.g., the DNSH criteria, see also chapters 4 and 5) means that an economic operator has the responsibility to identify and mitigate potential risks in its supply chain downstream (e.g., from trader to farmer), but also if needed upstream (e.g., from farmer to trader); for example, to ensure negligible risk on human rights violations. This may also indirectly influence other bioenergy related economic activities that are not (yet) included in the Taxonomy.

Note that when economic activities of a company are not (yet) considered under the Taxonomy, this does not mean it is an unsustainable activity – it can mean that (i) it will not make a significant contribution climate mitigation or adaptation under the defined criteria, but possibly to other environmental objectives. It may also

mean that this activity (ii) falls in the 'neutral' zone but is not unsustainable or (iii) is not (yet) included in the Taxonomy (but may be over time).

4. The Frameworks, its objectives and sustainability criteria

The Taxonomy regulation 2020/852 establishes the general framework for determining whether an economic activity qualifies as 'environmentally sustainable' with the objective to establish the degree to which an investment is environmentally sustainable (EC, 2020c). An economic activity shall qualify as environmentally sustainable when it (EC, 2020):

1. Contributes substantially to one or more of the **environmental objectives** (to be determined by the project, company, financial institution and/or Member State or Union)[39]
2. **Does not significantly harm** any of the environmental objectives (TEG, 2020), (EC, 2020).
3. Is carried out in compliance with the **minimum safeguards** laid down in article 18 (e.g., OECD Guidelines on Multinational Enterprises and the UN Guiding Principles on Business and Human Rights).
4. Complies with the **technical screening criteria** that have been established by the Commission in accordance with Article 10 (EC, 2020).

The Taxonomy Regulation sets out the following environmental objectives (EC, 2020):

1. Climate change mitigation
2. Climate change adaptation
3. The sustainable use and protection of water and marine resources
4. The transition to a circular economy
5. Pollution prevention and control
6. The protection and restoration of biodiversity and ecosystems

A further description of the objectives 3 to 6 can be found in Annex 2.

Note that technical screening criteria (in draft) are until now available for climate change mitigation and adaptation; Criteria for the other objectives will follow. This means that in the future an economic activity may also contribute significantly to biodiversity (e.g., forestry), water (agriculture) or to the circular economy (e.g., end-products in the biobased economy).

In the RED2, Article 29 lays down the sustainability and GHG emissions saving criteria for biofuels, bioliquids and biomass fuels (EC, 2018):

- There is a GHG emission saving criterium, except for electricity, heating and cooling produced from municipal solid waste (Art.29.1)
- Related to this, there are efficiency requirements for installations producing electricity from biomass fuels (Art. 29.11)
- For agricultural residues, there is a criterium to address the impacts on soil quality and soil carbon (Art.29.2)

[39] set out in Article 9 in accordance with Articles 10 to 16.

- Furthermore, agricultural biomass shall not be made from raw material obtained from land with a high biodiversity value (Art.29.4), shall not be made from raw material obtained from land with high-carbon stock (Art.29.4), or from raw material obtained from land that was peatland in January 2008 (Art.29.5).
- There are specific rules for biofuels, bioliquids and biomass fuels produced from food and feed crops, with a maximum contribution of 7 % of final consumption of energy in the road and rail transport sectors in a Member State, to be taken into account for counting towards the Union target and other purposes[40].
- Furthermore, the aim is to reduce the share of high indirect land- use change-risk biofuels, bioliquids or biomass fuels produced from food and feed crops to 0% in 2030 at the latest (Art. 26). There is an exemption from these limits for biofuels, bioliquids and biomass fuels certified as low ILUC-risk, as further defined in the Delegated Regulation (EC, 2019a).
- Forest biomass has to meet various criteria, with the aim to minimise the risk of using forest biomass derived from unsustainable production, and to ensure that carbon stocks and sinks levels in the forest are maintained or strengthened over the long term (Art.29.6 and 29.7).

4.1 Further explaining the screening criteria, DNSH criteria and social safeguards under the Taxonomy

Technical screening criteria under the Taxonomy determine the conditions under which a specific economic activity qualifies as contributing substantially to any of the six objectives (EC, 2020). The EU Taxonomy now covers the first two objectives (being climate change mitigation and climate change adaptation) but is expected to extend its also focus to the other objectives, including the protection and restoration of biodiversity and ecosystems. The technical screening criteria for 'do no significant harm' (DNSH) should ensure that the economic activity has no significant negative environmental impact (EC, 2020c).

Art. 19 of the Taxonomy regulation gives information about the requirements for the technical screening criteria, which will be further developed in separate Delegated Acts, and need, **amongst others**, to:

- Identify the most relevant potential contributions to the given environmental objective[41] (Art. 19, EC 202)
- Specify the minimum requirements that need to be met to avoid significant harm to any of the relevant environmental objectives, considering both the short- and long-term impact (Art. 19, EC, 2020)
- Where appropriate, build upon Union labelling and certification schemes, Union methodologies for assessing environmental footprint, and Union statistical classification systems, and take into account any relevant existing Union legislation (Art, 19, EC, 2020).
- Take the nature and scale of the economic activity into account, including whether it is an enabling activity or whether it is a transitional activity (Art, 19, EC, 2020).
- To avoid overly burdensome compliance costs on economic operators, the Commission should establish technical screening criteria that provide for sufficient legal clarity, that are practicable and easy to apply, and for which compliance can be verified within reasonable cost-of-compliance boundaries, thereby avoiding unnecessary administrative burden (EC, 2020).

4.1.1 Technical screening criteria for climate change mitigation

The technical screening criteria for climate change mitigation are developed, and (at the writing of this report) in consultation. According to the Regulation, an economic activity shall qualify as contributing substantially to climate change mitigation where that activity ***contributes substantially*** to the stabilisation of GHG concentrations in the atmosphere at a level which prevents dangerous anthropogenic interference with the climate system, amongst others by generating or using renewable energy[42], improving energy efficiency or strengthening land carbon sinks (Art. 10.1, EC, 2020).

[40] Purposes: (i) contributing towards the Union target set in Article 3(1) and the renewable energy shares of Member States; (b) measuring compliance with renewable energy obligations, including the obligation laid down in Article 25; and (iii) eligibility for financial support for the consumption of biofuels, bioliquids and biomass fuels.
[41] while respecting the principle of technological neutrality, considering both the short- and long-term impact of a given economic activity
[42] in line with Directive (EU) 2018/2001

An economic activity for which there is not a technically and economically feasible low-carbon alternative shall qualify as contributing substantially to climate change mitigation where it supports **the *transition*** to a climate-neutral economy[43], including by phasing out GHG emissions, in particular emissions from solid fossil fuels, and where that activity (Art. 10.2, EC, 2020):

- Has GHG emission levels that correspond to the best performance in the sector or industry
- Does not hamper the development and deployment of low-carbon alternatives; and
- Does not lead to a lock-in-in of carbon-intensive assets, considering the economic lifetime of those assets

4.1.2 Technical screening criteria for climate change adaptation

Also, the technical screening criteria for climate change adaptation are already developed, and (at the writing of this report) in consultation. An economic activity that pursues the environmental objective of climate change adaptation should contribute substantially to reducing or preventing the adverse impact of the current or expected future climate, or the risks of such adverse impact, whether on that activity itself or on people, nature or assets (EC, 2020). An economic activity shall qualify as contributing substantially to climate change adaptation where that activity (Art. 11.1, EC, 2020):

- Includes adaptation solutions that either substantially reduce the risk of the adverse impact of the current climate and the expected future climate on that economic activity or substantially reduce that adverse impact, without increasing the risk of an adverse impact on people, nature or assets; or
- Provides adaptation solutions that, in addition to satisfying the conditions set out in Article 16 (*i.e., conditions for enabling activities*), contribute substantially to preventing or reducing the risk of the adverse impact of the current climate and the expected future climate on people, nature or assets, without increasing the risk of an adverse impact on other people, nature or assets.

4.1.3 Do Not Significant Harm (DNSH) criteria

Under the Taxonomy, an economic activity shall be considered to significantly harm when that activity leads for example, for climate change mitigation to significant GHG emissions. When assessing an economic activity against the DNSH criteria, both the environmental impact of the activity itself and the environmental impact of the products and services provided by that activity throughout their life cycle shall be taken into account, in particular by considering the production, use and end of life of those products and services (Art. 17, EC, 2020).

4.1.4 Minimum safeguards

The minimum safeguards shall be procedures implemented by an undertaking (e.g. company or financial institution) that is carrying out an economic activity to ensure the alignment with the OECD Guidelines for Multinational Enterprises and the UN Guiding Principles on Business and Human Rights, including the principles and rights set out in the eight fundamental conventions identified in the Declaration of the International Labour Organisation on Fundamental Principles and Rights at Work and the International Bill of Human Rights (Art. 18, EC, 2020). Where applicable, more stringent requirements in EU law still apply (TEG, 2020).

- The **OECD Guidelines for multinational enterprises** are a legal international instrument on responsible business conduct (RBC). The Guidelines reflect the expectation that governments and businesses act responsibly. The TEG encourages companies to implement all recommendations in the Guidelines to the greatest extent possible but considers that both companies and investors should centre compliance on (1) human rights, (2) labour rights, and (3) combating bribery, bribe solicitation and extortion (TEG, 2020).
- The **UN Guiding Principles (UNGPs) on Business and Human Rights** represent a global standard for preventing human rights violations, and addressing any potential risk, resulting from economic activities. It is a businesses' responsibility to respect them. For companies, this entails a responsibility to act with due diligence to avoid infringement, and to address adverse impacts on human rights[44] (TEG, 2020).

[43] consistent with a pathway to limit the temperature increase to 1,5 0C above pre- industrial levels
[44] it comprises all companies, of all sizes, in every sector, in any country (TEG, 2020).

When implementing these procedures, undertakings shall adhere to the principle of 'do no significant harm' (Art, 18, EC, 2020). Companies and other issuers disclosing against the Taxonomy will need to assess their compliance with minimum safeguards through Due Diligence[45] (TEG, 2020).

4.2 Agriculture: Comparing the sustainability criteria between the taxonomy and the RED2

Table 6 Shows **a summary** of the results of the comparison on sustainability requirements between the RED2 and the EU Taxonomy for one selected economic activity in the agricultural sector: "growing of non-perennial crops". More details, and the results of the other analysed agricultural activity "growing of perennial crops" can be found in **Annex 1**[46]. The criteria for both activities are very similar. Key observations of the comparison are mentioned in section *4.2.1*.

*Table 6: **Summarized** findings of comparison between the RED2 and the Taxonomy for the economic activity **"growing of non-perennial crops** (= Comparable, ~ Differences exist, x Not comparable, (Tax)There are differences; the Taxonomy has the more stringent or extensive requirement; (RED) There are differences; the RED2 has the more stringent or extensive requirement, **(X)** footnote referring to further explanation in section 4.2.1.*

Comparison sustainability criteria Taxonomy (based on the draft Delegated Regulation) and RED 2 for economic activity "growing of non-perennial crops"		
Criteria Taxonomy	Keywords of the Taxonomy (sub-) criteria (in summary)	Comparison with RED2
Climate change mitigation[47] *(Substantial contribution)*	* 1. Protection of non-agricultural land with high carbon stock from land use change	=
	* 2. Establishment of a Farm Sustainability Plan **(1)**	X (Tax)
	* 3. Compliance with essential management practices	X (Tax)
	* 4. Farm records	X (Tax)
	* 5. Verification of the yearly records and the Farm Sustainability Plan **(2)**	~ (Tax)
Climate change mitigation *(DNSH)*	* The activity complies with a set of criteria ..... **(3)**	~ (Tax)
	* No conversion of forests.....(further defined) **(4)**	~ (RED)
Climate change adaptation *(Substantial contribution)*	* implemented 'adaptation solutions') ..... **(5)**	X (Tax)
	* physical climate risks have been identified	X (Tax)
	* The adaptation solutions implemented	X (Tax)
Climate change adaptation *(DNSH)*	* The activity complies with certain criteria...	X (Tax)
Sustainable use & protection of water *(DNSH)*	* Environmental degradation risks .....identified and addressed.... **(6)**	X(Tax)
	* Water Permit	X(Tax)
Transition to a circular economy *(DNSH)*	* Non-natural waste materials ...	X(Tax)
	* Natural organic materials ..... **(7)**	=
Pollution prevention and control *(DNSH)*	* Application of nutrients and plant protection products, ... **(8)**	X(Tax)
	* Zones affected by nitrogen pollution and waters by pollution.....	X(Tax)
	* Livestock manure (emission levels) **(9)**	~ (Tax)
	* Plant protection products.	X (Tax)
Protection and restoration of biodiversity & ecosystems *(DNSH)*	* Activities ensure the protection of soil.....	~ (Tax)
	* legally protected species and their habitats **(10)**	~ Tax/(RED)
	*No conversion, fragmentation or unsustainable intensification	~ Tax/(RED)
	* Sites/operations located in or near to biodiversity-sensitive areas	~ Tax/(RED)
	* The cultivation of alien species complies ..... **(11)**	~ (Tax)
Minimum social safeguards	Minimum social safeguards **(12)**	X Tax
Other	(issues addressed in RED2 but not mentioned in taxonomy) **(13)**	X (RED)

[45] The Taxonomy applies them at activity level and not company or institution level. Those conducting the activities – candidates to be Taxonomy-aligned – ought to ensure that they are carried out in line with the principles and standards embedded in the OECD Guidelines and UNGPs. However, it is beyond the scope of the Taxonomy to assess other activities that a company or other issuer might also conduct, as well as an institution itself (TEG, 2020).

[46] The in-depth comparison (Annex 1), supporting the observations in this main report, is available upon request via the following e-mail address: gave@rvo.nl.

[47] There are separate for climate change mitigation when (i) used to show that the economic activity contributes significantly to climate change mitigation and (ii) when used as DNSH criterium (in this case the economic activity aims to contribute significantly to climate change adaptation.

4.2.1 Explanation of main findings

This section further explains the main findings from the comparison of the Taxonomy criteria with the RED2 for the selected activities in the agriculture sector, referring to the footnotes in Table 6:

(1) A Farm Sustainability Plan is required under the Taxonomy but is not required under the RED2. A farm sustainability plan sets out the agricultural holding's strategy to contribute significantly to climate change mitigation by both reducing GHG emissions and strengthening land carbon sinks. Such plan should for example identify the management practices with the highest potential to substantially contribute to climate change mitigation and quantify this potential contribution.

(2) Unlike the Taxonomy, the RED2 does not require a verification of the yearly records and the farm sustainability plan but information about the GHG emissions savings thresholds, GHG data and sustainability criteria are to be verified by an independent auditor.

(3) The RED2 partly covers part of the requirements under the Taxonomy (for example that permanent grassland is to be maintained) but does for example not require that arable stubble is not burnt.

(4) Under the Taxonomy, the definitions of continuously forested areas' and 'land spanning more than one hectare' (which are used in RED2) are merged into one definition. Consequently, this results in the fact that land spanning more than one hectare with trees and a canopy cover of more than 30 % is not covered under the Taxonomy (in this version).

(5) Unlike the Taxonomy, criteria related to climate change adaptation are not addressed in the RED2. This also explains the scores of the other criteria under this requirement.

(6) Unlike the Taxonomy, sustainable use of water is not a requirement under the RED2. This also explains the scores of the other criteria under this DNSH requirement.

(7) It is assumed that natural organic materials and other suitable wastes are used for agricultural benefit under the RED2 (as is also required in the Taxonomy).

(8) The appropriate use of agrochemicals is not a requirement under the RED2. This also explains the scores of the other criteria under this DNSH requirement.

(9) Here, there is a direct reference to EU policies and laws. Because of legal compliance, operators automatically meet the requirements for biomass produced in the EU – this is not the case for operators outside the EU.

(10) Here, the requirements are partially aligned but differences exist, for example in terminology, stringency and the mentioning of a cut-off date (or not). This also explains the scores of the other criteria under this DNSH requirement.

(11) Because of legal compliance, operators automatically meet the Taxonomy requirements for biomass produced in the EU – this is not the case for operators outside the EU.

(12) Unlike the Taxonomy, minimum social safeguards are not addressed in the RED2.

(13) The RED2 sets a limit in the share of food and feed crops for biofuels and bioliquids, and the share of high indirect land- use change-risk biofuels, bioliquids or biomass fuels produced from food and feed crops shall be reduced to 0% in 2030 at the latest, with an exemption for those certified as low ILUC-risk; this requirement excludes intermediate crops, such as catch crops and cover crops. This is (logically) not a requirement for the growing of non-perennial crops under the EU Taxonomy as these criteria apply to all crops, and the end-use is irrelevant.

4.2.2 Interpretation of criteria and definitions

There are some criteria and terms mentioned in the Taxonomy that are open for interpretation and need further clarification to avoid unambiguity, for example:

- In the criteria for transition to a circular economy (DNSH), the term 'agricultural benefit' is introduced but not further defined or explained under the Taxonomy, and therefore open for interpretation.
- Under the criteria for the 'protection and restoration of biodiversity & ecosystems', the term "high-nature-value-land" is introduced. It is not clear which land use categories fall exactly under this.

4.3 Sustainability criteria for forestry: Comparing the criteria between the taxonomy and RED2

Table 7 shows **a summary** of the results of the comparison on sustainability requirements between the RED2 and the EU Taxonomy for one selected economic activity in the forestry sector: "improved forest management". More details, and the results of the other forestry related economic activities that are analysed in this report can be found in **Annex 1**[48].

The criteria for all forest related economic activities are largely comparable. Key observations of the comparison are mentioned in section *4.3.1*.

*Table 7: **Summarized** findings of comparison between the RED2 and the Taxonomy for the economic activity **"improved forest management"** (= Comparable, ~ Differences exist, x Not comparable, (Tax)There are differences; the Taxonomy has the more stringent or extensive requirement; (RED) There are differences; the RED2 has the more stringent or extensive requirement. (Legal) Comparable because of legal requirement, **(X)** footnote referring to further explanation in section 4.3.1.*

Comparison sustainability criteria Taxonomy (based on the draft Delegated Regulation) and RED 2 for economic activity "improved forest management"		
Criteria Taxonomy	Keywords of the Taxonomy (sub-) criteria (in summary)	Comparison with RED2
Climate change mitigation[49] *(Substantial contribution)*	* 1.1 Forest management plan or equivalent instrument: The activity takes place in an area that is subject to a forest management plan or equivalent[50], covers a period of 10 years or more, and provides information about e.g., management goals, or social issues. (1), (1b)	~ ? (Tax) (1a)
	* 1.2 Forest management plan or equivalent instrument: sustainability of the forest management systems ensured through a.o. compliance with implementing act & RED2. (2)	~ (Tax)
	* 1.3 Forest management plan or equivalent instrument: complies with EUTR (Due Diligence) (3)	= Legal
	* 1.4 Forest management plan or equivalent instrument: All DNSH criteria are addressed (4)	X ? (Tax)
	* 1.5 Forest management plan or equivalent instrument provides for monitoring (5)	~ ? (Tax)
	* 1.6 Forest management plan or equivalent instrument: compliance (6)	~ (Tax)
	* 2.1 Climate benefit analysis: establishes a baseline (20 years) starting at the beginning, associated to the business-as-usual practices: these can be amongst others the practices corresponding to a management system as set out in Article 29(7), point (b) of RED2.	~ ? (Tax)
	* 2.2 Climate benefit analysis: demonstrates the net balance of GHG emissions and removals over a period of 20 years (and should be higher than the start (7)	~ ? (Tax)
	* 2.3 Climate benefit analysis: Emissions and removals due to natural disturbances do not result in non-compliance (see IPCC guidelines)	~ ? (Tax)
	* 2.4 Climate benefit analysis: the correctness of the analysis is controlled (8)	~ ? (Tax)
	* 3.1 Additionality: The additionality of the activity is demonstrated. (9)	X (Tax)
	* 3.2 Additionality: verification	X (Tax)
	* 4. Guarantee of permanence	X (Tax)
Climate change mitigation *(DNSH)*	* 1.1 Forest management plan or equivalent instrument: The activity takes place in an area that is subject to a forest management plan or equivalent[51], covers a period of 10 years or more, and provides information about e.g., management goals, or social issues. (1), (1a)	~ ? (Tax)
	* 1.2 Forest management plan or equivalent instrument: sustainability of the forest management systems ensured through a.o. compliance with implementing act & RED2. (2)	~ (Tax)
	* 1.3 Forest management plan or equivalent instrument: complies with EUTR (Due Diligence) (3)	= Legal
	* 1.4 Forest management plan or equivalent instrument: All DNSH criteria are addressed (4)	X ? (Tax)
	* 1.5 Forest management plan or equivalent instrument provides for monitoring (5)	~ ? (Tax)
	* 1.6 Forest management plan or equivalent instrument: compliance (6)	~ (Tax)
Climate change adaptation *(Substantial contribution)*	implemented 'adaptation solutions' (10)	X (Tax)
	physical climate risks identified	X (Tax)
	Adaptation solutions are implemented	X (Tax)

[48] The in-depth comparison (Annex 1), supporting the observations in this main report, is available upon request via the following e-mail address: gave@rvo.nl.
[49] There are separate for climate change mitigation when (i) used to show that the economic activity contributes significantly to climate change mitigation and (ii) when used as DNSH criterium (in this case the economic activity aims to contribute significantly to climate change adaptation.
[50] as set out in national law or, where national law does not define a forest management plan or equivalent instrument, as referred to in the FAO definition of 'forest area with long-term forest management plan'
[51] as set out in national law or, where national law does not define a forest management plan or equivalent instrument, as referred to in the FAO definition of 'forest area with long-term forest management plan'

Climate change adaptation *(DNSH)*	physical climate risks identified and addressed (plan with adaptation solutions) **(10)**	X **(Tax)**
Sustainable use and protection of water *(DNSH)*	* Environmental degradation risks related to preserving water quality and avoiding water stress addressed **(11)**	X **(Tax)**
Transition to circular economy *(DNSH)*	* No significant reduction in long-term circularity **(12), (12a)**	=
Pollution prevention & control *(DNSH)*	* The use of pesticides is reduced; alternative (non-chemical) approaches are favoured. The activity does not use fertilisers **(13)**	X **(Tax)**
	* Avoid the use of active ingredients (e.g., listed in Stockholm Convention)	X **(Tax)**
	* Pollution prevention of water and soil **(14)**	~ **(Tax)**
Protection and restoration of biodiversity & ecosystems *((DNSH)*	* Protected areas	=
	* No conversion of habitats **(15)**	~ **(Tax)**
	* Referring to criterium 1: Maintaining and possibly enhancing biodiversity in accordance with national and local provisions and further specified **(16), (16a)**	~ **(Tax)**
Minimum social safeguards	Minimum safeguards **(17)**	X **Tax**

4.3.1 Explanation of main findings

This section further explains the main findings from the comparison of the Taxonomy criteria with the RED2 for the selected activities in the forest sector, referring to the footnotes in Table 7.

A general observation is that the description of the economic activities in the Taxonomy Regulation already provide guidance on what the objective of forest management should be. 'Improved forest management' assumes for example no change in land use and occurs while 'conservation forestry' covers management activities with the objective of preserving one or more habitats or species (see also Table 2).

(1) Both the RED2 and Taxonomy use an option (a), based on national law, and an option (b) approach. The options themselves show, however, large differences. Under the taxonomy, the forest management plan should for example cover a period of 10 years or more and include management goals and general strategies, including on social issues. The RED2 refers here to a more limited (and different) set of issues. This difference has also impact on the criteria 1.2 to 1.6

a. The question mark is added as the upcoming Implementing Act (see Art. 29.8) will further explain what evidence is required under option (b). This may include a plan.

b. Deviation for other economic activity in this sector: Note that there is an additional criterium for the activity 'conservation forest': the plan has to show a primary designated management conservation objective.

(2) The Taxonomy makes here a specific reference to RED2 and its upcoming implementing act on operational guidance for energy from forest biomass. However, only option (b) under Article 29.6 refers specifically to the use of management systems.

(3) Because of legal compliance, it is assumed that operators importing forest products to the EU, or using them in the EU, comply with the EUTR and therefore automatically meet this Taxonomy requirement.

(4) The Taxonomy requires that all DNSH criteria are addressed in the forest management plan. This will likely not be the case under the RED2, as some of the DNSH criteria (e.g., water use) are not covered under the RED2. The question mark is added as the upcoming Implementing Act (see Art. 29.8) will further explain what should be covered in a forest management system.

(5) The Implementing acts establishing the operational guidance on the evidence for demonstrating compliance with the criteria follow but guidance on monitoring is currently not provided under the RED2. A question mark is added as the content of the Implementing Acts is still unknown at the writing of this report.

(6) There is a compliance and verification check under the RED2, clarified under Article 30. There are also some differences. Art. 30.3 mentions for example that, in order to comply with point (a) of Article 29(6) and point

(a) of Article 29(7), first- or second-party auditing may be used up to the first gathering point of the forest biomass while only third-party certification is allowed under the Taxonomy.

(7) The business as-usual practices, required under the Taxonomy, can be the practices corresponding to a management system as set out in Article 29(7), point (b), of the RED2 (point a is also an option under the RED2). This information is required over a period of 20 years under the Taxonomy. The Implementing Act needs to provide guidance on this requirement under the RED2. This also has impact on the other sub-criteria for climate benefit analysis.

(8) This taxonomy requirement is partially covered by RED2: There is a compliance and verification check under the RED2 (see Article 30). This means there is for example verification for article 29 (7), which requires that "carbon stocks and sinks levels in the forest are maintained or strengthened over the long term".

(9) Unlike the Taxonomy, the requirement of 'additionality' is not covered under RED2.

(10) Unlike the Taxonomy, criteria related to climate change adaptation are not addressed in the RED2. This also explains the scores of the other criteria under this requirement.

(11) Unlike the Taxonomy, sustainable use of water is not a requirement under the RED2.

(12) This Taxonomy requirement is interpreted as the need to maintain the long-term productivity and capacity of the forest, which is covered under the RED2.

a. Deviation for other economic activity in this sector: Note that there is no DNSH criteria on 'transition to a circular economy' for afforestation activities

(13) Unlike the Taxonomy, the RED2 sets no requirements on the reduced use of pesticides, while favouring alternatives, and does not prohibit the use of fertilizers.

(14) RED2 requires that negative impacts on soil are minimized, which will include the prevention of soil pollution. Unlike the Taxonomy the RED2 has no requirements on water quality.

(15) The taxonomy requirement is not fully clear on what is meant with 'no conversion'. The RED2 does, however, not refer specifically to the protection of habitats with high biodiversity value or that conversion of it (to other types of forests?) is not allowed.

(16) Although RED2 does cover specific requirements on biodiversity and protecting areas with high biodiversity value, the criterium in the Taxonomy is differently worded, more stringent and specific.

a. Deviation for other economic activity in this sector: Only for afforestation activities, and only mentioned in Annex II on climate adaptation, there is the requirement that the use of whole tree stems for bioenergy is to be avoided[52].

(17) Unlike the Taxonomy, no minimum social safeguards are included in the RED2.

4.3.2 Interpretation of criteria and definitions

The upcoming implementing act on operational guidance for energy from forest biomass, under the RED2, is not available yet. Consequently, some further explanation on, for example, the interpretation of a sourcing area of management system is missing (at this point). The Taxonomy refers to forest management plans while the RED2 refers to management systems and further clarification is need what is understood by such a system or plan, and in how far they are comparable.

Furthermore, clarification on the interpretation of some of the other criteria in the taxonomy is also required, for example on:

- The DNSH criterium on 'transition to a circular economy', which requires that "the silvicultural change induced by the activity is not likely to result in a significant reduction in the long-term circularity of wood products from the forest. This requirement is unclear and requires further clarification
- One of the DNSH criteria on biodiversity, mentioning that there should be 'no conversion', without specifying what type of conservation and to which land-use (or forest type).

[52] especially where viable, unsubsidised markets exist for their use in carbon-retaining materials or products, except where it has been authorised at the national or regional levels in exceptional circumstances, including for phytosanitary reasons or to reduce fire risks, in accordance with applicable law

4.3.4 Expected revisions over time

The upcoming Implementing Acts on operational guidance for energy from forest biomass are not available yet at the writing of this project but may have considerable impact on how the RED2 aligns with the taxonomy.

The Taxonomy Regulation mentions, on the other hand, that in the follow-up of upcoming Communications, and in line with the new Forests and Adaptation Strategies planned in 2021, technical screening criteria for forest activities should be complemented, reviewed and where necessary revised by end of 2021 (EC, 2020c).

4.4 Sustainability criteria for bioenergy: Comparing the criteria between the taxonomy and RED2

Table 8 shows **a summary** of the results of the comparison on sustainability requirements between the RED2 and the EU Taxonomy for the selected economic activity "production of heat/cool from bioenergy". More details, and the results of the other bioenergy related economic activities that are analysed in this report can be found in **Annex 1**[53]. Key observations of the comparison are mentioned in section *4.4.1*. The criteria for the bioenergy related economic activities are to some extent comparable; deviations are also mentioned in this section (but not shown in the table).

*Table 8: **Summarized** findings of comparison between the RED2 and the Taxonomy for the economic activity **"production of heat/cool from bioenergy"** (= Comparable, ~ Differences exist, x Not comparable, (Tax)There are differences; the Taxonomy has the more stringent or extensive requirement; (RED) There are differences; the RED2 has the more stringent or extensive requirement. (Legal) Comparable because of legal requirements, **(X)** footnote referring to further explanation in section 4.4.1.*

Comparison sustainability criteria Taxonomy (based on the draft Delegated Regulation) and RED 2 for economic activity "production of heat/cool from bioenergy"		
Criteria Taxonomy	Keywords of the Taxonomy (sub-) criteria (in summary)	Comparison with RED2
Climate change mitigation[54] *(Substantial contribution)*	* 1. Agricultural and forest biomass comply with sustainability criteria in Directive (EU) 2018/2001 **(1), (1a)**	**~ (Tax)**
	* 2. GHG emission saving of at least 80 % (see Directive (EU) 2018/2001) **(2), (2a)**	**~ (Tax)**
	* 3. Anaerobic digestion of organic material: see criteria on anaerobic digestion of sewage sludge and of biowaste" **(3)**	**X (Tax)**
	* 4. Points 1 and 2 do not apply to electricity generation installations with a total rated thermal input below 2 MW and using gaseous biomass fuels **(4)**	**~ (Tax)**
Climate change mitigation *(DNSH)*	The activity meets the requirements relating to sustainability, GHG emission savings and efficiency laid down in Article 29 of RED2 **(5), (5a)**	**=**
Climate change adaptation *(Substantial contribution)*	* 'Adaptation solutions' are implemented **(6)**	**X (Tax**
	* Physical climate risks identified.	**X (Tax**
	* Requirements on adaptation solutions implemented (e.g., are consistent with local, sectoral, regional or national adaptation efforts)	**X (Tax**
Climate change adaptation *(DNSH)*	* The activity complies with the criteria set out in Appendix E: economic operator has developed a plan to implement adaptation solutions after having identified them **(6)**	**X (Tax**
Sustainable use and protection of water *(DNSH)*	* Environmental degradation risks related to preserving water quality and avoiding water stress are identified and addressed **(7)**	**X (Tax**
Transition to circular economy *(DNSH)*	N/A **(8), (8a)**	**=**
Pollution prevention & control *(DNSH)*	* Emissions within or lower than the emission levels associated with the best available techniques (BAT-AEL) ranges (see Directive 2010/75/EU) **(9)**	**~ (Tax)**
	* For combustion plants > 1 MW thermal input but below thresholds for the BAT conclusions for large combustion plants: emissions below emission limit values (Directive (EU) 2015/2193) **(9)**	**~ (Tax)**
	* For plants in zones or parts of zones not complying with the air quality limit values laid down in Directive 2008/50/EC: results of information exchange are taken into account	**X (Tax**
	* For anaerobic digestion of organic material: produced digestate is used as fertiliser or soil improver; requirements for fertilising materials **(10), (10a)**	**X (Tax**
	* For anaerobic digestion plants treating > 100 tonnes per day: emissions to air/ water are within or lower than emission levels associated with the best available techniques (BAT-AEL) ranges **(9)**	**~ (Tax)**

[53] The in-depth comparison (Annex 1), supporting the observations in this main report, is available upon request via the following e-mail address: gave@rvo.nl.
[54] There are separate for climate change mitigation when (i) used to show that the economic activity contributes significantly to climate change mitigation and (ii) when used as DNSH criterium (in this case the economic activity aims to contribute significantly to climate change adaptation.

Protection and restoration of biodiversity & ecosystems *(DNSH)*	* EIA or screening completed **(9)**	~ **(Tax)**
	* After EIA: required mitigation and compensation measures implemented **(9)**	~ **(Tax)**
	* Appropriate assessment for sites/operations located in or near biodiversity-sensitive areas	X **(Tax)**
Minimum social safeguards	Minimum safeguards **(11)**	X **(Tax**
Other	Requirements on chain of custody and the use of mass balance **(12),** Efficiency requirements for some of the economic activities **(12a)**	X **(RED)**

4.4.1 Explanation of main findings

This section further explains the main findings from the comparison of the Taxonomy criteria with the RED2 for the selected activities in the bioenergy sector, referring to the footnotes in Table 8.

(1) The Taxonomy makes a direct reference to the RED2. For agriculture, the Taxonomy requirements are not entirely in line with the REDII: for agricultural biomass only 29.3 to 5 applies. Article 29.2 applies only to agricultural residues. The Taxonomy does not distinguish between agricultural biomass and the residues.
   a. Deviation for other economic activity in this sector: For the manufacture of biogas and biofuels for use in transport, the Taxonomy requires that food and feed crops are not used in the activity for the manufacture of biofuels for use in transport. This is, under conditions, partially allowed under the RED. The two frameworks are conflicting for this requirement.

(2) Partial compliance. The RED2 requires "at least 70 % for electricity, heating and cooling production from biomass fuels used in installations starting operation from 1 January 2021 until 31 December 2025, and 80 % for installations starting operation from 1 January 2026" while the Taxonomy requires 80%.
   a. Deviation for other economic activity in this sector: For the manufacture of biofuels, the Taxonomy uses the GHG emission reduction of biofuels and biogas for use in transport of at least 65 %; under the RED2, this excludes the installations that starting operation before 1 January 2021 and have a lower GHG emission reduction.

(3) See

(4) Table 10 and section 4.5

(5) Next to a threshold for installations using gaseous biomass fuels (as also mentioned under the Taxonomy), The RED2 also mentions that the sustainability criteria and GHG emission savings do not apply to installations with a total rated thermal input below 20 MW in the case of solid biomass fuels. This means that the sustainability criteria apply to all installations, irrespective of the size.

(6) The economic activities meet the requirements relating to sustainability, GHG emission savings and efficiency laid down in Article 29 of Directive 2018/2001 (EC, 2020b).

(7) Unlike the Taxonomy, criteria related to climate change adaptation are not addressed in the RED2. This also explains the scores of the other sub-criteria under this requirement.

(8) Unlike the Taxonomy, Sustainable use of water is not a requirement under the RED2.

(9) There are for this economic activity no Taxonomy criteria on the 'transition to a circular economy'. This is also not explicitly addressed under RED2.
   a. Deviation for other economic activity in this sector: Manufacture of biogas and biofuels for use in transport: Although the transition to a circular economy is not a requirement under the RED2, its principle is covered as such by promoting e.g., certain feedstocks, as included in the list of feedstocks in Annex IX.

(10) Because of legal compliance, installations automatically meet this Taxonomy requirement for operations inside the EU. The requirements are not automatically met for operations outside the EU, and not as such covered under the RED2.

(11) For anaerobic digestion of organic material, RED2 does not require that the produced digestate is used as fertiliser or soil improver (although this may be a logical pathway to follow).
   a. Deviation for other economic activity in this sector: Manufacture of biogas and biofuels for use in transport: under this activity, there is also a requirement that a gas-tight cover on the digestate storage is applied for biogas production.

(12) Unlike the Taxonomy, no minimum social safeguards are included in the RED2.

(13) RED2 requires, amongst others, economic operators to use a mass balance for their Chain of Custody. This aspect is not included in/covered by the Taxonomy.

a. Deviation for other economic activities in this sector: the efficiency requirements are a requirement for 'electricity generation from bioenergy' under the 'substantial contribution' criteria for climate mitigation. The Taxonomy does not mention the efficiency requirements for the economic activity 'cogeneration of heat/cool and power' Efficiency requirements for electricity from biomass fuels are laid down in Article 29.1 under the RED2 (EC, 2018) and requires amongst others that co-generation installations with a thermal input from above 50 MW are high-efficient.

4.4.2 Interpretation of criteria and definitions

The DNSH criteria for bioenergy production refer often to EU policies (which is relevant for economic activities inside the EU). It would be helpful if the Taxonomy would give more guidance if this is a reference, a recommendation, or a mandatory requirement for all operations in the EU.

Under the Taxonomy, food-and feed crops cannot be used in the activity for the manufacture of biofuels for use in transport. Here, the Taxonomy and RED2 are conflicting as food and feed crops are allowed under the RED2 up to a certain limit (see RED2 Article 26.1) as long as the GHG emission reduction and sustainability criteria are complied with. Next to that, the share of high indirect land- use change-risk biofuels, bioliquids or biomass fuels produced from food and feed crops for which a significant expansion of the production area into land with high-carbon stock is observed shall not exceed the level of consumption of such fuels in that Member State in 2019. Until 31 December 2030 at the latest, that limit shall gradually decrease to 0 %, unless they are certified as being low indirect land-use change (EC, 2018).

The taxonomy makes within the criteria for bioenergy-related activities a reference to criteria of other activities e.g., anaerobic digestion of sewage sludge of biowaste). As a result, it is not immediately clear which criteria must be met. It would be helpful if these would be included in the same table.

4.4.3 Thresholds

Although the Taxonomy refers to thresholds used by the RED2 (for example on GHG emission savings), the Taxonomy opts for the more stringent option provided under the RED2. For example, for electricity generation from bioenergy, the GHG gas emission savings from the use of biomass shall be at least 80 % under the Taxonomy. The RED2 indicates that the GHG emission reduction shall be at least 70 % for electricity, heating and cooling production from biomass fuels used in installations starting operation from 2021 until end of 2025, and 80 % for installations starting operation in 2026. An additional complication here is that the RED GHG reduction refers to individual deliveries, while the Taxonomy refers to economic activities of companies, making the comparison more complicated.

A second example are the thresholds mentioned for installations, and whether biomass fuels should consequently fulfil the sustainability and GHG emissions saving criteria, or not. The Taxonomy mentions that the criteria do not apply to electricity generation installations with a total rated thermal input below 2 MW and using gaseous biomass fuels. The RED2 mentions *in addition* that the criteria also do not apply for biomass fuels used in installations producing electricity, heating and cooling or fuels with a total rated thermal input below 20 MW in the case of solid biomass fuels. The Taxonomy does not give this threshold.

4.4.4 Expected revisions over time

The Taxonomy (EC, 2020c) mentions that the technical screening criteria for the production of heating, cooling and power from bioenergy and the production of biofuels and biogas for transport should take into account the comprehensive sustainability framework for those sectors laid down under the Directive (EU) 2018/2001 setting requirements for sustainable harvesting, carbon accounting and GHG emission savings, in the follow-up of to the European Green Deal, the EU Climate Law, the EU Biodiversity Strategy for 2030, and in accordance with the biodiversity and climate neutrality ambitions of the Union. Technical screening criteria for bioenergy activities

should be complemented, reviewed and where necessary revised by end 2021 to take into account the latest evidence base and policy developments (EC, 2020c).

The Taxonomy Regulation also mentions that the technical screening criteria for electricity or heat generation activities should ensure coherence with the Communication from the Commission of 14 October 2020 on an EU strategy to reduce methane emission (EC, 2020c).

Furthermore, to ensure that economic activities as referred to in Article 10(2) remain on a credible transition pathway consistent with a climate-neutral economy, the Commission shall review the technical screening criteria for those activities *at least every three years* and, where appropriate, amend the delegated act referred to in Article 10(3) in line with scientific and technological developments (Art, 19, EC, 2020).

4.5 Sustainability criteria for biowaste related activities: Comparing the criteria between the taxonomy and the RED2

Table 9 shows **a summary** of the results of the comparison on sustainability requirements between the RED2 and the EU Taxonomy for the selected economic activity "anaerobic digestion of biowaste". More details, and the results of the other bioenergy related economic activities that are analysed in this report can be found in **Annex 1**[55]. Key observations of the comparison are mentioned in section *4.5.1*. The criteria for the bioenergy related economic activities **are only to some extent comparable**; some of these deviations are mentioned in this section (but not shown in the table).

*Table 9: **Summarized** findings of comparison between the RED2 and the Taxonomy for the economic activity **"Anaerobic digestion of biowaste"** (= Comparable, ~ Differences exist, X Not comparable, (Tax)There are differences; the Taxonomy has the more stringent or extensive requirement; (RED) There are differences; the RED2 has the more stringent or extensive requirement. (Legal) Comparable because of legal requirements, **(X)** footnote referring to further explanation in section 4.5.1.*

Comparison sustainability criteria Taxonomy (based on the draft Delegated Regulation) and RED 2 for economic activity "anaerobic digestion of biowaste"		
Criteria Taxonomy	Keywords of the Taxonomy (sub-) criteria (in summary)	Comparison with RED2
Climate change mitigation[56] *(Substantial contribution)*	* **1.** A monitoring and contingency plan is in place for methane leakage at the facility (EC, 2020a). (1), (1a).	X (Tax)
	* **2.** Produced biogas used for the generation of electricity or heat or upgraded to bio-methane (2), (2a)	=
	* **3.** Bio-waste used for anaerobic digestion is source segregated and collected separately (1).	X (Tax)
	* **4.** The produced digestate is used as fertiliser or soil improver, either directly or after composting or any other treatment, and meets requirements for fertilizing material (1)	X (Tax)
	* **5.** For dedicated bio-waste treatment plants: bio-waste constitutes at least 90 % of the input feedstock: the other input material (10%) may not include food or feed crops (3)	X (Tax)
Climate change mitigation *(DNSH)*	* Monitoring and contingency plan for methane leakage in place	X (Tax)
Climate change adaptation *(Substantial contribution)*	* 'Adaptation solutions' are implemented (4)	X (Tax)
	* The physical climate risks are identified	X (Tax)
	* Requirements on adaptation solutions implemented (e.g., are consistent with local, sectoral, regional or national adaptation efforts)	X (Tax)
Climate change adaptation *(DNSH)*	* The activity complies with the criteria set out in Appendix E: economic operator has developed a plan to implement adaptation solutions after having identified them (4)	X (Tax)
Sustainable use and protection of water *(DNSH)*	* Environmental degradation risks related to preserving water quality and avoiding water stress are identified and addressed (5)	X (Tax)
Transition to circular economy *(DNSH)*	N/A (6)	=
Pollution prevention & control *(DNSH)*	* For anaerobic digestion plants treating > 100 tonnes per day: emissions to air/ water are within or lower than emission levels associated with best available techniques (BAT-AEL) ranges (7)	~ (Tax)
	* The Nitrogen content of the digestate used as fertiliser or soil improver is communicated	X (Tax)

[55] The in-depth comparison (Annex 1), supporting the observations in this main report, is available upon request via the following e-mail address: gave@rvo.nl.
[56] There are separate for climate change mitigation when (i) used to show that the economic activity contributes significantly to climate change mitigation and (ii) when used as DNSH criterium (in this case the economic activity aims to contribute significantly to climate change adaptation.

Protection and restoration of biodiversity & ecosystems *(DNSH)*	N/A (6)	=
Minimum social safeguards	Minimum social safeguards (8)	X **(Tax)**
Other	Requirements on chain of custody and the use of mass balance (9)	X **(RED)**

4.5.1 Explanation of main findings

This section further explains the main findings from the comparison of the Taxonomy criteria with the RED2 for biowaste related activities, referring to the footnotes in Table 9.

(1) Unlike the Taxonomy, this requirement is not covered under the RED2.
   a. Deviation for other economic activity in this sector: For the economic activity 'composting of biowaste': The Taxonomy requires for example that the composted bio-waste is source segregated (EC, 2020a). The RED2 sets no requirements on how bio-waste should be composted. The Taxonomy refers to the use of compost as fertilizer and soil improver. At the same time, heat and power can be generated from composting. In the Netherlands, there is actually a separate SDE++ category "composing mushroom compost" for this[57]. In this case, the compost can be considered municipal waste under the RED2 and the power and heat do not have to meet any of the sustainability criteria under the RED2.

(2) The scope of the RED2 includes the use of biogas for the generation of electricity or heat, or (after upgrading) the use of biomethane for energy purposes. The Taxonomy also refers to the chemical sector.
   a. Deviation for other economic activity in this sector: For the economic activity 'composting of biowaste': Under the RED2, the use of organic soil improver is mentioned in an Annex V and explains how this can be taken into account for GHG emissions savings from improved agriculture management The RED2 sets no further requirements on how this bio-waste should be composted (this is also out of scope as the RED2 focuses on energy generation from biomass).

(3) Although the RED2 sets (i) a limit on the use of food and feed crops within the share of biofuels and bioliquids, as well as of biomass fuels consumed in transport[58] and (ii) aims to reduce the share of high indirect land- use change-risk biofuels, bioliquids or biomass fuels produced from food and feed crops to 0% in end of 2030 at the latest. The RED2 does not prohibit the use of food and feed crops as biowaste. Note that in practice, it may be unlikely that food and feed crops will be used as input for dedicated biowaste treatment plans, unless they are rotten or with harvest failures.

(4) Unlike the Taxonomy, criteria related to climate change adaptation are not addressed in the RED2. This also explains the scores of the other criteria under this requirement.

(5) Unlike the Taxonomy, sustainable use of water is not a requirement under the RED2.

(6) Not addressed, or a requirement, in both frameworks for this economic activity.

(7) Because of legal compliance, installations automatically meet this Taxonomy requirement for operations inside the EU. The requirements are not automatically met for operations outside the EU.

(8) Unlike the Taxonomy, no minimum social safeguards are included in the RED2.

(9) RED2 requires, amongst others, economic operators to use a mass balance for their Chain of Custody. This aspect is not included in/covered by the Taxonomy – which is also logical as the Taxonomy focuses on economic activities, and not on consignments moving through the value chain to the end-user.

[57] The SDE++ provides subsidies for the use of techniques for the generation of renewable energy and other CO2-reducing techniques in the Netherlands. See also: https://english.rvo.nl/subsidies-programmes/sde

[58] See article 26.1: "the share of biofuels and bioliquids, as well as of biomass fuels consumed in transport, where produced from food and feed crops, shall be no more than one percentage point higher than the share of such fuels in the final consumption of energy in the road and rail transport sectors in 2020 in that Member State, with a maximum of 7 % of final consumption of energy in the road and rail transport sectors in that Member State (EC, 2018).

4.5.2 Interpretation of criteria and definitions

More guidance is needed on how the economic activity "composting of biowaste" and the use of compost as fertilizer relates to the requirements in the RED2. Although composting of biowaste is out of the scope of the RED2, heat and power can still be generated from it. More guidance is also needed in the RED2 on how to deal with bioenergy generation from compost.

Furthermore, for the economic activity 'Landfill gas capture and utilization', more guidance is at times needed to clarify that some of the requirements refer directly to ongoing policy developments or EU Law. There is for example the requirement that '*landfill or landfill cells where the gas capture system is newly installed, extended, or retrofitted is permanently closed and is not taking further biodegradable waste'*. This requirement leans on ongoing EU policy developments, although this is not mentioned in the Taxonomy itself. This makes it more difficult to interpret this criterium.

4.6 Key observations

This section discusses the key observations based on the comparison of the sustainability criteria between the RED2 and the Taxonomy.

4.6.1 The absence of certain sustainability issues under the RED2

In overall, it can be concluded that the Taxonomy covers a broader range of sustainability issues than the RED2. Consequently, the RED2 is systematically, and for all economic activities, not aligned with the Taxonomy on the following issues:

- Climate adaptation
- Proof of additionality (for forest related activities)
- Water
- Pollution (including emission levels, use of fertilizers or other agrochemicals)
- Social safeguards

The DNSH criterium "transition to a circular economy" is not really elaborated in both frameworks.

Although not directly a sustainability issue, the RED2 has additional requirements on the Chain of Custody, and the use of the mass balance, and on safeguarding sustainability throughout the value chain (see also chapter 5). These issues are – almost logically - not addressed in the Taxonomy: Whereas the RED2 focuses on consignments moving through the value chain to the end-user, the scope of the Taxonomy is on economic activities.

4.6.2 Different priorities result in different levels of stringency and/or requirements

Other sustainability issues (e.g., GHG reduction, biodiversity) are covered by both frameworks. Still, criteria are not always aligned because one of the two (in most cases the Taxonomy) has more stringent requirements, see also the following examples:

- The Taxonomy is more explicit than the RED2 on not using food and feed crops, and this Taxonomy requirement exists under several economic activities, amongst which the activity 'anaerobic digestion of biowaste'.
- Although RED2 refers to digestate, the Taxonomy has is in addition the explicit requirement that the produced digestate is to be used as fertilizer or soil improver.
- The GHG emission reduction thresholds selected for bioenergy under the Taxonomy refer to the more stringent requirement mentioned in the RED2; which should under the RED2 be realized over time.

Furthermore, it should be noted that there are fundamental differences between the climate change adaptation activities (not covered under RED2) and mitigation activities[59]. The technical screening criteria for climate change

[59] For mitigation activities, a one-tonne reduction of CO2 emissions has the same impact regardless of where the mitigation activity takes place. Adaptation responds to physical climate risks that are mostly location and context specific (TEG, 2020a).

adaptation are less detailed and specific than the climate change mitigation criteria, which may also allow some room for interpretation (Riemersma, 2020).

4.6.3 Interpretation of criteria and definitions

Some of the criteria and terms in the Taxonomy need further guidance or clarification as they are open for interpretation and ambiguous. A pilot survey from Adelphi (2020) also mentions that unclear and multi-interpretable technical criteria and definitions are one of the reasons for big differences between high scope percentages and low alignment percentages of companies.

More insight and (practical) experience may be needed to build up a good understanding on how criteria under RED2, for example GHG emission reduction, which are determined per consignment relate to the GHG emission reduction requirement under the Taxonomy, which is defined per economic activity.

4.6.4 Required proof of verification: plans and analysis

Data and proof for verification differ per sustainability issue. They include, for both the RED2 and the taxonomy, a combination of indicators and data, which are for example based on clear thresholds (e.g., GHG emission saving thresholds), maps (e.g., no conversion) or more process-based indicators.

Especially for the forest and agriculture related activities, both frameworks require a plan, management system or analysis as proof of verification for some of the criteria.

For the RED2, there is for example the requirement that operators or national authorities have monitoring or management plans in place in order to address the impacts on soil quality and soil carbon, when agricultural residues are used (Art.29.2), (EC, 2018). Under option (b) of Art. 29(6) and 29 (7), management systems have to be in place at forest sourcing area level to ensure some of the sustainability criteria for forest biomass.

For the Taxonomy, there is for example the requirement to have a climate benefit analysis and a forest management plan (or equivalent) for the forest related activities. Agricultural economic activities should have a farm sustainability plan in place.

The main difference between the two frameworks is the level of detail in what requirements should be met, and what information should be provided. Under the RED2, it is not (yet) further defined how those systems and plans should look like; The implementing acts that provide guidance for implementing Art. 29(6) and 29(7) should provide more clarification on that. The Taxonomy is, on the other hand, quite specific in what should be covered in a plan, and what it should address; and it is not (yet) clear what the final consequences are when those specifics cannot be met.

4.6.5 Required proof of verification: the use of policies and legislation as proxy

Under the Taxonomy, especially the DNSH criteria for bioenergy production rely strongly on EU legislation and policies (which is relevant for economic activities inside the EU). In some cases, it would be useful when the Taxonomy states more explicitly whether this concerns mandatory EU legislation or not.

Note that economic activities outside Europe cannot rely on EU policies and laws. At the same time, many potential users of the EU taxonomy have portfolios with worldwide economic activities, and also those activities operating outside Europe should also meet the (underlying) requirements laid down in EU policies and laws.

Especially for forest related activities, both the RED2 and the Taxonomy make use of an option (a) and (b) to proof compliance with the sustainability criteria for forest biomass. Under option (a), applicable laws and related monitoring and enforcement systems in the country where the activity takes place (which could also be outside Europe) should provide enough assurance that certain criteria are complied with. Unfortunately, the options (a) and (b) are only partially comparable and requirements between the two frameworks are not aligned.

4.6.6 Different complexities for different sectors

The number of criteria and sub-criteria that an economic activity must meet differs substantially between the different sectors. Poolen (2020) also mentions that the complexities for realizing the technical screening criteria

are much more complex for the agriculture sector than for the energy sector, given the different characteristics of both sectors. The forest sector has a comparable level of complexity as the agriculture sector.

Table 10: Differences in technical screening criteria between the agricultural and energy sector, from: (Poolen, 2020).

Theme	Energy sector	Agriculture sector
Production system	Limited number of ways to produce energy	Large number of farming systems, depending on natural circumstances
Number of companies	Limited	Large
Mitigation options	Limited; clear possibly pathway to zero emissions	Large number; production without GHG impossible
Possibility to single out interaction other sectors	Easy: limited interaction	Difficult: strong interactions
Complexity GHG emission	GHG directly related to energy production; emissions are mostly CO_2	Relevant share GHG is upstream. Emissions divided over CH_4, CO_2 and N_2O
Data needs	Limited data required to assess GHG emission	Lot of data required to assess GHG emission

4.6.7 Required improvements over time

Expectedly, some technical screening criteria will be tightened over time. This is particularly the case for CO_2 intensity metrics which are highly likely to trend towards zero over the period to 2050[60]. The climate change adaptation criteria are based on material risks to a particular economic activity and its relevant assets. As such, the adaptation criteria are not likely to tighten or be modified over time (TEG, 2020).

Especially for bioenergy related activities, reviews can be expected in the coming years as the Commission shall review the technical screening criteria for those activities *at least every three years* and, where appropriate, amend the delegated act referred to in Article 10(3) in line with scientific and technological developments (Art, 19, EC, 2020).

4.6.8 Impact of complexity and lack of clarity on being 'taxonomy aligned'

To be 'taxonomy aligned' the Taxonomy requires that all technical screening criteria are met. This means that non-compliance with one of the criteria (for example because of lack of clarity or complexity) has direct impact on the conclusion whether an activity is aligned or not.

Although some first surveys[61] and pilots have been done (see Adelphi, 2020), little is still known about the operation of the Taxonomy and the Taxonomy itself is also still under development.

At the same time, it is clear that at least some of the Taxonomy criteria are complex, multi-interpretable, or not entirely consistent or absent in the RED2. In order to ensure that the Taxonomy achieves its goal (wide application in the financial sector), it is important that the Taxonomy is also feasible and practically implementable.

[60] The TEG understands climate change mitigation objectives to mean net-zero emissions by 2050 and a 50–55% reduction by 2030. In order for an economic activity to be considered as substantially contributing to climate change mitigation, it must demonstrate consistency with medium- and long-term climate goals (TEG, 2020).

[61] An extensive research to date from Adelphi (2020) is on companies whose shares are traded in the EURO STOXX 50 (Europe), CAC 40 (France) and DAX 30 (Germany). They fall within the group of companies that will be obliged to report in line with the Taxonomy. An analysis shows that less than 30% of the turnover within these indices qualifies for the Taxonomy. A maximum of 2% of the turnover of this group of companies appears to be fully in line with the Taxonomy. Of the companies, 77% was in scope, but 1% or less was in line with the Taxonomy

5. Demonstrating compliance (or negligible risk) and the role of independent auditing

This chapter discusses how compliance (or negligible risk) with the sustainability criteria should be demonstrated under the Taxonomy and the RED2.

5.1 Demonstrating compliance and negligible risk under the Taxonomy

For the Taxonomy regulation, the TEG reports indicate that companies and issuers are expected to have conducted **thorough due diligence** on the operations related to those activities that they wish to qualify as Taxonomy-aligned. Due diligence is intended to be risk-based. This means that the measures that an enterprise takes to conduct due diligence should be commensurate to the severity and likelihood of the adverse impact. When the likelihood and severity of an adverse impact is high, then due diligence should be more extensive. Due diligence is also appropriate to an enterprise's circumstances. In practice, this means that the concept of **proportionality**, given companies' capacities and contexts, should prevail (TEG, 2020).

The DNSH technical criteria provide specific guidance to companies on the potential adverse environmental impacts that are more likely to affect activities given their nature. For DNSH criteria that reflect legal requirements under EU regulations, it would be sufficient to assume these criteria have been met in the normal, lawful conduct of business, unless evidence to the contrary is demonstrated (TEG, 2020).

In relation to the **social safeguards**, the TEG recommends that companies follow the recommendations of the OECD and when conducting due diligence and in their reporting. Companies may use the same due diligence[62] process for identifying, preventing and mitigating any breach of the qualitative substantial contribution and DNSH criteria (TEG, 2020).

The minimum safeguards and qualitative screening criteria apply at the economic-activity level. In practice, compliance might be partially assessed at the company level to explain the observance of safeguards at the activity level. Where companies do not provide the necessary information on qualitative criteria and/or on minimum safeguards, investors may need to form an independent judgement (TEG, 2020).

Next to the Due Diligence requirements, the Delegated Regulation (Annexes) mentions for some of the technical screening criteria also **the specific requirement of independent verification**, for example for:

- The yearly records and the **farm sustainability plan**[63] **(agricultural sector)**: verification is carried out by an independent third-party body at the request of the agricultural holding at the beginning of the investment period and every three years thereafter (EC, 2020a).
- The **afforestation plan or forest management plan** (or equivalent)[64] **for forest-related activities**, at the beginning of the activity and every five years thereafter: to be verified by the relevant national competent authorities or by an independent third-party certifier, such as forest certification scheme, at the request of national authorities or of the operator of the activity. The independent third-party certifier is not directly linked to the owner or the funder, and not involved in the development or operation of the activity (EC, 2020a).
- This Independent third-party check should also include a verification of the **water use and consultation plan** as part of the forest management or afforestation plan (one of the DNSH criteria).
- **Climate benefit analysis**[65] **for forest-related activities**: At the beginning of the period and every five years thereafter: controlled by either (i) the relevant national competent authorities or (ii) an independent third-party certifier, at the request of national authorities or the operator of the activity (EC, 2020a).

[62] Due diligence is "the process enterprises should carry out to identify, prevent, mitigate and account for how they address these actual and potential adverse impacts in their own operations, their supply chain and other business relationships. [...] Effective due diligence should be supported by efforts to embed Responsible Business Conduct (RBC) into policies and management systems and aims to enable enterprises to remediate adverse impacts that they cause or to which they contribute. Due diligence addresses actual adverse impacts or potential adverse impacts (risks) related to human rights or other sustainability risks" (TEG, 2020).

[63] Required for the economic activity "growing of perennial and non-perennial crops"

[64] Required for all economic activities in the forestry sector in the technical screening criteria to contribute significantly to climate change mitigation.

[65] Required for all economic activities in the forestry sector in the technical screening criteria to contribute significantly to climate change mitigation.

- The need for independent third-party certification is also mentioned for **the proof of additionality for forest-related activities** that aim to significantly contribute to climate change mitigation.

5.2 Demonstrating compliance under the RED2

The RED2 mentions in Article 30.3 that Member States shall require economic operators to arrange for an adequate standard of independent auditing of the information submitted, and to provide evidence that this has been done. The auditing shall verify amongst others that the systems used by economic operators are accurate, reliable and protected against fraud. It shall evaluate the frequency and methodology of sampling and the robustness of the data (EC, 2018).

The European Commission recognises a number of voluntary schemes that demonstrate compliance with the sustainability criteria, or part of the criteria (partial compliance). This recognition is valid for a period of 5 years. Schemes may adapt their verification procedures over time but must notify changes that might be relevant to the Commission, such as changes in auditing procedures over time. A certificate issued under a recognised voluntary scheme is valid in all EU Member States. The European Commission may also recognise national sustainability schemes that have been notified to the Commission by EU governments (EC, 2018).

5,1 Key observations

Demonstrating compliance with the Taxonomy criteria relies largely on Due Diligence (especially for the DNSH criteria). The Delegated Regulation (Annexes) mentions for some of the technical screening criteria the specific requirement of independent third-party verification. For proving compliance with the sustainability criteria, economic operators under the RED2 can make use of voluntary certification schemes that are recognized by the European Commission, and of national schemes.

Table 11: Key characteristics and differences in demonstrating compliance (and negligible risk) and the role of independent auditing.

Topic compared:	Taxonomy Regulation	RED2
Role of Due Diligence	In general: Companies and issuers are expected to conduct due diligence	n.a.
Role of voluntary certification schemes	Mentioned for some criteria: independent third-party certification is required for verification of the farm sustainability plan, the forest management or afforestation plan and for the climate benefit analysis (see technical screening criteria).	* In general: Economic operators can make use of voluntary certification schemes that are recognized by the Commission, to demonstrate compliance with the GHG reduction requirements and sustainability criteria
Role of national competent authorities and national schemes	Mentioned for some criteria: The climate benefit analysis and the afforestation/ forest management plan can also be verified by relevant national competent authorities at the request of national authorities.	* In general: Economic operators can make use of national sustainability schemes. * Mentioned for some criteria: the RED2 refers to national authorities, laws and/or enforcement and monitoring systems for some of the criteria (e.g., Article 29.2 or 29.6)
Time intervals of verification	Mentioned for some criteria: The climate benefit analysis and the afforestation/ forest management plan are to be verified at the beginning of the activity and every five years thereafter; this is every 3 years for the farm sustainability plan. Due Diligence is to take place on an annual basis (Poolen, 2021).	The assessment of certification schemes includes the requirement that "the voluntary scheme shall arrange for regular, at least yearly, retrospective auditing of a sample of claims made under the scheme" (EC, 2016). *(in practice, certification schemes also have their own auditing procedures, often risk-based)*

Note that financial institutions and some (larger) companies generally also have their own sustainability policy and performance standards, which are used to check whether an investment meets the own sustainability requirements (which in general also includes social issues). Examples are the performance standards of FMO[66], IFC[67] or the ABN AMRO, which for example also developed sector-specific policies for agriculture or forestry[68].

[66] See: https://www.fmo.nl/l/library/download/urn:uuid:9978eafe-864f-4b3a-bed1-5e0563df0c85/fmo+sustainability+policy.pdf
[67] See: https://www.ifc.org/wps/wcm/connect/topics_ext_content/ifc_external_corporate_site/sustainability-at-ifc/policies-standards/sustainability+framework
[68] https://www.abnamro.com/app#/en/about-abn-amro/product/sector-specific-policy

6. Reporting and taxonomy disclosure obligations

In this chapter, it is further explained which reporting and disclosure obligations are required under the RED2 and Taxonomy, and how they compare.

6.1 Taxonomy disclosure obligations

The Taxonomy regulation has disclosure obligations that encourage the reporting of progress towards meeting the criteria as well as reporting on their achievement (TEG, 2020). The disclosure requirements differ between financial and non-financial companies[69] (TEG, 2020).

6.1.1 Taxonomy disclosure for companies falling under the NFRD

The taxonomy Regulation introduces in Article 8 a disclosure requirement for companies already required to provide a so-called 'non-financial statement' under the Non-Financial Reporting Directive (NFRD)[70], which are large public-interest companies with more than 500 employees. On estimation, this covers approximately 6,000 large companies and groups across the EU, including listed companies, banks, insurance companies and other companies designated by national authorities as public-interest entities (EC, 2020d).

All companies subject to this requirement will include a description of how, and to what extent, their activities are associated with Taxonomy-aligned activities and this must include (TEG, 2020):

- The proportion of turnover[71] aligned with the Taxonomy; and
- Capex[72] and, if relevant, opex[73] aligned with the Taxonomy.

The calculation methodology for the Taxonomy-aligned turnover, capex and opex, if relevant, varies depending on the financial vehicle (equity or debt) and the purpose of the investment regarding the environmental objective being pursued[74] (TEG, 2020). The Taxonomy Regulation requires companies to provide company-level disclosures. These need to build from an understanding of the economic activities in which a company is involved. Companies may also be involved in multiple economic activities (TEG, 2020). The TEG recommends that companies complete the Taxonomy calculation separately for each of the environmental objectives for which substantial contribution technical screening criteria have been developed[75,76] (TEG, 2020).

Although the Regulation does not require companies to disclose the proportion of Taxonomy activities that are categorised as 'transition' or 'enabling'. However, as investors are expected to disclose this breakdown in their own disclosures (see 6.1.3), the TEG recommends that company disclosure obligations under the NFRD also provide a disclosure on the basis of enabling and transition activities (TEG, 2020).

Figure 3 and Figure 4 give some examples on how the level of 'taxonomy alignment' is calculated from economic activity to company level.

[69] By 1 June 2021, the European Commission will adopt a delegated act specifying how these obligations should be applied in practice. The delegated act will consider the differences between non-financial and financial companies.
[70] Article 8: Any undertaking which is subject to an obligation to publish non-financial information (see Directive 2013/34/EU) shall include in its non-financial statement or consolidated non-financial statement information on how and to what extent the undertaking's activities are associated with economic activities that qualify as environmentally sustainable (as defined under the Taxonomy Regulation), (EC, 2020).
[71] The primary way of aggregating from an economic activity to a company level. Some companies may need to aggregate from asset to economic activity level (TEG, 2020).
[72] Capital expenditure (capex) is a payment for goods or services recorded, or capitalised, on the balance sheet instead of expensed on the income statement (TEG, 2020).
[73] Operating expenses (opex) are shorter- term expenses required to meet the ongoing operational costs of running a business (TEG, 2020).
[74] For example: When looking at climate change mitigation, turnover can be counted where economic activity meets Taxonomy technical screening criteria for substantial contribution to climate change mitigation and relevant DNSH criteria. When looking at climate change adaptation, turnover can be recognised only for activities enabling adaptation. Turnover cannot be recognised for adapted activities at this stage.
[75] This means that it should be completed separately for climate change mitigation and adaptation from 2021 and for all six environmental objectives for 2022. This is to provide transparency around which environmental objectives are being pursued
[76] When a company discloses the overall % of turnover or capex which is Taxonomy-aligned, it might be obliged to choose one of the two (or, in future, multiple) environmental objectives to which an activity or asset contributes, in situations where an activity makes multiple substantial contributions, in order to avoid double counting (when aggregating environmental objectives) (TEG, 2020).

Figure 3: Example of company disclosures, from economic activity to company level (TEG, 2020)

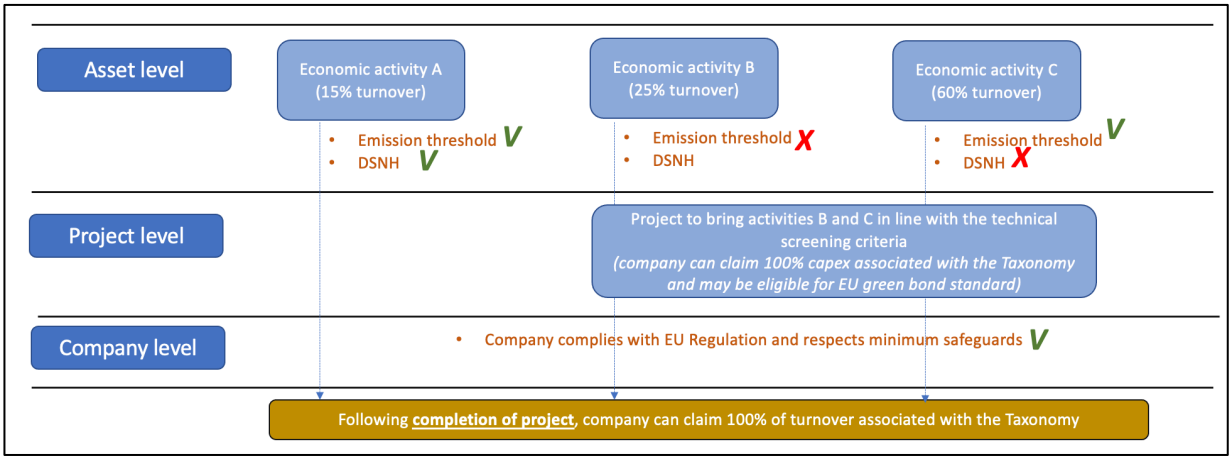
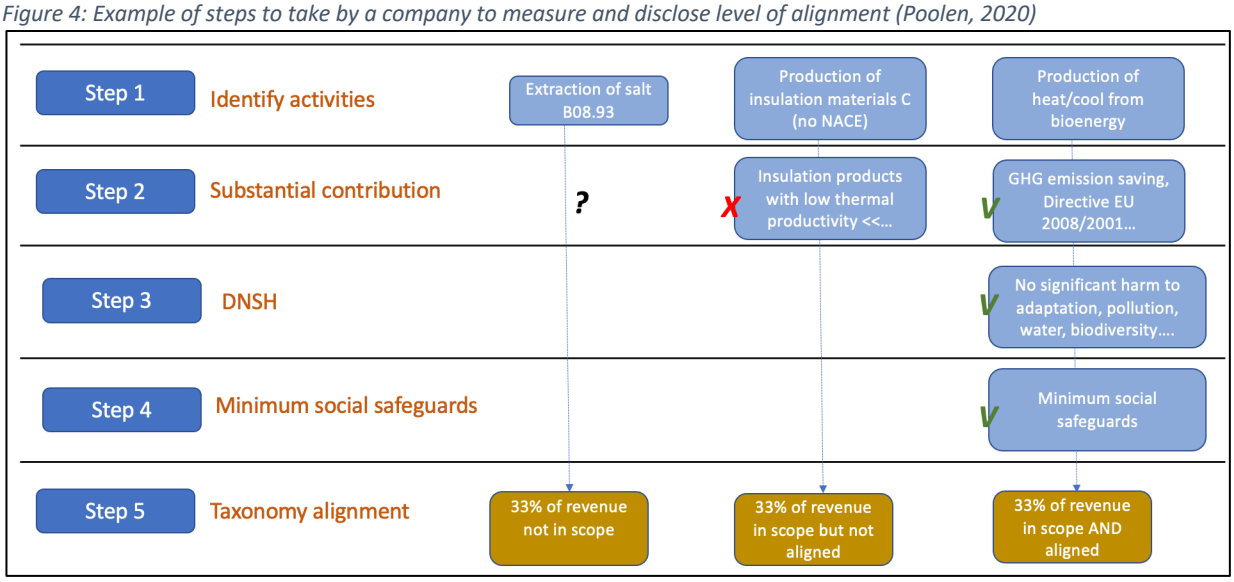


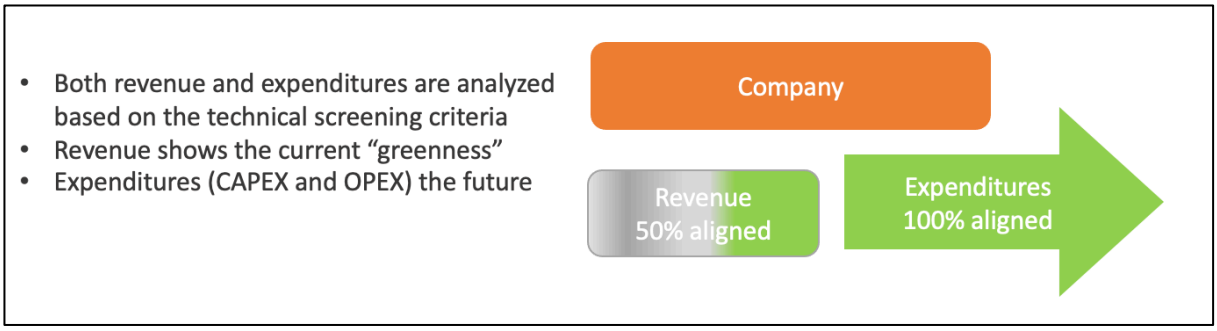
Figure 4: Example of steps to take by a company to measure and disclose level of alignment (Poolen, 2020)



Both revenue and expenditures (e.g., for financing of improvement measures) are analysed based on the technical screening criteria. Expenditures (CAPEX and OPEX) give insight in how much a company spends to improve its sustainability for the future. This is for example relevant for the contribution to climate adaptation, because (except for specific activities) you do not generate turnover from climate adaptive investments, but they still need to be stimulated (Poolen, 2021).

Expenditures (CAPEX and OPEX) also give insight in the 'now' versus 'future' level of 'taxonomy alignment of a company. This insight can for example be of interest for e.g., investment funds to build a pathway towards 100% green (Poolen, 2020).

Figure 5: Insight in current and future "greenness", based on (Poolen, 2020).



6.1.2 Taxonomy disclosure for companies not falling under the NFRD

For companies not falling under the NFRD, the Taxonomy Regulation and the disclosure obligation is a voluntary process. Consequently, investors (see 6.1.3) might have to step in and assess compliance themselves when seeking to invest or report on Taxonomy-aligned activities conducted by those smaller or medium-sized companies (TEG, 2020).

6.1.3 Taxonomy disclosure for financial market participants offering financial products

The disclosure obligations laid down in the Taxonomy Regulation (articles 5, 6 and 7) supplement the rules on sustainability-related disclosures as laid down in the Sustainable Finance Disclosure Regulation (SFDR), EU 2019/2088[77,78], which is already in force but will apply from 10 March 2021. The SFDR lays down harmonised rules for financial market participants and financial advisers on transparency[79]. This part of the Taxonomy disclosure obligation thus applies to financial market participants offering financial products in the EU, including occupational pension providers.

Financial products marketed into or manufactured in the European Union, including pension products, will be required to refer to the Taxonomy (see also Table 12). Financial market participants may choose to use the Taxonomy for other product types if they wish (TEG, 2020). Individual financial instruments are not directly included in the Taxonomy disclosure obligation (TEG, 2020), although the proposed draft proposal for an EU 'Green Bond Standard' is directly linked to the EU Taxonomy Regulation (TEG, 2020b).

Table 12: Financial products with Taxonomy disclosure obligations (TEG, 2020).

Market segment	In scope for Taxonomy disclosure
Pensions and Asset Management	UCITS funds (such as e.g., equity funds); Alternative Investment Funds (AIFs): portfolio management (under Article 4(1) of MiFID II); pensions:
Insurance	Insurance-based investment products (IBIPs)
Corporate & Investment Banking	Securitisation funds; Venture capital and private equity funds; Portfolio management; Index funds

In alignment with the SFDR, the disclosure for a product or offering is either mandatory or on a comply-or-explain basis, depending on the type of sustainability claim, as shown in Table 13 (EBF and UNEP-FI, 2021).

Table 13: Type of disclosure depending on the type of sustainability claim (EBF and UNEP-FI, 2021).

Description (in brackets related article SFDR)	Obligation
Financial products which have sustainable investment as their objective (Article 9)	Must complete taxonomy disclosures where the investment concerns activities that contribute to an environmental objective
Financial products which promote environmental or social characteristics of the investment, either alone or in combination with other characteristics (Article 8)	Must complete taxonomy disclosures where environmental characteristics are promoted.
All other financial products (Article 7)	Must complete taxonomy disclosures or carry a disclaimer that "the investment(s) underlying the financial product do not take into account the EU criteria for environmentally sustainable investments"

As seen in Table 13, financial market participants that do not take the criteria for environmentally sustainable investments into account, could provide a statement to that end. The Regulation (EC, 2020) mentions that, to avoid the circumvention of the disclosure obligation, this obligation should also apply where financial products

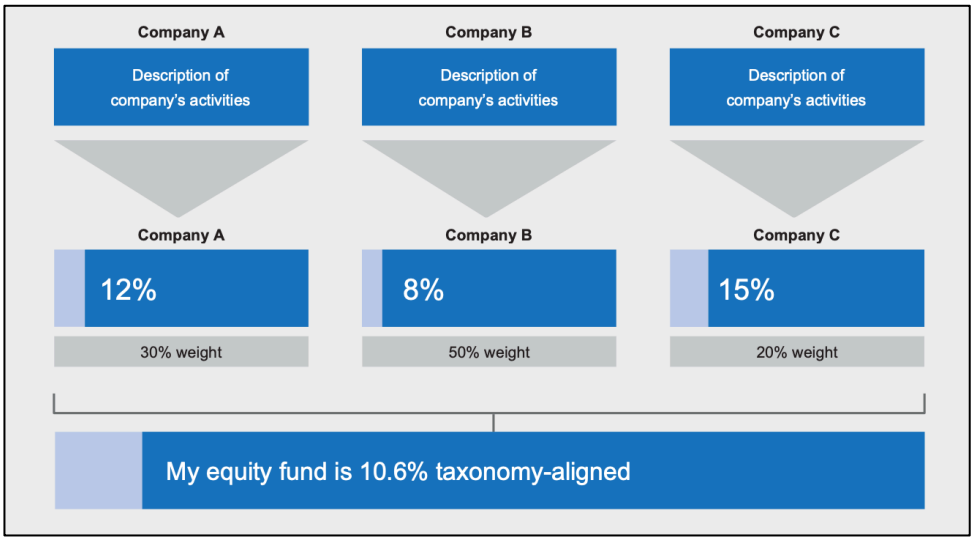
[77] Regulation (EU)2019/2088 of the European Parliament and of the Council of 27 November 2019 on sustainability-related disclosures in the financial services sector (OJ L 317, 9.12.2019, p. 1).
[78] The definition of 'sustainable investment' in Regulation (EU) 2019/2088 includes investments in economic activities that contribute to an environmental objective which, amongst others, should include investments into 'environmentally sustainable economic activities' within the meaning of this Regulation. Moreover, Regulation (EU) 2019/2088 only considers an investment to be a sustainable investment if it does not significantly harm any environmental or social objective as set out in that Regulation (EC, 2020).
[79] The SFDR requires transparency with regard to the integration of sustainability risks and the consideration of adverse sustainability impacts in their processes and the provision of sustainability-related information with respect to financial products.

are marketed as promoting environmental characteristics, including financial products that have as their objective environmental protection in a broad sense (EC, 2020).

According to the TEG (2020), investors are required to disclose and state the following information:

- How and to what extent they have used the Taxonomy in determining the sustainability of the underlying investments.
- When the investments underlying the financial product are in economic activities that contribute to an environmental objective[80], the disclosed information should specify the environmental objective or objectives to which the investment underlying the financial product contributes (EC, 2020).
- The disclosed information should also specify how and to what extent the investments, underlying the financial product, fund environmentally sustainable economic activities, and should include details on the respective proportions of enabling and transitional activities (EC, 2020), see also Figure 6.
- Disclosing the proportion of underlying investments that are Taxonomy-aligned includes (TEG, 2020):
    - The % of the fund that can be *demonstrated* to align with the Taxonomy (either where full disclosure has been made by the company, or where the investor has independently evaluated the Taxonomy eligibility of the company, including with the use of estimated or modelled data).
    - The % of the fund that is *potentially* aligned. In this case, the investor has good reason to believe that the underlying activity is aligned, but full compliance has not been demonstrated[81].

Figure 6: Example methodology for equity investments (TEG, 2020)



The TEG mentions that *a narrative* is considered an important companion to the quantitative (percentage) disclosure requirements; investors may wish to explain elements of their strategy or approach in the narrative, especially where the percentage is low (TEG, 2020).

6.2 RED2 reporting obligations

The RED2 mentions that Member States must require economic operators to show that the sustainability and GHG emissions saving criteria have been fulfilled and that this information is reliable when biofuels, bioliquids and biomass fuels are to be taken into account for counting towards the Union target and other purposes[82].

[80] Investors should bear in mind the different treatment of financial metrics for climate change mitigation and climate change adaptation. For climate change mitigation, the following may be counted: (i) Turnover associated with Taxonomy-aligned activities; and (ii) costs incurred (capex and, if relevant, opex) as part of a plan to achieve the climate thresholds for the economic activity. For climate change adaptation (adapted activities), only costs incurred can be counted and only when they are part of a plan developed in response to a climate risk assessment. Turnover generated from the activity should not be counted (TEG, 2020).
[81] The investor should explain which technical screening criteria could not be verified and why, the nature of the due diligence they have conducted, engagement with the company (if undertaken) and results, and how estimates, where appropriate, have been calculate
[82] Purposes: (i) contributing towards the Union target set in Article 3(1) and the renewable energy shares of Member States; (b) measuring compliance with renewable energy obligations, including the obligation laid down in Article 25; and (iii) eligibility for financial support for the consumption of biofuels, bioliquids and biomass fuels.

Member States have to submit this information in aggregated form to the Commission (Art. 30.1, 30.3), (EC, 2018).

Where an economic operator provides evidence or data obtained in accordance with a recognized voluntary international or national scheme, a Member State cannot require the supplier to provide further evidence of compliance with the sustainability and GHG emissions saving criteria as defined in article 29 (Art. 30.9, EC, 2018). However. In case of

However, in case of the geographic origin and feedstock type of biofuels, bioliquids and biomass fuels, Information has to be made available to consumers per fuel supplier and must be updated on an annual basis (Art. 30.3). Member States have to submit this information to the Commission, who publishes this information in summary (Art. 30.3), (EC, 2018).

The Commission also requires that each recognized voluntary certification scheme, that operated for at least 12 months, submits an annual report covering the preceding calendar year, with information about e.g., type of feedstock certified (Art.30.5). The Commission has to make these reports, in an aggregated form or in full, available (EC, 2018).

Furthermore, the Commission also monitors[83], and reports on, the origin of biofuels, bioliquids and biomass fuels consumed in the Union and the impact of their production. This includes monitoring the impact as a result of displacement, on land use in the Union and in the main third countries of supply. Such monitoring shall be based on Member States' integrated national energy and climate plans and corresponding progress reports pursuant to Articles 3, 17 and 20 of Regulation (EU) 2018/1999. Next to that, the Commission has to maintain a dialogue, and exchange information, with key stakeholders[84] including third countries about the general implementation of the measures in the RED2 relating to biofuels, bioliquids and biomass fuels, with particular attention on their possible impact on food prices (Art. 33, EC, 2018).

6.3 Key observations

Whereas the disclosure obligations under the Taxonomy apply to companies and financial market participants, the RED2 has – next to obligations for economic operators - also reporting obligations for recognized voluntary schemes, Member States and the European Commission itself.

Table 14: Key characteristics and differences in disclosure and reporting obligations between the Taxonomy and RED2.

Disclosure & reporting obligations for:	Taxonomy Regulation	RED2
Companies and financial market participants	Obligations for companies falling under the NFRD and for financial market participants offering financial products in the EU to make transparent how, and to what extent, activities are 'taxonomy aligned'	An economic operator needs to provide reliable information that criteria have been complied with. When a recognized scheme is used, this is sufficient evidence. Information about geographic origin and feedstock type should be made publicly available, on annual basis.
Voluntary schemes	n.a.	Voluntary schemes need to submit a report to the Commission on annual basis.
Member States	n.a.	Member States submit information about compliance of economic operators, feedstock type and origin in aggregated form to the Commission and by the Governance Directive.
The European Commission	n.a.	The Commission publishes the information received from the Member States and voluntary schemes in aggregated form on yearly basis. Next to that, the Commission monitors, and reports on the production impact of biofuels, bioliquids and biomass fuels, with specific attention to food prices

[83] This monitoring is based on Member States' integrated national energy and climate plans and corresponding progress reports pursuant to Articles 3, 17 and 20 of Regulation (EU) 2018/1999

[84] including third countries and biofuel, bioliquid and biomass fuel producers, consumer organisations and civil society

7. Verification and monitoring of information and disclosure obligations and consequences of non-compliance

Chapter 7 discusses if and how the submission of reporting and disclosure obligations, and the information included in it, are monitored and verified under the Taxonomy and the RED2. This chapter also further explain possible consequences of non-compliance with these obligations.

7.1 Verification and monitoring of Taxonomy disclosure obligations

For the Taxonomy regulation, the TEG mentions that, **for investors,** the Taxonomy Regulation does not require to seek external verification or assurance of their disclosures (TEG, 2020). However, issuers do have existing obligations for the presentation and accuracy of their reporting. This will be reviewed by 2022 (EBF and UNEP-FI, 2021).

For companies, the Taxonomy Regulation does not explicitly require any formal verification of Taxonomy-related disclosures. The disclosures must be made as part of the non-financial statement under NFRD, which does not require verification at this point (although transposition into some Member States may influence this on a case-by-case basis), (TEG, 2020).

Note that NFRD requirements on verification may change, as a proposal for an adopted NFRD Regulation is expected in 2021[85] based on the public consultation and review in 2020 (TEG, 2020).

The TEG considers it, however, good practice for issuers to seek external assurance on their Taxonomy-related disclosures. This is consistent with the recommended approach in the Taskforce on Climate-Related Financial Disclosures (TCFD) framework. The TEG's report on the 'EU Green Bond' recommends the set-up of an accreditation scheme for external verifiers for green bonds, which should develop further robust criteria for verifiers and is expected to provide further guidance on verification (TEG, 2020).

7.1.1 Consequences of non-compliance

The Taxonomy regulation does not mandate any investments into economic activities meeting the set of criteria (EC, 2020c). Investments in activities that are not "taxonomy aligned" are thus not prohibited, but possibly (in the future) less attractive due to, for example, different financing conditions. Note that not 'taxonomy aligned' is definitely not the same as non-sustainable: a separate "brown" taxonomy will be drawn up for negative / polluting activities in the future.

According to the Regulation, Member States shall ensure that the competent authorities referred to in Article 14(1) of Regulation (EU) 2019/2088 monitor the compliance of financial market participants with the requirements on **transparency of disclosures** laid down in Articles 5, 6 and 7[86]. Member States shall lay down the rules on measures and penalties applicable to infringements of these 3 articles. The measures and penalties provided for shall be effective, proportionate and dissuasive (EC, 2020).

7.2 Verification and monitoring of RED2 reporting obligations

The RED2 mentions that Member States shall require economic operators to show that the sustainability and GHG emissions saving criteria have been fulfilled and that this information is reliable when biofuels, bioliquids and biomass fuels are to be taken into account for counting towards the Union target and other purposes[87] (Art. 30.1, 30.3), (EC, 2018).

[85] See also: https://ec.europa.eu/info/law/better-regulation/have-your-say/initiatives/12129-Revision-of-Non-Financial-Reporting-Directive

[86] Article 5: Transparency of environmentally sustainable investments in pre-contractual disclosures and in periodic reports; Article 6: Transparency of financial products that promote environmental characteristics in pre-contractual disclosures and in periodic reports; Article 7: Transparency of other financial products in pre-contractual disclosures and in periodic reports

[87] Purposes: (i) contributing towards the Union target set in Article 3(1) and the renewable energy shares of Member States; (b) measuring compliance with renewable energy obligations, including the obligation laid down in Article 25; and (iii) eligibility for financial support for the consumption of biofuels, bioliquids and biomass fuels.

Recognized voluntary certification schemes and national schemes verify compliance with the RED2 requirements, based on their own standards, and can withdraw a certificate when certain standard requirements are not fulfilled.

The RED2 requires that competent authorities of the Member States supervise the operation of certification bodies that are conducting independent auditing under a voluntary certification scheme. Certification bodies have to submit, upon the request of competent authorities, all relevant information necessary to supervise the operation. Where Member States find issues of non-conformity, they shall inform the voluntary scheme (Art.30.9, EC, 2018). Next to that, the assessment of certification schemes includes the requirement of "accreditation of certification bodies", which means that they are (depending on the scheme) controlled by an accreditation organization or by another private supervisory body (EC, 2016).

Furthermore, at the request of a Member State (which may be based on a request of an economic operator), the Commission can, on the basis of available evidence, examine whether the sustainability and GHG emissions saving criteria in relation to a source of biofuels, bioliquids and biomass fuels, and the GHG emissions savings thresholds are indeed met. The Commission then decides whether the Member State concerned may either: (i) take into account the biofuel, bioliquid or biomass fuel from that source for the 'purpose' (54) or (b) require the suppliers of that source of biofuel, bioliquid or biomass fuels to provide further evidence of compliance with the sustainability, GHG emissions saving criteria and GHG emissions savings thresholds (Art, 30.10, EC, 2018).

7.2.1 Consequences of non-compliance

Under the RED2, ultimately, the consequence of non-compliance with the sustainability and GHG emissions saving criteria and those GHG emissions savings thresholds is that the biofuel, bioliquid or biomass fuel is not eligible for the purposes (69) as defined under Article 29.1 (EC, 2018).

7.3 Key observations

Under the Taxonomy regulation, competent national authorities have to monitor compliance with the disclosure obligation itself but there is (yet) no requirement to seek external verification or assurance of the content of them. NFRD requirements on verification may change, the NFRD Regulation is adopted in 2021.

The RED2 has, in comparison, more requirements on supervising and controlling the information submitted by economic operators, to ensure that this information is robust and reliable. Member States have a supervising role in the operation of certification bodies, which also need to be accredited (and controlled) by accreditation bodies or other private supervisory bodies.

Table 15: Key characteristics and differences in verification of reporting obligations and consequences of non-compliance

Topic compared	Taxonomy Regulation	RED2
External verification of information in reports	There is (at least at this moment) no requirement to seek external verification or assurance of the content of the disclosures, although it is considered good practice.	Recognized voluntary certification schemes and national schemes verify compliance with the RED2 requirements, based on their own standards. Member States supervise the operation of certification bodies, which are accredited (and controlled) by an accreditation body or other private supervisory body.
Monitoring the reporting obligations	Competent national authorities have to monitor compliance with the requirements on transparency of disclosures	Member States have to ensure that information from economic operators is reliable and Member States receive information on a yearly basis. The Commission can, on request of a Member State, further examine a source of a biofuel, biomass fuel or bioliquid.
Consequences of non-compliance	The Taxonomy Regulation does not mandate any investments be 'taxonomy aligned'. Following the NFRD and SFRD, Member States shall lay down rules on measures and penalties when the disclosure obligations are not complied with.	The ultimate consequence is that the biofuel, bioliquid or biomass fuel is not eligible for the purposes as defined under Article 29.1

8. Consequences for practical implementation

The EU taxonomy is a classification system for a long list of economic activities, covering a broad scope of sustainability issues. The EU Taxonomy Regulation is still in its infancy, but ambitions are high. The EU taxonomy can be an important enabler to scale up sustainable investment and to implement the European Green Deal. Financial Institutions generally view the EU Taxonomy, amongst others, as a positive initiative to strengthen sustainable finance by bringing consistency and transparency to the industry (EBF and UNEP-FI, 2021).

In order to really help finance of sustainable growth, it is however essential that financial institutions and companies, including producers and users of bioenergy, have a clear picture of what is regarded as a 'taxonomy aligned' activity (or not) and what is required to prove that. Implementation should also be feasible.

Financial institutions and some (especially large) companies will generally use their own existing policy and procurement criteria as starting point. Note that financial market participants will already be required to complete their first set of EU Taxonomy linked disclosures by the end of 2021, covering activities that substantially contribute to climate change mitigation and/or adaptation (EBF and UNEP-FI, 2021).

At this moment, a number of pilots and case studies are carried out to look at the practical feasibility of the EU Taxonomy. Table 16 shows the outcomes for a selection of case studies (in summary), carried out by a group of financial institutions[88], when applying the Taxonomy to financial products relevant for the agriculture, forestry and power sector (EBF and UNEP-FI, 2020).

Table 16: Summary and selection of published case studies for forest, agriculture and the power sector, as listed in (EBF and UNEP-FI, 2020)

Bank	Product	Sector	EU based	Outcome
Nordea	SME general purpose loan for acquisition of additional forest land.	Forest & Agriculture	√	Partially aligned: use of FSC/PEFC certification to meet criteria for sustainable forest management but insufficient evidence for other technical screening criteria (carbon sink), DNSH and social safeguards.
Swed-bank	General Purpose Corporate Loan- Revolving Credit Facility to a leading biogas group consisting of biogas CHP plants and an agricultural company.	Power & Agriculture	√	Aligned with assumptions: As the company is located in the EU, it was assumed the customer is complying with EU and local regulations, therefore not all DNSH categories were thoroughly analysed.
SEB	General Purpose Corporate Loan- RCF to a Large Cap forest industry company	Forest & Agriculture	√	Aligned with assumptions: Difficult to calculate the turnover/ proceeds from the standing forest since the value chain of the forest to the end-product remains within the company and use of proceeds is unknown.
FMO	Senior debt secured corporate financing forestry and timber product business	Forest & Agriculture	Africa	Not aligned yet: Borrower involved in several activities, turnover / CAPEX information not available at that level; difficulties to identify which of Mitigation or Adaptation objective is the most appropriate. Impossibility to assess climate risk at portfolio-level.
OP	Green loan following LMA Green Loan Principles. Proceeds are used for modernizing an existing CHP (combined heat and power)	Energy	√	Not aligned yet: It is not clear whether a CHP plant using small quantities of fossil fuels in the mix would be eligible under the climate change mitigation taxonomy. Compliance with DNSH was assumed through application of Finnish and EU regulations.

[88] From January to August 2020, 26 banks tested the EU Taxonomy on more than 40 live or recently closed transactions and existing client relationships, across a large spectrum of macro sectors and economic activities. The testing exercise led to eight recommendations addressed to legislators, regulators, owners of environmental and social standards and frameworks, labels and certification schemes used by banks, and banks themselves (EBF and UNEP-FI, 2020).

8.1 Finding a good balance between ambition, complexity and feasibility

The comparison between the Taxonomy and the RED2 learns that some of the criteria in the Taxonomy are complex, detailed or ambiguous. Furthermore, there is still uncertainty about what exactly is expected for proving compliance with the criteria, how this should be verified, and how feasible this is (e.g., in terms of data availability, administrative burden) for practical implementation. To what extent can a financial institution, for example, rely on a proxy (e.g., energy label, own procurement criteria, certification) for certain criteria? To what extent, and to what level of detail, should data be registered? (FI, 2021).

Key observations and challenges for practical implementation are described below.

8.1.1. Categorizing and classifying economic activities correctly

The NACE code indicates the main economic activity of a company. Some of the investments and loans may take place at project level with one single main activity, but a project can also be active in other (smaller) economic activities which may not necessarily be reflected in the NACE code (Poolen, 2021). Furthermore, a financial institution may also provide corporate loans to companies or holdings that have multiple economic activities (FI, 2020).

Consequently, taxonomy users need to get insight in the economic activities of their investments and determine as to whether they fall under the Taxonomy, and under which economic activities (e.g., afforestation or improved forest management) they must be categorized. Complexity of this categorization may lead to risk of errors of inconsistent application of the EU Taxonomy (EBF and UNEP-FI, 2021).

8.1.2. Different data needs and complexities per economic activity

The complexity of the technical screening criteria differs per economic activity. Complexities for realizing the technical screening criteria are for example much more complex for the agriculture or forestry sector than for the energy sector, given the different characteristics of both sectors (Poolen, 2020).

More complex activities may find it challenging to collect the required data to establish alignment with the EU Taxonomy. An additional challenge is how the reliability of these data can be guaranteed, and how differences in data quality may impact the comparability of portfolios (EBF and UNEP-FI, 2021).

Obviously, clearly defined projects with few taxonomy criteria (such as an offshore wind project) are easier to comply with then the more complex projects (FI, 2020). There is a risk that the more complex economic activities may not receive easily the label 'taxonomy aligned', which may potentially lead to adverse (financial) consequences.

8.1.3 Taxonomy implementation inside and outside Europe

Especially the DNSH criteria for bioenergy production rely strongly on EU regulations, which are relevant for economic activities inside the EU. According to the TEG (2020), for DNSH criteria that reflect legal requirements under EU regulations, it would be sufficient to assume these criteria have been met in the normal, lawful conduct of business, unless evidence to the contrary is demonstrated.

However, many potential users of the EU Taxonomy have portfolios with worldwide economic activities, so also outside Europe. These activities cannot rely on EU policies and laws and it requires an additional effort for activities outside Europe to comply with those criteria (and the related EU legislation). Firstly, it requires a good understanding on what the EU legislation requires. Secondly, it may require that companies make their activities more sustainable than legally required in their own country.

This is of course also a positive side-effect and it shows how the Taxonomy can create a global sustainability impact. At the same time, given the urgent need of ongoing investments in for example forest restoration[89] or clean energy worldwide, it is important that these types of investments are not hampered because investment criteria or reporting requirements are unfeasible because of for example missing data or lack of capacity.

8.1.3 Consignment versus project (activity) versus company level

The sustainability requirements in the RED2 and the Taxonomy have a different scope. Where, for example, the GHG emission reduction requirements under RED2 apply to individual consignments, they apply under the Taxonomy to the economic activity. It is important to gain insight into how these different scopes relate to each other and what the potential consequences are for verification.

On top of that, it is not always clear whether the Taxonomy criteria can or should be assessed at the economic activity level, or at the company level. TEG (2020) mentions for example that the compliance of the minimum safeguards might be partially assessed at the company level to explain the observance of these safeguards at the economic activity level – while the RED2 sustainability criteria need to be assessed at product level.

8.1.5 Future and current investments

Where the RED2 asks to prove the sustainability of already existing products (which have been produced in the past), the Taxonomy relates to economic activities that take place or to economic activities for which investments will be made in the future.

Demonstrating compliance with certain sustainability criteria for already existing activities is at times complex for some of the Taxonomy criteria. It becomes even more complicated to prove compliance when the activity is not yet taking place (while the investment may already be made), for example when:

- An investment is taking place int the forest sector: It is not clear how a forest management plan or a farm sustainability plan can be verified when the activities are not implemented (at full scale) yet.
- An investment in a bio-waste treatment plant: As input flows often depend on contracts (and available waste flows), It is challenging to predict in advance that the bio-waste indeed constitutes of at least 90% of the input feedstock, measured in weight, as an annual average, and the share of other input material (which cannot be food or feed crops) is less than or equal to 10% of the input feedstock (EC, 2020a), (Poolen, 2021).

8.1.6 The need for a good balance between complexity and feasibility

If demonstrating alignment with the Taxonomy turns out to be too complex, this will imply that a large number of economic activities will not be "taxonomy aligned" or deliberately use the disclaimer that “the investment(s) underlying the financial product do not take into account the EU criteria for environmentally sustainable investments” (see also chapter 6). This will have impact on the applicability and uptake of the Taxonomy and its use as commonly accepted classification system for sustainable finance. Although the consequences are unknown, the following risks should be considered and where possible mitigated (see chapter 9):

- When a Taxonomy user (large company, financial institution) aims to improve its level of “Taxonomy alignment” for various reasons (e.g., reputation), there is a risk that complex economic activities will be excluded, when too many barriers exist.

- It is important that the effort and the administrative burden for companies to become ‘taxonomy aligned’ are in proportion to what the company gains for it (for example, easier access to capital, joining certain subsidy programs), (Poolen, 2021). This is especially relevant for smaller companies which are not obliged to disclose information (as they do not fall under the NFRD) but may need to do so to get access to certain financial products. The case studies from (EBF and UNEP-FI, 2021) also indicate that SMEs lack resources, expertise, regulatory pressure and incentives to produce the data necessary to inform the technical

[89] For ecosystem restoration at scale, with a target of 350 million hectares of restored land, investments of about US$837 billion are needed between now and 2030 (UNCCD, 2010).

screening criteria. Furthermore, SMEs are generally not accustomed to collect the level of information required, as they typically focus on conforming to local legislation and permits.

- The Taxonomy itself does not mandate that financial products comply with the Taxonomy requirements; only that the level of alignment is disclosed. At the same time, financial products with an environmental objective (e.g., Green Bonds) are already linked to the Taxonomy, and will increasingly do so.
  When certain financial products require Taxonomy compliance to get access to funding or to get a financial discount (e.g., better loans), there is a risk that only the "easy" economic activities get the financial advantage. This in itself is not a problem in case this would exclude certain activities because they do not contribute to a certain objective. It becomes, however, a barrier and an undesirable side effect when this results into exclusion of sustainable but 'complex' activities (because of e.g., lack of data or capacity) as also these activities are highly needed for a transition towards a sustainable and carbon neutral economy.

- In practice, when for certain financial products cannot be proven that they are aligned with the Taxonomy, they can no longer be claimed as 'sustainable', as framed under the Taxonomy. In this case, financial institutions may want to change the label of their financial product, which could potentially lead to a subdivision of products that do not meet the EU taxonomy requirements but can be considered sustainable in a broader sense (FI, 2021). Although this would not have direct impact on the bioenergy sector, this could hamper the effectiveness of the Taxonomy, which is precisely aimed at harmonization in the financial sector.

Clearly, rules and classifications are needed to scale up sustainable investment and to prevent greenwashing. At the same time, a balance needs to be found to ensure that those rules are also feasible to reach the 'critical mass', to be effective on the long term and to avoid unintended consequences.

Note that not 'taxonomy aligned' is definitely not the same as non-sustainable: a separate "brown" taxonomy will be drawn up for negative / polluting activities in the future.

8.2 Bioenergy as economic (transition) economic activity: practical implications

Bioenergy production is considered a transitional economic activity. Both the so-called 'low carbon activities' and 'transition activities' are 'taxonomy aligned' under the Taxonomy and there is, with that respect, no distinction between these two types of economic activities.

There is also a difference between the two categories. Where 'low carbon' activities can already be considered carbon neutral, transitional economic activities yet have to achieve this status through a transition path. To ensure that transitional economic activities remain on a credible transition pathway consistent with a climate-neutral economy, the Commission aims to review the technical screening criteria for those activities at least every three years (EC, 2020). Next to that, technical screening criteria for bioenergy activities will be complemented, reviewed and where necessary revised by end 2021 to take into account the latest evidence base and policy developments (EC, 2020c).

In practice this means that current (planned) bioenergy installations may need to adapt their processes over time to be able to meet more stringent criteria in the future, and to be carbon neutral in 2050. As investments are often done for over a longer time period (for example, a term of 20 years), lack of clarity on how the criteria will be adjusted in the future – and when, and how this may impact their implementability (also on the longer term), can possibly lead to a reluctance to invest.

Next to that, there are also indirect implications. The classification of bioenergy as "transitional activity" would also disqualify 'research, development and innovation[90]' (an enabling activity) on bioenergy, even though scenarios of the International Energy Agency (IEA) and the Intergovernmental Panel on Climate Change (IPCC), consider sustainable bioenergy to have an important role for reaching climate targets on the long term.

[90] Technical screening criteria 1 to contribute significantly to climate change mitigation mentions that "the activity researches, develops or provides innovation for technologies, products or other solutions that are dedicated to enable one or more economic activities for which the technical screening criteria have been set out in this Annex, with the exception of activities considered as transitional and enabling activities"

9. Recommendations

To promote sustainable finance for bioenergy, it is important that financial institutions and producers and users of biomass and bioenergy can effectively implement the EU Taxonomy. This means that it should in practice be feasible to implement the EU Taxonomy, without losing credibility of the classification system and the level of sustainability that is at least required. This requires, amongst others, that the RED2 and the EU Taxonomy are consistent with each other.

9.1 Recommendations for practical implementation

This section gives recommendations to improve the implementability of the EU Taxonomy for Taxonomy users, including producers and users of biomass and bioenergy. Ideally, these recommendations are combined and implemented by multiple stakeholders including the European Commission, national governments, private sector (sector associations, individual companies), financial institutions, knowledge institutions or certification schemes.

Communication and building awareness

- It is important to create awareness amongst key Taxonomy users investing and involved in bioenergy about the Taxonomy requirements, now and in the future, and what that implies for their internal processes, such as reporting and KPIs.
- Communicate clearly what "taxonomy alignment" (or not) means. It should be clear to all (potential) users that an economic activity which is not taxonomy compliant or for which alignment with the taxonomy cannot be (fully) demonstrated, does not mean that the activity is not sustainable.
- To improve the uptake of the Taxonomy, it is important that non-Taxonomy users (such as smaller companies, municipalities or project developers) are aware of the Taxonomy, and its requirements (also those expected in the future), so its criteria (e.g., emission levels) can be integrated in the permits and in project development (FI, 2021).
- The Taxonomy focuses for now on climate mitigation and adaptation, but technical screening criteria will be extended to the other objectives, such as biodiversity or the circular economy. It is interesting to explore already which (end) products and bioenergy related activities (for example biomaterials, biodiversity in forests, etc.) could potentially significantly contribute to these objectives, and herewith create an (other) option to become taxonomy aligned.

Get prepared: provide support and sharing lessons

- Consider a first survey (see e.g., Adelphi, 2020 or EBF and UNEP-FI, 2021) amongst stakeholders active in the bioenergy sector (companies and financial institutions) to get further insight in the level of "taxonomy alignment", to the challenges in practical implementation of the Taxonomy, and possible solutions.
- Based on first experiences, share lessons learnt amongst key stakeholders.
- Provide support to economic activities with more complexities, e.g., through capacity or tool development. Especially smaller companies and investors and companies outside the EU may need significant support in understanding and taking advantage of the EU Taxonomy (EBF and UNEP-FI, 2021).
- Monitor over time the implementation of the EU Taxonomy and analyse (and where possible mitigate) potential direct and indirect impacts and unintended consequences (e.g., exclusion of certain sectors, activities, slowing down the pace or level of investments in certain activities, sectors or regions).

Development of tools and guidance

- Develop comparability assessments to facilitate the applicability of the EU Taxonomy to show in how far a policy (as the RED2), standard or other external sources of assessment aligns with the Taxonomy or not (see also

- Table 18).
    - Comparability assessments could focus on certain criteria, compare certain sectoral policies on EU or national level, or compare criteria in the EU Taxonomy with commonly applied standards or certification schemes.
    - Comparability assessments are also of relevance to get insight in the level of Taxonomy compliance of policies, regulation and standards in important countries outside the EU where investments in bioenergy or related supply-chain activities take place[91].
- Develop guidelines for the bioenergy sector for the implementation and application of the EU Taxonomy to core banking products[70]
- Develop tools to improve data availability and to facilitate (international) data collection and analysis of data, for example, through:
    - Developing common templates for data collection; this could significantly improve the efficiency with which information is acquired, while streamlining reporting (EBF and UNEP-FI, 2021).
    - By developing tools that facilitate and standardize, for example, the climate benefit analysis.
    - By establishing common digital data platforms that provide access to certain data
    - Creating, or facilitating access, to central databases to facilitate data collection and assessment, preferably to be set up by the European Commission (EBF and UNEP-FI, 2021).

Promote adoption of the Taxonomy by smaller companies (that do not fall under the NFRD)

- When formulating the technical screening criteria, the Taxonomy Regulation indicates that it is important to take into account the nature and scale of the economic activity (Article 19, EC, 2020). However, first experiences learn that the Taxonomy is at this moment far too technical for SMEs to adopt. Simplification is needed (EBF and UNEP-FI, 2021).
- Lessons can possibly be learnt from smallholder experiences on certification.

Give clarity on changes due to revisions and adoptions, and keep stakeholders well informed

- The EU Taxonomy will periodically revise its technical screening criteria over time. Given that investments are made for the long-term, it is crucial that the transition pathway is clear and scientifically based. This also means that there should be some guarantee that criteria are not immediately adapted due to political pressures or social concerns on the short-term (Poolen, 2021).
- It is important that stakeholders active in the bioenergy sector, and related sectors, are well informed about the transition pathway and other (expected) changes.
- The Taxonomy integrates a large range of sectoral policies and is herewith a frontrunner example on how an integrated policy framework could look like; related sectoral EU policies/legislation are also revised over time[92], and therefore also have consequences for the criteria laid down in the EU Taxonomy. A mechanism is needed to keep the overview on how changes in sectoral EU policies impact on the EU Taxonomy, and its criteria, and vice versa.

Harmonize overall objectives between the two frameworks

- Although both the Taxonomy and the RED2 aim to contribute to the Green Deal, there are currently conflicting or unclear messages in the criteria that may hamper the realization of objectives. These need to be solved and clarified.
- One example is that there is a full exclusion of food and feed crops for biofuels in the Taxonomy, while this is (to a certain limit) allowed under the RED2. This means in practice that biomass from failed harvests can be used for biofuel production under the RED2, but not under the Taxonomy.
- Another example is that the RED2, on one hand, aims to promote innovation (e.g., via advanced biofuels), while the Taxonomy hampers research for innovation in bioenergy (as it is a transitional activity).

[91] See also the recommendations from EBF and UNEP-FI (2021).
[92] For example, the Commission expects in 2021 an adoption of the NFRD Regulation, an evaluation of the RED2 and the publication of Implementing Acts on operational guidance for energy from forest biomass.

- More guidance is also needed on how the economic activity "composting of biowaste" (to be used as soil improver) relates to the requirements of the RED2, as heat and power can be generated from composting, and how the RED2 itself deals with bioenergy generation from compost.

Clarification on the EU Taxonomy

- Further clarification on the criteria and definitions used in the EU Taxonomy is key to ensure that they are unambiguous, practicable and feasible to apply. Recommendations are given in Table 17.

Table 17: Recommendations to create more clarity and unambiguity of the EU Taxonomy, also in relation with the RED2.

Clarification on the transition path for bioeconomy activities	• Especially for bioenergy related activities, reviews of the Technical screening criteria can be expected at least every three years. This may give uncertainty in the market. It is important to create clarification on the expected transition pathway to 2050 for bioenergy related activities. • Keep the market and investors informed about expected changes so more stringent thresholds can already be included in permits etc.
Create unambiguity in interpretation	• (Re-) establish technical screening criteria that provide for sufficient legal clarity, that are practicable and easy to apply, and for which compliance can be verified within reasonable cost-of-compliance boundaries, thereby avoiding unnecessary administrative burden – as also mentioned in the Regulation (EC, 2020). • Develop guidance on the interpretation of certain criteria, terms and definitions used so they are unambiguous and do not create confusion in the market.
Create clarity in implementation	• Provide further guidance on the operationalization of the Taxonomy, e.g., on the verification of criteria, what is expected in terms of reporting and if, and in how far, proxies can be used. • This includes clarification on how the nature, scale and context of the economic activity should be taken into account.
Clarification on changes due to revisions and adoptions in related EU policies	• Create a mechanism to keep the overview on how changes in sectoral EU policies impact on the EU Taxonomy, and its criteria, and vice versa.

Clarification on the RED2

- Clarity is needed about the content of the Implementing Act on operational guidance for energy from forest biomass, as the Taxonomy makes direct reference to this Implementing Act for the criteria that fall under the forest-related economic activities.

9.2 Recommendations for further harmonization of the Taxonomy

The feasibility of implementation of the EU Taxonomy will be much improved when Taxonomy users can rely on external verification sources and can use 'proxies' such as EU policies, permits, standards or external auditing procedures or certification schemes.

By using proxies, EU Taxonomy users can narrow down the required data collection to what is potentially different and/or supplementary to e.g., the standards or policies applied. This is especially important for financial institutions, who do not have direct access to the data themselves as the economic activity takes place at company or project level (Poolen, 2021) and especially true for those criteria which have no market practice, because there is not (yet) no demand on the market to meet a certain requirement (FI, 2021).

As economic operators can make use of voluntary certification schemes (recognized by the EC) to proof compliance with the GHG reduction requirements and sustainability criteria under the RED2, it is likely that these will serve as proxy for the RED2. They may also serve as a proxy for additional taxonomy criteria that are not covered in the RED2, such as water or social requirements.

Also, the Taxonomy Regulation mentions that, where appropriate, technical screening criteria should build upon Union labelling and certification schemes, Union methodologies for assessing environmental footprint, and Union statistical classification systems, and take into account any relevant existing Union legislation (Art, 19, EC, 2020).

Table 18 gives recommendations on how the Taxonomy can be further harmonized with existing EU policies (including RED2) and other external assurance sources.

Table 18: Recommendations for further harmonization of the Taxonomy with EU policies and other external sources of assurance (so they can be used as proxy).

EU policies and legislation	• Where appropriate, the Taxonomy should refer as much as possible to European policies, standards or Laws (or ideally an international standard) as feasibility of implementation is much improved when this can be used as 'proxy'
	  ○ When referring to other EU policies and law, the Taxonomy should be very clear whether these are mandatory (and can thus be used as proxy) or not.
	• There should, be no contradictions between different EU policies, legislation and regulations. These should, as much as possible, be aligned, especially with respect to:
	  ○ The criteria themselves (an example of a current contradiction is the exclusion of food and feed crops for biofuels, which are still partially - and under certain conditions - allowed by the RED2)
	  ○ Use of terminologies and definitions
	• Develop publicly available databases where Taxonomy users can find evidence of alignment to EU laws and regulations (EBF and UNEP-FI, 2021).
		European Commission
		Legislators and regulators

National policies and legislation in EU Member States	• Ensure consistency and compatibility/comparability of criteria between the EU Taxonomy and applicable national legislation and regulations (EBF and UNEP-FI, 2021). • In the Netherlands, this includes for example alignment of the EU Taxonomy with the SDE+ requirements or with the *'Warmtewet 2.0'*	EU Member States Legislators and regulators
National policies and legislation in producing countries	• Build insight in how far laws and policies in key biomass producing countries align with the requirements of the EU Taxonomy and related EU policies so they can potentially be used as proxy as well. • When not aligned, build insight in which additional efforts are required from economic activities to become 'taxonomy aligned'	Governments in key biomass producing countries (with support from the European Commission)
International standards	• For the purpose of facilitating trade flows and economic development, global alignment of the Taxonomy with international taxonomies and standards on sustainable finance is recommended, as this will also facilitate implementation of economic activities outside Europe. • Alignment can for example be explored via the International Platform for Sustainable Finance or through the UNEP Finance Initiative with its framework of UN Principles for Responsible Investment (UN-PRI) • Support processes that aim to reach consensus and further harmonization on internationally used definitions and standards.	Global partnerships and its members (For example, the UNEP Finance Initiative)
Certification schemes	• Analyse and benchmark in how far some of the Taxonomy criteria are covered by leading certification schemes. This is especially relevant for issues that are not included in the RED2 (e.g., social issues, pollution and water) but are generally covered by certification schemes. • Clarify alignment with the Taxonomy[71] • Develop guidance that explains on which criteria (not covered by RED2) are automatically fulfilled when an economic activity is for example FSC or PEFC certified (and can therefore be used as proxy). • Explore the introduction of specific modules or labels which represent that activities are "taxonomy aligned".	Certification schemes (especially certification schemes for sustainable forest management and agriculture)

Verification protocols	• Explore the need for additional expertise (e.g., on carbon sequestration) and capacity to be able to offer the verification and monitoring services as requested in the EU Taxonomy (EBF and UNEP-FI, 2021).	Certification bodies (auditors)
Permits	• Analyse in how far some of the Taxonomy criteria are (or can be) covered by permits. This is especially relevant for those issues, which are systematically not covered by the RED2 (e.g., social issues, pollution). • It is helpful when permits (for example for installations) become in line with the requirements of the Taxonomy, and request for example similar criteria on water quality or on pollution levels (FI, 2021). An environmental impact assessment and / or consultation of residents (see water requirement) should for example be part of the permit procedure and can be used as proxy (FI, 2021).	Government (including national governments and municipalities)
Internal sustainability policies and performance standards	• Align internal sustainability policies, performance standards (and internal procedures) where possible with the Taxonomy.	• Financial institutions and large companies that have their own sustainability policy.

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Annex 1: Comparison of the sustainability criteria of the Taxonomy with the RED2 for selected activities

This Annex shows an overview of the economic activities that are included in the detailed comparison of the sustainability criteria between the Taxonomy and the RED2. The in-depth comparison is available upon request via the following e-mail address: gave@rvo.nl

Table 19: Selected economic activities for this comparison and contribution of the different economic activities to the six environmental objectives (TEG, 2020)

		Screening criteria for 'significant contribution' (1)				DNSH criteria			
Sector[93]	Selected economic activities for this comparison	Climate mitigation			Climate change adapta-tion	Water	Circular econo-my	Pollu-tion	Eco-systems
		Low carbon (own performance)	Enabling activities	Transitio nal activities					
Forestry and agriculture	1. Afforestation	V			V	V		V	V
	2. Rehabilitation and restoration	V			V	V		V	V
	3. Reforestation	V			V	V		V	V
	4. Improved forest management	V			V	V		V	V
	5. Conservation forest	V			V	V		V	V
	6. Growing of perennial crops	V			V	V	V	V	V
	7. Growing of non-perennial crops	V			V	V	V	V	V
Electricity, gas, steam and air conditioning supply	8. Electricity generation from bioenergy	V		V	V	V	V	V	V
	9. Manufacture of biogas and biofuels for use in transport	V		V	V	V	V	V	V
	10. Co-generation of heat/cool and power from bioenergy	V		V	V	V	V	V	V
	11. Production of heat/cool and power from bioenergy (biomass, biogas, biofuels	V		V	V	V	V	V	V
Water, sewerage, waste and remediation	12. Anaerobic digestion of sewage sludge	V			V			V	
	13. Anaerobic digestion of bio-waste	V			V			V	
	14. Composting of biowaste	V			V			V	
	15. Landfill gas capture and utilization	V			V			V	

Table 20: Signs used in the benchmark and explanation of its meaning

Sign	Explanation of meaning
=	Comparable
~	Differences exist
x	Not comparable
(Tax)	There are differences; the EU taxonomy has the more stringent or extensive requirement
(RED)	There are differences; the EU-RED has the more stringent or extensive requirement
(Legal)	Comparable because of legal requirements
?	Uncertainty because of missing legislation / policy (i.e., Implementing Act)

[93] Transport and storage and manufacturing are not included in the comparison

Annex 2: Further description of the environmental objectives

The Taxonomy Regulation sets out the following environmental objectives (EC, 2020):

- Climate change mitigation
- Climate change adaptation
- The sustainable use and protection of water and marine resources
- The transition to a circular economy
- Pollution prevention and control
- The protection and restoration of biodiversity and ecosystems

Climate change mitigation

An economic activity shall qualify as contributing substantially to climate change mitigation where that activity contributes substantially to the stabilisation of GHG concentrations in the atmosphere at a level which prevents dangerous anthropogenic interference with the climate system consistent with the long-term temperature goal of the Paris Agreement through the avoidance or reduction of greenhouse gas emissions or the increase of GHG removals, including through process innovations or product innovations (EC, 2020). Article 11 gives various options on how this can be realized, e.g., by switching to the use of sustainably sourced renewable materials.

Climate change adaptation

An economic activity shall qualify as contributing substantially to climate change adaptation where that activity (see also Article 12, EC, 2020):

- Includes adaptation solutions that either substantially reduce the risk of the adverse impact of the current climate and the expected future climate on that economic activity or substantially reduce that adverse impact, without increasing the risk of an adverse impact on people, nature or assets; or
- Provides adaptation solutions that, in addition to satisfying the conditions set out in Article 16, contributes substantially to preventing or reducing the risk of the adverse impact of the current climate and the expected future climate on people, nature or assets, without increasing the risk of an adverse impact on other people, nature or assets.

The sustainable use and protection of water and marine resources

An economic activity shall qualify as contributing substantially to the sustainable use and protection of water and marine resources where that activity either contributes substantially to achieving the good status of bodies of water, or to preventing the deterioration of bodies of water that already have good status[94]..[…] …, amongst others by improving water management and efficiency or preventing contamination (Art. 12, EC, 2020). This criterium should be interpreted in accordance with relevant Union Law[95] (EC, 2020).

The transition to a circular economy

An economic activity shall qualify as contributing substantially to the transition to a circular economy, including waste prevention, re-use and recycling, where that activity, amongst others, increases the use of secondary raw materials or uses natural resources, including sustainably sourced bio-based and other raw materials, in production more efficiently (Art, 13, EC, 2020). This criterium should be interpreted in accordance with relevant Union Law in the areas of circular economy, waste and chemicals[96] (EC, 2020).

[94] In addition: or contributes substantially to achieving the good environmental status of marine waters or to preventing the deterioration of marine waters that are already in good environmental status.

[95] including Regulation (EU) No 1380/2013 of the European Parliament and of the Council (9) and Directives 2000/60/EC (10), 2006/7/EC (11), 2006/118/EC (12), 2008/56/EC (13) and 2008/105/EC (14) of the European Parliament and of the Council, Council Directives 91/271/EEC (15), 91/676/EEC (16) and 98/83/EC (17) and Commission Decision (EU) 2017/848 (18), and with the communications of the Commission of 18 July 2007 on 'Addressing the challenge of water scarcity and droughts in the European Union', of 14 November 2012 on 'A Blueprint to Safeguard Europe's Water Resources' and of 11 March 2019 on 'European Union Strategic Approach to Pharmaceuticals in the Environment'.

[96] including Regulations (EC) No 1013/2006, (EC) No 1907/2006 and (EU) 2019/1021 (of the European Parliament and of the Council and Directives 94/62/EC, 2000/53/EC, 2006/66/EC, 2008/98/EC, 2010/75/EU, 2011/65/EU, 2012/19/EU, (EU) 2019/883 and (EU) 2019/904 of the European Parliament and of the Council, Council Directive 1999/31/EC, Commission Regulation (EU) No 1357/2014 and Commission Decisions 2000/532/EC (33) and 2014/955/EU (34), and

Pollution prevention and control

An economic activity shall qualify as contributing substantially to pollution prevention and control where that activity contributes substantially to environmental protection from pollution by, amongst others, cleaning up litter or improving levels of air, water or soil quality (Art. 14, EC, 2020). This criterium should be interpreted in accordance with relevant Union Law[97] (EC, 2020).

The protection and restoration of biodiversity and ecosystems

An economic activity shall qualify as contributing substantially to the protection and restoration of biodiversity and ecosystems where that activity contributes substantially to protecting, conserving or restoring biodiversity or to achieving the good condition of ecosystems, or to protecting ecosystems that are already in good condition, by, amongst others, sustainable forest management or sustainable agricultural practices (Art. 15, EC, 2020). This criterium should be interpreted in accordance with relevant Union Law[98] (EC, 2020).

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[97] Directives 2000/60/EC, 2004/35/EC, 2004/107/EC, 2006/118/EC, 2008/50/EC, 2008/105/EC, 2010/75/EU, (EU) 2016/802 and (EU) 2016/2284 of the European Parliament and of the Council.

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Annex 3: Definitions in the Taxonomy Regulation

- **Financial market participant** as defined in point (1) of Article 2 of Regulation (EU) 2019/2088 and includes a manufacturer of a pension product to which a Member State has decided to apply that Regulation in accordance with Article 16 of that Regulation (EC, 2020).
- **Climate change mitigation'** means the process of holding the increase in the global average temperature to well below 2 °C and pursuing efforts to limit it to 1,5 °C above pre-industrial levels, as laid down in the Paris Agreement (EC, 2020)
- **Climate change adaptation** means the process of adjustment to actual and expected climate change and its impacts (EC, 2020).
- **Greenhouse Gas** means a greenhouse gas listed in Annex I to Regulation (EU) No 525/2013 of the European Parliament and of the Council (70) (EC, 2020).
- **'Waste hierarchy'** means the waste hierarchy as laid down in Article 4 of Directive 2008/98/EC (EC, 2020).
- **'Circular economy'** means an economic system whereby the value of products, materials and other resources in the economy is maintained for as long as possible, enhancing their efficient use in production and consumption, thereby reducing the environmental impact of their use, minimising waste and the release of hazardous substances at all stages of their life cycle, including through the application of the waste hierarchy (EC, 2020).
- **Pollutant'** means a substance, vibration, heat, noise, light or other contaminant present in air, water or land which may be harmful to human health or the environment, which may result in damage to material property, or which may impair or interfere with amenities and other legitimate uses of the environment (EC, 2020).
- **'Soil'** means the top layer of the Earth's crust situated between the bedrock and the surface, which is composed of mineral particles, organic matter, water, air and living organisms (EC, 2020).
- **'Ecosystem'** means a dynamic complex of plant, animal, and micro-organism communities and their non-living environment interacting as a functional unit (EC, 2020).
- **'Ecosystem services'** means the direct and indirect contributions of ecosystems to the economic, social, cultural and other benefits that people derive from those ecosystems (EC, 2020).
- **'Biodiversity'** means the variability among living organisms arising from all sources including terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part and includes diversity within species, between species and of ecosystems (EC, 2020).
- **'Good condition'** means, in relation to an ecosystem, that the ecosystem is in good physical, chemical and biological condition or of a good physical, chemical and biological quality with self-reproduction or self-restoration capability, in which species composition, ecosystem structure and ecological functions are not impaired (EC, 2020),
- **'Energy efficiency'** means the more efficient use of energy at all the stages of the energy chain from production to final consumption (EC, 2020).
- **sustainable forest management'**: For the purposes of the Taxonomy Regulation, the term 'sustainable forest management' should be construed by taking into account practices and uses of forests and forest land that contribute to enhancing biodiversity or to halting or preventing the degradation of ecosystems, deforestation and habitat loss, by taking into account the stewardship and use of forests and forest land in a way, and at a rate, that maintains their biodiversity, productivity, regeneration capacity, vitality and their potential to fulfil, now and in the future, relevant ecological, economic and social functions, at local, national, and global levels, and that does not cause damage to other ecosystems[99] (EC, 2020).

[99] as set out in Resolution H1 of the Second Ministerial Conference on the Protection of Forests in Europe of 16–17 June 1993 in Helsinki on General Guidelines for the Sustainable Management of Forests in Europe as well as by taking into account Regulations (EU) No 995/2010 and (EU) 2018/841 of the European Parliament and of the Council and Directive (EU) 2018/2001 of the European Parliament and of the Council and the communication of the Commission of 20 September 2013 on 'A new EU Forest Strategy: for forests and the forest-based sector'.