Joint civil society organisation analysis and recommendations Climate Taxonomy draft Delegated Act - Mitigation and Adaptation

3 December 2020

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INTRODUCTION

The main objective of this document is to compare the final draft Delegated Act (DA) of the Commission specifying 'technical screening criteria' for economic activities under the climate mitigation and adaptation objectives of the EU Taxonomy with the final recommendations of the Technical Expert Group on sustainable finance (TEG). On the basis of this analysis, we issue recommendations to improve the draft DA.

This is a document that reflects the collective analysis of a large network of NGOs and think tanks working on the EU taxonomy. In total, over 40 experts from 20 organisations contributed their analysis to the document, each providing detailed recommendations on specific activities in the Delegated Act.

Some experts have provided contact information for the section they analysed and are pleased to be contacted for further discussion of their area.

However, **this document is not a statement of joint positions by the organisations and experts who have contributed**. It does not commit organisations or experts to the views expressed by others. Experts will comment on the sections they have analysed but should not be understood to be endorsing comments made in other sections.

Final draft Delegated Act published here: (one Act + Annex I on climate mitigation criteria + Annex II on climate adaptation criteria):
https://ec.europa.eu/info/business-economy-euro/banking-and-finance/sustainable-finance/eu-taxonomy-sustainable-activities_en#201120

Final TEG recommendations published here: (Technical Annex)
https://ec.europa.eu/info/sites/info/files/business_economy_euro/banking_and_finance/documents/200309-sustainable-finance-teg-final-report-taxonomy-annexes_en.pdf

LIST OF ALL ACTIVITIES IN ANNEX I CLIMATE MITIGATION DRAFT DELEGATED ACT

Note: we provide analysis for 50 activities in the draft DA not all.

The page numbers below refer to the Annex I of the draft Delegated Act.

I. ANALYSIS ACTIVITY BY ACTIVITY

SCORECARD OF ACTIVITIES ANALYSED IN THE DRAFT DA

Green - good criteria
Orange - criteria need improvement
Red - criteria problematic, require significant changes (or exclusion from taxonomy)

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II. ANALYSIS ACTIVITY BY ACTIVITY

1. AGRICULTURE AND FORESTRY

1.1. Growing of non-perennial crops & 1.2. Growing of perennial crops

Overall Assessment:

Problematically, the draft DA does not include the TEG recommendations on GHG emissions benchmarks; the draft DA criteria on soil drainage also need to be clarified.

Positively the 10% target for landscape features, which was not in the TEG recommendations, was added in the draft DA and should be maintained.

Technical Assessment:

The draft DA criteria on protection of non-agricultural land (e.g. wetlands and peatlands) is the same as in the TEG report, which will protect valuable areas from conversion. Yet some mandatory management requirements are unclear and need to be clarified: they forbid artificially lowering of water tables on organic soils but do not specify whether this means classification as sustainable only when a farmer stops maintaining existing drainage of peatlands or whether it is only forbidden to *extend* existing drainage.

Problematically, references to benchmarks for GHG emission targets, which were in TEG report, have not been included in the draft DA: the full focus is on mandatory management practices as a means to reduce GHG emissions. This includes a strong focus on the "Establishment of a Farm Sustainability Plan" that covers both emissions and removals, and identifies the management practices with highest potential.

The requirement for crop rotation remains but is weakened: we suggest **reintroducing the requirement to have one leguminous crop in the crop rotation,** as it lowers needs for fertiliser and improves the soil structure by increasing its carbon content, therefore benefiting the climate.

The compliance with the essential management practice is set out in relatively robust language in the DA, as the *Agricultural holding will have to deploy all of the essential management practices listed in Appendix A to this Annex, except those that are clearly not applicable to that holding*.

The addition of a 10% target for landscape features such as hedges, fallow land etc within the management practices is very positive. This wasn't in the TEG recommendations, but will benefit climate mitigation and adaptation as well as restore biodiversity: it should be maintained.

The draft DA removes the TEG's wording on compliance with the EU water law from the DNHS on freshwater. Furthermore, on water quantity, a simple condition of having a permit to extract water is mentioned, which is too weak. It would open the door to excessive use by those who can have a permit but then extract more than appropriate. This condition is necessary but clearly insufficient.

The text should be improved as follows: 'Where the activity involves water abstraction, a permit for water abstraction has been granted by the relevant authority for the activity, *water metering devices are used, an effective water pricing system prevents wasteful use of water, and water allocations are strictly respected alongside other* ~~specifying~~ conditions to avoid significant impact on water bodies.

Recommendations:

- The TEG recommendation on GHG emissions benchmarks should be reinstated;
- The new 10% target for landscape features should be maintained;
- The draft DA's text on compliance with essential management practices should be maintained;
- The draft DA should reinstate the TEG's requirement to have one leguminous crop in the crop rotation, as it lowers the need for fertiliser.
- The draft DA criteria on soil drainage should be clarified.

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1.2. Growing of perennial crops

See analysis provided in section 1.1.

1.3. Livestock production

Overall Assessment:

DA recommendations are relatively similar to TEG. We note some discrepancies below, which should be improved.

Excessive focus on technical solutions rather than reducing livestock numbers.

Technical Assessment:

Points above on (non-) perennial crops apply here as well. Similar to TEG, the main focus remains on technical solutions to reduce emissions, such as adjusted feeding of livestock.

However, we see the number and concentration of livestock as one of the main barriers to significant GHG reductions in the sector. Yet there is no steering of investments towards lowering these numbers within the DA. **Given livestock's high impact on climate, biodiversity, and land use, it should be excluded while more stringent criteria are developed.**

The draft DA's Herd Management requirements, which were added compared to the TEG recommendations, further focuses its scope on intensive farming systems. The TEG's report was already problematic in this regard.

The TEG's requirement for "no ploughing of permanent grassland" has disappeared and should be reinstated.

Furthermore, the draft DA dramatically weakens the TEG's DNSH recommendations on circular economy, which should be reinstated in full.

Finally, the draft DA removes the TEG's wording on compliance with the EU water law from the DNHS on freshwater. Furthermore, on water quantity, a simple condition of having a permit to extract water is mentioned, which is too weak. It would open the door to excessive use by those who can have a permit but then extract more than appropriate. This condition is necessary but clearly insufficient.

The text should be improved as follows: 'Where the activity involves water abstraction, a permit for water abstraction has been granted by the relevant authority for the activity, *water metering devices are used, an effective water pricing system prevents wasteful use of water, and water allocations are strictly respected alongside other* ~~specifying~~ conditions to avoid significant impact on water bodies.'

Recommendation: the draft DA focuses on technical solutions and weakens the TEG's DNSH recommendations. Instead, it should do the following:

- Given its high impact on climate, biodiversity, and land use, **livestock should be excluded from the taxonomy while more stringent criteria are developed**.
- Criteria should focus on **reducing the number and concentration of livestock**;
- Improve the **essential management** wording by adding a requirement to the top paragraph of the Soil Management Section: '*The Plan establishes the current and ideal ratio of farm animals per hectare, and where needed, a process to reduce this density so that it matches the carrying capacity of the farmland.'*
- Reinstate the TEG's requirement for "no ploughing of permanent grassland".
- Reinstate the TEG's recommendations on circular economy;
- Improve the DNSH recommendations for **water**, by including the following text: 'Where the activity involves water abstraction, a permit for water abstraction has been granted by the relevant authority for the activity, *water metering devices are used, an effective water pricing system prevents wasteful use of water, and water allocations are strictly respected alongside other* ~~specifying~~ conditions to avoid significant impact on water bodies'.

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1.4. Afforestation

Overall Assessment:

The draft DA does not include the TEG safeguard that prevents carbon-rich soils from being converted into forests; it also weakens the TEG recommendations on non-native species.

Technical Assessment:

Afforestation projects sometimes take place on peatlands, which is problematic from a biodiversity and climate perspective. The TEG report rightly included a safeguard to avoid conversion of carbon-rich soils to forests, which would weaken our ability to achieve our GHG-emission targets.

This safeguard is based on the Renewable Energy Directive principles, which are quite weak, and there are strong arguments to go further than those principles. However this was a useful minimum safeguard. Problematically this criterion is not included in the draft DA. The impacts on carbon-stocks is now only part of the afforestation plan, which is much weaker than the TEG report.

The TEG recommendations included slightly tougher recommendations on non-native-species within the DNSH criteria for forestry. Native species should be the norm, while exceptions can be allowed e.g. when native trees are not able to tolerate the conditions at a site due to climate change. The draft DA appears to be a bit weaker and should get back to the TEG version.

The draft DA has deleted the list with sustainable forest management requirements and practices, which was a key criterion for climate mitigation. This is highly problematic and should be reinstated.

Finally, the draft DA asks for an assessment that wood used simply improves the net GHG balance over 20 years. However, this involves short-term rotation (less than 20 years), which is not climate neutral, because the carbon released has to be considered. Short-term rotation is usually done using the wrong type of trees without considering existing forest / tree structures / biomass.

Recommendations:

- Most importantly, the draft DA needs to include the TEG safeguard that prevents carbon-rich soils from being converted into forests;
- The draft DA needs to reinstate the TEG' recommended list of sustainable forest management requirements and practices, which was a key criterion for climate mitigation.
- The draft DA should follow the TEG recommendations on non-native species that are slightly better.

For more information, please contact:
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1.5. Rehabilitation and restoration of forests

Technical analysis:

The draft DA has deleted the list with sustainable forest management requirements and practices, which was a minimum criterion for climate mitigation. This is highly problematic and should be reinstated.

Furthermore, the DA should strengthen Biodiversity DNSH criteria by extending the ban on conversion of habitats in protected areas to all habitats. Furthermore, it should strengthen the Pollution Do No Harm criteria to prevent pesticide and fertiliser use, as required in chapter 1.8 Conservation forestry.

Recommendation: The draft DA needs to:

- reinstate the TEG's recommended list of sustainable forest management requirements and practices, which was a key criterion for climate mitigation;
- Strengthen the Biodiversity DNSH requirements to extend the ban on habitat conversion to all habitats, not just those in protected areas.

- Strengthen the Pollution DNSH requirements to match those in the 'Conservation forestry' chapter, which prevent pesticide or fertiliser use.

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1.6. Reforestation

Technical analysis:

The draft DA has deleted the list with sustainable forest management requirements and practices, which was a minimum criterion for climate mitigation. This is highly problematic and should be reinstated.

Furthermore, the DA should strengthen Biodiversity DNSH criteria by extending the ban on conversion of habitats in protected areas to all habitats. Furthermore, it should strengthen the Pollution Do No Harm criteria to prevent pesticide and fertiliser use, as required in chapter 1.8 Conservation forestry.

Recommendation: The draft DA needs to:
- reinstate the TEG's recommended list of sustainable forest management requirements and practices, which was a key criterion for climate mitigation;
- Strengthen the Biodiversity DNSH requirements to extend the ban on habitat conversion to all habitats, not just those in protected areas.
- Strengthen the Pollution DNSH requirements to match those in the 'Conservation forestry' chapter, which prevent pesticide or fertiliser use.

For more information, please contact:
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1.7. Improved Forest Management

Technical analysis:

The draft DA has deleted the list with sustainable forest management requirements and practices, which was a minimum criterion for climate mitigation. This is highly problematic and should be reinstated.

Furthermore, the DA should strengthen Biodiversity DNSH criteria by extending the ban on conversion of habitats in protected areas to all habitats. Furthermore, it should strengthen the Pollution Do No Harm criteria to prevent pesticide and fertiliser use, as required in chapter 1.8 Conservation forestry.

Recommendation: The draft DA needs to:
- reinstate the TEG's recommended list of sustainable forest management requirements and practices, which was a key criterion for climate mitigation;

- Strengthen the Biodiversity DNSH requirements to extend the ban on habitat conversion to all habitats, not just those in protected areas.
- Strengthen the Pollution DNSH requirements to match those in the 'Conservation forestry' chapter, which prevent pesticide or fertiliser use.

For more information, please contact:
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1.8. Conservation forestry

Technical analysis:

The draft DA has deleted the list with sustainable forest management requirements and practices, which was a minimum criterion for climate mitigation. This is highly problematic and should be reinstated.

Furthermore, the DA should strengthen Biodiversity DNSH criteria by extending the ban on conversion of habitats in protected areas to all habitats. Furthermore, it should strengthen the Pollution Do No Harm criteria to prevent pesticide and fertiliser use, as required in chapter 1.8 Conservation forestry.

Recommendation: The draft DA needs to:

- reinstate the TEG's recommended list of sustainable forest management requirements and practices, which was a key criterion for climate mitigation;
- Strengthen the Biodiversity DNSH requirements to extend the ban on habitat conversion to all habitats, not just those in protected areas.
- Maintain the Pollution DNSH requirements, which correctly prevent pesticide or fertiliser use.

For more information, please contact:
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2. ENVIRONMENTAL PROTECTION AND RESTORATION ACTIVITIES

2.1. Restoration of wetlands

Technical analysis:

This is a new activity in the draft DA compared to the TEG. The draft DA makes the correct assessment that restoration of wetlands can have major climate benefits.

The activity is judged positively for its presence in the taxonomy. The four cumulative criteria for ensuring the substantial contribution of the activity to climate mitigation objectives seem accurate.

The DNSH criteria for Circular economy could be improved: peat extraction should be banned not 'minimised'. The DNSH criteria for Pollution prevention could be improved as well: the use of pesticides should be banned not 'minimised'.

Recommendation: the draft DA should retain this activity; the DNSH criteria for Circular economy and for Pollution prevention could be improved.

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3. MANUFACTURING

3.3. Manufacture of low carbon technologies for transport

Overall assessment:

Most importantly the draft DA adds water transport vessels in an extremely problematic way (which were not included in the TEG report), and bi-mode trains which are problematic as well.

Technical Assessment:

Compared to the TEG recommendations the draft DA adds personal mobility devices powered by zero emission or physical activity, such as bicycles, which is positive.

The draft DA adds water transport vessels which use 50% or more biofuels until 2025, which is extremely problematic.

Problematically as well, bi-mode trains are allowed (point b). This means that a passenger or freight train with a hybrid powertrain, which uses the overhead lines above the rail tracks to propel an electric motor when available and a conventional diesel engine on non-electrified parts of the network, is defined as environmentally sustainable. In the case of the currently non-electrified track sections where train movements and service frequencies are too low, battery electric and hydrogen fuel cell trains can offer a cheaper solution compared to equipping those sections with overhead lines.

Important note: see as well analysis and recommendations in the Transport section (Section 6.1; 2; 6; 7; 8; 9; 10) to ensure consistency.

Recommendation:

- For trains, the draft DA should follow the TEG recommendations, i.e. be corrected to focus exclusively on: 1) battery electric trains, if the non-electrified 'islands' aren't too long, or 2) alternatively hydrogen fuel cell electric trains. Both of them have zero direct tailpipe emissions. Point b should therefore be deleted.

For more information, please contact:

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3.4. Manufacture of energy efficiency equipment for buildings

Overall assessment:

The overall criteria reach relatively high standards; however three specific issues should be improved in the draft DA.

Technical Assessment:

The overall criteria reach relatively high standards. A few categories are weaker than EU best in class standards (BR18 due 1 Jan 2021) however. They should be reviewed on a cycle, in line with revision of EPBD (for example) and new climate ambition for 2030 in 3-5 years.

However they should be improved in three areas:

- Point (e): The inclusion of (e) household appliances rated in the top 2 energy labelling class is surprising as it covers products such as TVs or tumble driers. These are not necessary items, and investments into the manufacturing of TVs or tumble driers should not be labelled as 'sustainable';
- Point (g): If current regulations are revised according to Regulation 2017/1396 (= if the energy label is rescaled to an A-G scale), then the class A is supposed to remain empty when introduced, to foster innovation. Although this is not expected to happen very soon, this would result in this bullet point not being applicable as no single product would meet the top energy labelling class;
- Point (h) covers all cooling and ventilation systems. At the moment, various cooling products have separate energy labels, meaning that portable air conditioners which are by far the least energy efficient of all air conditioners can still be labelled as sustainable according to this classification. This issue is recognised and will in the future be solved by the implementation of a rescaled, unique label. This will take time, though, and until this is the case, we call for the explicit exclusion of portable air conditioners.

Recommendations: The draft DA should be improved on the three following issues:
- Delete bullet point (e);
- Change point (g) to: "(g) space heating and domestic hot water systems rated in the top energy labelling class in Regulations (EU) **811/2013 and (EU) 812/2013**;
- Complete point (h) as follows: "(h) cooling and ventilation systems rated in the top 2 energy labelling class in Regulation (EU) 626/2011, excluding single duct air conditioners energy labels as described in Annex III, section 5 of Regulation (EU) 626/2011";

Note: Please see Annex at the end of the document for more detailed discussion on manufacturer of energy efficiency equipment for buildings, with example from Denmark.

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Peter Sweatman, ClimateStrategy, info@climatestrategy.es

3.5. Manufacture of other low carbon technologies

Overall assessment:

The draft DA criteria are aligned with the TEG recommendations, which are satisfactory.

Technical assessment:

The TEG recommendation contains acceptable criteria on manufacturing of technologies essential for renewable energy technologies, of low-carbon vehicles and vessels, of energy efficiency equipment for buildings, and low-carbon technologies that provide substantial GHG emission reductions in other sectors, including households.

The draft DA retains these TEG recommendations, with satisfactory criteria on manufacturing of renewable energy technologies, equipment for production of hydrogen (limited to electrolysis technologies), low-carbon technologies for transport (vehicles with zero direct emissions after 2025), energy efficiency equipment for buildings, low-carbon transport vehicles, fleets and vessels and key components, low carbon technologies that result in substantial GHG emission reductions in other sectors of the economy.

Recommendation: The draft DA is fine.

For more information, please contact:
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3.6. Manufacture of cement

Overall assessment:

Most importantly, the draft DA does not include the necessary TEG recommendation on excluding burning refuse-derived fuel (RDF) in cement plants.
Positively the draft DA follows the TEG recommendation on the ETS Benchmark threshold.

Technical assessment:

The draft DA follows the TEG recommendation on the threshold at or below the ETS Benchmark, which is positive.

The draft DA adds text on CCS, stating that '*Where CO2 emitted from the manufacturing process is captured, the CO2 is transported and stored underground, in accordance with the technical screening criteria set out in sections 5.10 and 5.11 of this Annex*".

However, the DNSH safeguards do not include criteria for CO2 capture and storage, nor is applicability mentioned when CCS is used.

The draft DA rightly excludes waste incineration, but **problematically deletes the TEG recommendation to exclude burning refuse-derived fuel (RDF) in cement plants**, duly justified by the TEG: "*co-incineration of RDF has significant impacts on health and environment due to the polluting nature of the associated emissions and may undermine waste minimisation efforts*". RDF is harmful and should be excluded, particularly as it increases waste incineration, therefore undermining the 'circular economy' objective. For more detail on RDF / co-incineration see here.

Further the DNSH criteria for Circular Economy and Pollution Prevention criteria are not adequate. The DNSH criteria for Pollution Prevention should be reviewed to refer to the following 'Ensure emissions to air, water and soil are prevented / minimised by employing the techniques included in the reference documents for the Best Available Techniques (BAT)' – so-called BREF(s) – concerning the activity in question. The Emission Limit Values set should be in line with the lower end of the BAT-AEL ranges included therein and set for "new installations" so to reflect true state of the art performance. Further the current CLM BREF (2013) already set out an energy consumption level of 2900MJ/clinker, this should be required as a minimal expectation. Reducing the cement to clinker ratio can also provide significant GHG emissions savings from concrete production. Mineral additives may allow substitution levels up to 70%.

Recommendation:
- The draft DA needs to follow the TEG recommendation to exclude refuse-derived fuel;
- In addition the DNSH criteria for Pollution Prevention should be improved as recommended above.

For more information, please contact:
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Christian Schaible, EEB, christian.schaible@eeb.org (pollution prevention criteria)

3.7. Manufacture of aluminium

Overall Assessment:

The draft DA criteria are largely aligned with the TEG recommendations, which are satisfactory.

Technical assessment:

The TEG recommended the manufacture of primary aluminium to meet ALL of the following three criteria:

1. Direct emission for primary aluminium production needs to be at or below the value of the related EU-ETS benchmark and calculated using the EUT ETS benchmark methodology = 1.514 tCO2e/t;
2. Electricity consumption for electrolysis is at or below: 15.29 MWh/t, which was the June 2019 European average emission factor, according to the International Aluminium Institute, 2017. This figure would be updated annually;
3. Average carbon intensity of the electricity that is used for primary aluminium production (electrolysis) is at or below 100 g CO2e/kWh. This figure was subject to update.

The draft DA introduces a minimal change since its criteria integrate direct and indirect emissions in one threshold rather than three: "*the sum of direct and indirect emissions must be lower than [xxx] tCO2/t*" and links this threshold to the top 10% of installations under new ETS data plus the substantial contribution criteria for electricity generation (100g CO2/kWh) multiplied by the average energy efficiency of aluminium manufacturing (15.5 MWh/t Al)].

However the DNSH criteria on pollution prevention is not adequate and should be improved as follows:

- Only environmental performance that is either equal or better than the stricter "new" installations BAT-AE(P) may be eligible. (The Non-Ferrous Metals (NFM) BREF is outdated)
- Further emission discharge of water pollutants shall meet the Maximum Allowable Concentration (MAC) levels of relevant Priority Substances / priority hazardous substances referred to under the EQS Directive at the discharge point;
- Safety requirements (tailing ponds) should also meet the highest standards for related activities (residues), the operator shall demonstrate full compliance with the BREF on Management of Waste from Extractive Industries, and the Seveso III Directive requirements.

Recommendation: The draft DA is fine.

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Christian Schaible, EEB, christian.schaible@eeb.org (pollution prevention criteria)

3.8. Manufacture of iron and steel

Overall Assessment:

The draft DA criteria are aligned with the TEG recommendations.

However these recommendations should be improved further: they do not promote the significantly less carbon intensive steelmaking route (Electric Arc Furnace-EAF).

Technical assessment:

The TEG recommendation includes a threshold at or below the ETS Benchmark, and the draft DA follows this recommendation, which is positive.

The draft DA adds text on CCS, stating that ' *Where CO2 emitted from the manufacturing process is captured, the CO2 is transported and stored underground, in accordance with the technical screening criteria set out in sections 5.10 and 5.11 of this Annex*".

However, the DNSH safeguards do not include criteria for CO2 capture and storage, nor is applicability mentioned when CCS is used.

Problematically the draft DA fails to promote the preference in its criteria for secondary steel making through the Electric Arc Furnace (EAF) route with more uptake of renewable-based electricity as first preference. The blast furnace (BF) and basic oxygen furnace (BOF) primary steel making is not sustainable due to its high coking coal input and should not be deemed environmentally sustainable. In general direct reduction primary steel making using fossil fuels should not be eligible. The benchmark should be set on the basis of the best in class EAF route, which achieves CO2 emissions up to 100kg CO2/tonne of steel (the current average is at 200kg CO2/tonne of steel according to industry sources). A switch to green hydrogen-based direct reduction primary steel making could be considered as eligible.

In addition it should be required that the stricter BAT-AEL levels set in the Iron and Steel plant BREF (where differentiated based on "new plants" levels) are implemented, in particular relating to dust (mandatory bag filter use) and addressing diffuse emissions from scrap handling, NOx and SOx. Rigorous fuel inputs controls should be required to prevent fuel inputs with halogen content. Where coke oven gas is used downstream (e.g. ferrous metals processing), the application of BAT 48 ii (wet oxidative desulphurisation) should be required to not exceed a residual hydrogen sulphide level below 10mg/Nm³.

Recommendation: The draft DA should be improved in the following ways:

- The Electric Arc Furnace route based on renewable electricity should be prioritised and the inclusion of steel making through the blast furnace and basic oxygen furnace route avoided (with a potential exception for green hydrogen-based direct reduction route under a transition timeline);
- The stricter BAT-AEL levels set in the Iron and Steel plant BREF should be implemented.

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3.9. Manufacture of hydrogen

Overall Analysis:

Positively, the draft DA improves the TEG recommendation on the threshold.

However it does not exclude fossil and non-renewable manufacture of hydrogen. It is also not clear enough whether upstream emissions (i.e. fugitive methane emissions) are taken into account and how.

Technical Analysis:

The draft DA improves the TEG recommendation on the threshold: it cuts by half the threshold of 5,8 t CO2e/t of hydrogen proposed by the TEG. The current threshold is 80% of the fossil fuel comparator of 94gCO2e/MJ threshold (RED2), i.e. 18,8 gCO2/MJ = 2.256 tCO2eq/tH2 = 0,67gCO2/kWh. A lower threshold would become too low for solar production of hydrogen so is not recommended.

A major question remains about what falls in the new threshold, and on which scientific basis (LCA methodology) upstream emissions (i.e. fugitive methane emissions) are taken into account:

- Throughout the draft DA, 3 methodologies are referred to: recommendation 2013/179/EU (PEF), ISO 14067 and ISO 14064-1. Manufacture of hydrogen is the only activity for which, for life cycle GHG emissions, the draft DA refers to the delegated act of RED II instead of the recommendation 2013/179/EU (i.e. the Product Environmental Footprint - PEF).
- Among the methodologies proposed in the draft DA, the recommendation 2013/179/EU (PEF) would be the preferred one: ISO 14067 is a relative methodology and as such it would only increase complexity (and open many ways for creative accounting). ISO 14067 does not define what 'significantly' means in quantitative terms, while PEF does it (see p. 61), meaning that upstream emissions (including fugitive methane emissions) would be covered.
- The RED II methodology (transport fuels Delegated Act on renewable fuels of non-biological origin) refers only to renewable electricity for the production of renewable (electrolytic) hydrogen. It is overall of good quality, but is not finalised yet.

Recommendations: The draft DA should be improved in two possible ways:

- Any fossil and non-renewable manufacture of hydrogen should be excluded from the draft DA: in that sense it would be relevant to only focus on the methodology referred to in the delegated act of RED II.
- If this is deemed impossible at this stage, i.e. if another methodology has to be referred to, it should be PEF and not ISO 14067, to account for upstream emissions and life-cycle GHG emissions. Indeed upstream emissions must be taken into account.

For more information, please contact:
Rita Tedesco, ECOS, rita.tedesco@ecostandard.org

3.13. Manufacture of organic basic chemicals

Overall assessment:

The exclusion of food or feed crops as bio-based feedstock for the manufacture of organic basic chemicals in the draft DA is positive.
However the draft DA weakens the requirement for 'substantially lower' GHG emissions.

Technical assessment:

The TEG recommendation demanded “substantially lower” GHG emissions, while the draft DA asks only for “lower” emissions, which is negative and is inconsistent with the main criteria of the EU taxonomy, the ‘substantial” contribution to climate mitigation. The emissions thresholds consist in the top 10% installations based on data used to establish the EU ETS 2021-2026.

Positively, the draft DA explicitly excludes food or feed crops as bio-based feedstock for the manufacture of organic basic chemicals.

However, a significant shortcoming is that the draft DA does not exclude the production of certain groups of chemical substances which have intrinsic hazard properties and/or are problematic due to specific end use phases. Promoting the production of certain organic chemical groups will not achieve the zero pollution and toxic free environment strategy and should therefore be excluded from the taxonomy. The draft DA should exclude:

- Aromatics;
- Vinyl Chloridemonomer (VCM) production;
- Styrene;
- Furthermore, hazard-based exclusion criteria should be laid down. The taxonomy should exclude the production of certain chemicals of concern i.e. any substance meeting the criteria of Substances of Very High Concern (SVHC) under the EU Chemicals Regulation REACH.

The DNSH criterion on Pollution prevention is not adequate if it does not refer to better compliance than would be achieved by meeting the lower BAT-AEL ranges set in the LVOC BREF / or for “new plants”. Where steam crackers are in operation (lower olefin crackers) those are required to be fitted with SCR and NOx levels should be below 65mg/Nm³. In addition it should require the operator to comply with the 12 Green Chemistry principles as a minimum and demonstrate compliance with the 10 golden rules on sustainable chemicals.

Recommendation:

- The draft DA should follow the TEG recommendation for ‘substantially lower’ emissions;
- The draft DA should exclude the production of certain groups of chemical substances which have intrinsic hazard properties and/or are problematic due to specific end use phases (see above);
- The DNSH criterion on Pollution prevention should be improved (see above).

For more information, please contact:
Marjolein van Dillen, Change Finance, mvandillen@hotmail.com
Christian Schaible, EEB, christian.schaible@eeb.org (pollution prevention criteria)

3.14. Manufacture of anhydrous ammonia

Overall Assessment:

The draft DA moves from a clear quantitative threshold to a best-in-class approach: this is weaker than the TEG recommendation.

Technical assessment:

The TEG report recommended that manufacturing of ammonia should be eligible if the two following thresholds are met:

- Scope 1 emissions lower than 1 tCO2/t ammonia;
- Combined CO2 emissions (scope 1 emissions and scope 2 emissions, from electricity consumed) lower than 1,3 tCO2/t ammonia.

The draft DA requires instead that GHG emissions from the manufacture of ammonia are lower than the average value of the top 10% of installations based on the data collected in the context of establishing the EU ETS industrial benchmarks for the period of 2021-2026 and calculated in accordance with the methodology for setting the benchmarks set out in Directive 2003/87/EC.

Problematically, this is weaker than the TEG recommendation, and more complex and burdensome to assess.

Recommendation: The draft DA should reinstate the TEG's quantitative thresholds.

For more information, please contact:
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3.16. Manufacture of plastics in primary form

Overall analysis:

The draft DA weakened the TEG recommendations in several ways. The draft DA has excluded a value chain approach, which would have helped to account for midstream use of the product. TEG criteria on single-use plastics were not included in the draft DA.

Furthermore, the draft DA's treatment of chemical recycling is problematic.

Technical analysis:

The TEG recommendations are weakened on four points in the draft DA:

- The criteria on reducing single-use plastics are not included in the draft DA;
- The TEG had recommended a 'value chain' approach which includes a maximum threshold related to the use of plastics in single-use products downstream. It created a very useful precedent by introducing a rare concern for the fate of the intermediate product into the taxonomy. Problematically this is not included in the draft DA;
- The TEG specified on the circular economy Do No Significant Harm criteria: "*Independent sector study confirms that at least 90% of the type of plastic manufactured is not used for single use consumer products*". This is not included in the draft DA. This should be maintained to ensure that the inclusion of manufacturing of plastics in primary form is coupled with consideration of the fate of the product and phase-out of unnecessary single-use plastic in line with the Directive on the reduction of the impact of certain plastic products on the environment (SUP Directive).
- Manufacturing of plastic from renewable feedstock or by recycling is currently listed under 'Manufacture of plastics in primary form'. It should be clarified that this should only refer to the manufacturing process of plastic itself and not to the pre-processing steps, such as development of feedstock or monomers through chemical recycling, which are more accurately categorised as 'waste management' instead of 'manufacturing', and should be subject to waste legislation.

New recycling technologies such as **chemical recycling of plastics** should only be supported if they ensure a substantial positive environmental performance compared to primary plastic manufactured from virgin fossil fuel feedstock, over their full life cycle : guidelines to assess and compare GHG emissions are required for chemical recycling of plastics. In addition the chemical recycling of plastic waste must not compete with mechanical recycling which is ecologically friendlier: it should therefore only be used in the production of plastics if it is advantageous in terms of the ecological balance both compared to the production of primary plastics and compared to mechanical recycling, provided that mechanical recycling is technically possible for the corresponding waste. Moreover, a criteria should be added to ensure that

chemical recycling should be used to deal with degraded and contaminated plastics and not with plastics coming from separate collection.

For **assessing GHG emissions**, it is important that there are clear and specific guidelines to allow for comparability and consistency. The draft DA refers to three potential guidance documents to assess GHG emissions (Commission Recommendation 2013/179/EU, ISO 14067 or ISO 14064-1). Life cycle assessment methodologies should be favoured in the draft DA as the Taxonomy regulation emphasizes such an approach: this is primarily the PEF methodology (Product Environmental Footprint, Commission Recommendation 2013/179/EU) or alternatively ISO 14067 (although less specific than the PEF so relatively weaker). The reference to ISO 14064-1 should be deleted as its scope differs, applying to organisations rather than to products.

Recommendations:

- The TEG recommendations need to be reinstated in the draft DA for single-use plastics;
- The draft DA should strengthen the TEG criteria on chemical recycling: mechanical recycling should be favoured over chemical recycling wherever possible; chemical recycling should be classified in the 'waste management' activities, not under plastic manufacturing. Criteria should prevent separately collected plastic waste being used for chemical recycling;
- For assessing GHG emissions, life cycle assessment methodologies should be favoured in the draft DA, referring to the PEF methodology.

For more information, please contact:
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4. ENERGY

- **The emissions threshold of 100gCO2e/kWh has been kept for most sources of power generation. However, the draft DA has removed the TEG proposal for a 5-yearly declining threshold to 0CO2e/kWh by 2050. The TEG recommendation should be reinstated in full.**
- **The draft DA has removed most criteria around methane leakage monitoring for energy activities in DNSH to climate change mitigation for energy. The TEG recommendations should be reinstated in full.**
- **The draft DA has also changed the DNSH threshold for electricity production. The TEG proposed 262gCO2/kWh based on life cycle emissions with reference to the regional average as set by the IEA, while the draft DA has proposed 270gCO2/kWh direct emissions. The TEG recommendation's reference to the IEA regional average should be reinstated to ensure the long-term and continuous relevance of the sustainable finance taxonomy. An absolute metric, as the one proposed, will not ensure regular reviews and will jeopardize the climate impact credibility of the taxonomy. Additionally, the included specification of "direct emissions" excludes important indirect emissions from the accounting. This would mean that for fossil gas plants, for example, emissions resulting from the extraction and transportation would be excluded from emission accounting.**

4.1 Electricity generation using solar photovoltaic technology

Overall Analysis:

The draft DA weakened the TEG recommendations: it removes the emission threshold of 100 g and the regular criteria review.
The draft DA also weakens the TEG DNSH criteria on circular economy, and does not include the TEG DNSH criteria for ecosystems.

Technical Analysis:

The TEG threshold of 100g CO2/kWh and provision for it to be declining to net-zero CO2e/kWh are not included: this is problematic as there is no 2050 trajectory anymore to lower lifecycle emissions towards net-zero. In addition, no regular review of the criteria is included either.

The draft DA substantially weakens the TEG DNSH criteria on circular economy, which states that PV panels & associated components should be designed and manufactured for high durability, easy dismantling, refurbishment & recycling. Instead, the draft DA refers to the feasibility of activities and gives no direct motivation for ecodesign & recyclability of solar PV technology.

The draft DA also slightly alters the TEG DNSH criteria on Biodiversity/Ecosystems. While it does refer to Environmental Impact Assessment and Appropriate Assessments (which are already of low ambition), and to the implementation of necessary mitigation measures, it does not ensure these are done to a high standard.

To ensure a high standard, it should require alignment of the Appropriate Assessments with the conservation objectives of the Birds and Habitats Directive. For biodiversity-sensitive areas this includes creating a site-level biodiversity management plan and ensuring that a robust, appropriately designed, and long-term biodiversity monitoring and evaluation programme exists and is implemented - which is crucial as it is rarely done.

Finally, the draft DA should reintroduce the TEG's strict criteria for third countries (iethe mention of '...whatever stricter'.), which the TEG had originally proposed but are weakened in the DA.

Recommendations: The draft DA should follow the TEG recommendations:

- Reinstate the 100g emissions threshold, provision for it to be declining to net-zero CO2e/kWh and regular review of the criteria;
- Follow the TEG recommendations on DNSH criteria for the Circular Economy and Biodiversity/ Ecosystems objectives.
- Add to the TEG's recommendations on DNSH criteria for the Biodiversity/Ecosystems objectives a requirement to align with the Birds and Habitats Directives' conservation objectives.

For more information, please contact:

Verena Bax, Michael Jedelhauser, NABU, verena.bax@nabu.de

4.2. Electricity generation using concentrated solar power (CSP) technology

Technical Analysis:

The emissions threshold of 100g CO2/kWh not mentioned in the draft DA, while it was a TEG recommendation. This is not good but not a major issue for CSP, which is well below the threshold already.

The draft DA does not include TEG wording on declining threshold of 100gCO2/KWh with a review every five years.

Recommendation: The draft DA should follow the TEG recommendations:

- Reinstate the emissions threshold;
- Reinstate regular review of emissions threshold.

For more information, please contact

Malte Hessenius (Climate & Company) malte@climcom.de

4.3. Electricity generation from wind power

Overall analysis:

The draft DA slightly weakens the TEG recommendations. However it improves the TEG DNSH criteria on Biodiversity/Ecosystems and on Circular Economy.

Technical Analysis:

The **emissions threshold** of 100g CO2/kWh is not mentioned in the draft DA while it was a TEG recommendation. This is negative as all TEG emission thresholds should have been kept - but not a major issue for wind power specifically, which is well below the threshold.

The draft DA improves the TEG **DNSH criteria on Biodiversity/Ecosystems** with general provisions for offshore wind energy, compliance with the Marine Strategy Framework Directive, and provisions and criteria for good environmental status for marine waters.

The draft DA improves the TEG **DNSH criteria for Circular Economy** by asking for an assessment of the availability of, and use where feasible, of long-lasting & recyclable equipment. The TEG had asked to

maximise recycling based on waste management plans, and to state dismantling/decommissioning processes.

Recommendation: The draft DA should follow the TEG recommendations:
- Reinstate the emissions threshold;
- Reinstate regular review of emissions threshold;

Furthermore, the improved wording on DNSH criteria for Ecosystems and Circular Economy should be maintained.

For more information, please contact
Verena Bax, NABU, verena.bax@nabu.de

4.4. Electricity generation from ocean energy technologies

Overall analysis:

The draft DA removes the declining emissions threshold. However it improves the DNSH criteria for Biodiversity/Ecosystems and Circular Economy.

Technical Analysis:

The emissions threshold of 100g CO2/kWh is not mentioned in the draft DA, while it was a TEG recommendation. This is negative but not a major issue for ocean energy technologies at this very early stage.

On **biodiversity**, this activity must be surveilled carefully, as significant development can be expected that might harm marine biodiversity.

The draft DA improves the TEG **DNSH on Biodiversity/Ecosystems** by adding general provisions for offshore wind energy, compliance with the Marine Strategy Framework Directive, and provisions and criteria on good environmental status of marine waters.

As with wind power, the draft DA improves the TEG **DNSH recommendations for Circular Economy** by asking for an assessment of the availability of, and use where feasible, of long-lasting & recyclable equipment. The TEG had asked to maximise recycling based on waste management plans, and to state dismantling/decommissioning processes.

Recommendation: The draft DA should follow the TEG recommendations:
- Reinstate the emissions threshold;
- Reinstate regular review of emissions threshold;

Furthermore, the improved wording on DNSH for Biodiversity/Ecosystems and Circular Economy should be maintained.

For more information, please contact
Verena Bax, NABU, verena.bax@nabu.de

4.5. Electricity generation from hydropower

Overall Analysis:

Most problematically the draft DA ignores one TEG critical recommendation on excluding all small hydropower plants; it also ignores the requirement for a regularly declining emissions threshold.

Technical analysis:

The draft DA fails to protect already heavily fragmented freshwater ecosystems from further hydropower development. It weakens the TEG recommendations on two key points:

- The DA removes the TEG recommendation that "*construction of **small hydropower (<10MW)** should be avoided*." Instead of following this recommendation, the draft DA uses a power density (facility capacity / reservoir surface area) threshold of 5 W/m2, which rules out less efficient plants, but very problematically does not apply to derivation plants, which are very frequent in Europe and come with high environmental impacts.

  150 NGOs have asked that the DNSH criteria clearly state that no new hydropower plants should be built in Europe. At the very least, this means reintegrating the TEG recommendation that in Europe "*construction of small hydropower (<10MW) should be avoided*."

- In addition, the draft DA should reintroduce the TEG recommendation to reduce the emission threshold every 5 years in line with a net-zero CO2e in 2050 trajectory.

In addition, the draft DA should refer more clearly and consistently to the **Water Framework Directive (WFD) in the Do No Significant Harm criteria on water** regarding the operation of existing plants. It should stress that all necessary mitigation measures should be implemented to reach good ecological status or potential, as required by the Water Framework Directive, without mentioning "technical feasibility".

Recommendation: The draft DA should at least follow the TEG recommendations on:

- Avoiding the construction of small hydropower;
- Reinstate regular reduction of emissions threshold;

And it should refer more clearly and consistently to the Water Framework Directive (WFD) in the DNSH criteria on water regarding the operation of existing plants.

For more information, please contact:
Claire Baffert (WWF) cbaffert@wwf.eu

4.7. Electricity generation from gaseous and liquid fuels

Technical analysis:

The draft DA has followed the TEG's recommendation that life-cycle GHG emissions from fossil fuels should meet a threshold of 100gCO2e/KWh.

This is an important result and the Commission has done very positive work in ensuring this threshold is maintained, as it is the least that should be expected for a credible, science-based taxonomy.

Recommendation: the draft DA is fine and the TEG's recommended 100gCO2/KWh threshold for fossil fuel-generated electricity should be maintained in the final Delegated Act.

4.8. Electricity generation from bioenergy

Important note: the following section also pertains to the following sections:

- **4.13. Manufacture of biogas and biofuels for use in transport**
- **4.20. Cogeneration of heat/cool and power from bioenergy**
- **4.24. Production of heat/cool from bioenergy.**

Overall analysis:

The draft DA contains an unacceptable weakening of the TEG criteria on the activities above.

The DA has deleted the TEG recommendations on the limitation of feedstocks, which, although far from sufficient to exclude types of bioenergy that increase emissions compared to fossil fuels, might have provided marginal help with damage limitation.

Instead, the DA establishes the REDII as the metric for substantial contribution, despite its many obvious flaws when it comes to forest biomass and other types of bioenergy. This means that burning whole trees and dedicated energy crops could count as a green investment, with potentially disastrous consequences for the climate, forests and the EU carbon sink.

Technical analysis:

The TEG recommended that the manufacture of all forms of bioenergy and any heat or power plant that used them only be eligible if they met the criteria set out in **Part A of Annex IX of the Renewable Energy Directive (RED)**.

This was far from what would be required to ensure that all bioenergy delivered climate benefits compared to fossil fuels, because Part A of Annex IX still allows dedicated energy crops and all forms of forest bioenergy short of saw logs and veneer logs (including, potentially, whole trees). However, it would nevertheless have represented a modest improvement on the status quo, in that it would have constituted an explicit recognition that the basic criteria in the RED were not sufficient for something to be considered a 'green' investment and that the solution was the exclusion of specific feedstocks (see further details in annex).

For reasons that are not clear (but we assume are related to intensive lobbying by industry) the Commission has deleted the TEG's provisions and instead (bar a far trivial details) included what it and industry originally promoted during the working group stage, namely a generic cross-reference to the RED. This is a major step backwards, directly contradicts the stated aim of presenting a list of economic activities that can make a substantial contribution to climate change mitigation, and should be vociferously opposed.

Recommendation: The draft DA should follow the TEG recommendations on all activities above. Furthermore, it should commit to further essential tightening of the bioenergy criteria upon the revision of relevant environmental, climate- and energy regulations, particularly the RED.

For more information, please contact:
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Mary Booth, Partnership for Policy Integrity, mbooth@pfpi.net

Note: Partnership for Policy Integrity provided additional analysis, reflecting their position, in the Annex at the end of the document.

4.9 Transmission and distribution of electricity

Technical Analysis:

The draft DA weakens the TEG criteria. It sets four criteria for substantial contribution to climate change mitigation instead of the TEG's two criteria with a 100gCo2e/kWh threshold. In the draft DA, by contributing to the interconnected European system, any transmission and distribution of electricity can avoid the 100 gCo2e/kWh threshold : this loophole must be closed.

Furthermore, activities for construction/installation and operation of equipment and infrastructure, where the main objective is an increase of the generation or use of renewable electricity generation, + direct connection or expansion of an existing direct connection to production plants for infrastructure that is indispensable to carry the associated electricity from the power generation facility to a substation or network (this is then supporting everything but the renewable energy we would want to see).

The biodiversity DNSH criteria is weaker than the TEG recommendation by removal of criteria specifying that underground power lines must avoid routings with heavy impact on marine and terrestrial ecosystems, UNESCO World Heritage Sites and Key Biodiversity Areas.

Recommendation: The draft DA should follow the TEG recommendations.

For more information, please contact:
Verena Bax, NABU, verena.bax@nabu.de

4.13. Manufacture of biogas and biofuels for use in transport

Note: see also analysis provided in section 4.8. 'Electricity generation from bioenergy', that is complementary.

Overall Analysis:

The draft DA is marginally better than the RED because it completely excludes (rather than capping) food and feed based biofuels. But DA is weaker than TEG because it deletes all reference to the 'advanced' bioenergy feedstocks in Part A of Annex IX and does not exclude food and feed based feedstocks for biogas production.

Technical Analysis:

The draft DA goes beyond the Renewable Energy Directive II (RED II) because it does not allow food and feed biofuels to be eligible. Under the RED II, these biofuels can count towards the targets, albeit limited to each EU country's share of food and feed biofuels in the year 2020. Food and feed based biofuels have negative effects and lead to the expansion of the agricultural frontier at the expense of areas such as forests and peatlands - either directly or indirectly. This leads to GHG emissions[1], deforestation, habitat loss and environmental and social impacts. Thus, excluding them completely from the scope of the Taxonomy DA is good news and it improves on what the RED does.

[1] https://www.transportenvironment.org/publications/globiom-basis-biofuel-policy-post-2020

However, quite problematically the draft DA weakens the TEG recommendations: the TEG recommended that only biofuels and biogas made with feedstocks from annex IX part A of RED II be eligible. In the draft DA, however, the Commission has deleted this requirement, instead requiring only that biogas and biofuels manufactured for use in transport comply with the general criteria in the RED. The only difference is that the DA excludes biofuels (but not biogas) produced from food and feed crops, whereas under the RED such biofuels are merely capped at 2020 levels (see above). In this respect alone the DA would represent a marginal improvement on the RED, but it still falls well short of the TEG proposals.

More generally, the draft DA, unlike the TEG, essentially reverts to the basic sustainability criteria in the RED II, and is therefore a step backwards from the TEG proposals - themselves far from sufficient. At a minimum the Commission should reinstate the proposals from the TEG and commit to tightening them further as part of much needed changes to the criteria in the RED itself[2]. These changes should include: a robust application of the waste hierarchy, to ensure that the feedstocks are really wastes/residues and are not being taken away from other industries which might be using them; the performing of a robust impact assessment of the domestic availability of the feedstocks before their promotion in the advanced biofuels industry; accounting for indirect emissions including forgone sequestration and displacement effects as part of any decision on the inclusion or exclusion of feedstocks from the list in Annex IX Part A; ensuring sustainable removal rates for any agricultural and forestry residues categorised as advanced biofuels, ensuring proper soil quality without utilising unsustainable fertilisers; and ensuring strong verification and monitoring schemes to ensure that feedstocks are sourced sustainably.

Recommendation: The absolute minimum is to reinstate the full recommendations of the TEG, and commit to tightening the sustainability criteria for advanced biofuels further as part of the planned revision of the RED in 2021.

For more information, please contact:
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Alex Mason, WWF European Policy Office, amason@wwf.eu

4.16. Installation of electric heat pumps

Overall Analysis:

The TEG recommendation was weak. TEG first draft set 'Global Warming Potential' threshold at 10, whereas the TEG report set it at 675. This is worse than existing policy: the EU F-Gas Regulation, which will be updated next year, sets a GWP threshold of 150. The taxonomy's 'substantial contribution' threshold should go beyond existing regulation - certainly not beneath it.

Technical Analysis:

The DA follows the recommendations of the TEG (change compared to the TEG first draft).
But the criteria are bad.

Although they play a central role in the decarbonisation of the heating sector, electric heat pumps contain fluorinated gases as refrigerants that can undermine emission savings in case of leakage and release into the atmosphere. It is therefore important that the global warming potential (GWP) of refrigerants is low or equal to zero. Alternatives with low GWP (for example propane, GWP = 3) exist and are widely applied in the heat pump sector. Since the first draft by the TEG, the GWP threshold was multiplied by 67,5, raising from a GWP equal or lower than 10 to a GWP equal of lower than 675.

[2] https://www.transportenvironment.org/publications/red-ii-and-advanced-biofuels

Although there are no placing-on-the-market restrictions for heat pumps, the new threshold is much worse than the bans applied to similar products to 2022 by the EU F-Gas Regulation (e.g. commercial refrigerators using refrigerants with GWP < 150 will no longer be allowed on the EU market as from 2022).

The Commission is currently preparing the proposal for a revision of the EU F-Gas Regulation to be published at the end of 2021. The revision initiative will seek to raise ambition in line with European Green Deal and increase the HFC phase-down ambition in line with technological development: it is likely that the current thresholds would be even more ambitious than the current Regulation. The EU Taxonomy should not go below the ambition of an already existing policy.

The current proposal is not based on science, or on the availability of well working very low GWP alternatives, but on industry lobbying (675 is the GWP of a refrigerant manufactured by Daikin, a commercial giant in that world). Refrigerant industries should rather align their production to already existing, technologically-ready and climate-friendly alternatives, such as natural refrigerants, rather than lobbying to have their outdated products be considered as sustainable.

Recommendation: The draft DA should go beyond the TEG recommendations and change the GWP threshold from 675 to 10 (as proposed in the TEG's first draft), as these low warming potential alternatives exist and are widely used.

For more information, please contact:
Mathilde Crepy, ECOS, mathilde.crepy@ecostandard.org
Peter Sweatman, ClimateStrategy,info@climatestrategy.es

4.20. Cogeneration of heat/cool and power from bioenergy

See analysis provided in section 4.8. 'Electricity generation from bioenergy' above.

4.24. Production of heat/cool from bioenergy

See analysis provided in section 4.8. 'Electricity generation from bioenergy' above.

6. TRANSPORT

6.1 Passenger interurban rail transport

Technical analysis:

The draft DA removes the TEG emissions threshold of 50 g CO2/vkm. There are no specific norms for trains without zero emission infrastructure, and conventional engines are allowed. This is very problematic.

Problematically bi-mode trains are allowed (point (b): '*the trains and passenger coaches have zero direct tailpipe CO2 emission when operated on a track with necessary infrastructure, and use a conventional engine where such infrastructure is not available (bimode)'*). This means that a passenger or freight train with a hybrid powertrain, which uses the overhead lines above the rail tracks to propel an electric motor when available and a conventional diesel engine on non-electrified parts of the network, is defined as environmentally sustainable. In the case of the currently non-electrified track sections where train movements and service frequencies are too low, battery electric and hydrogen fuel cell trains can offer a cheaper solution compared to equipping those sections with overhead lines.

Therefore, the correct options should be: 1) battery electric train, if the non-electrified 'islands' aren't too long, or 2) alternatively hydrogen fuel cell electric trains. Both of them have zero direct tailpipe emissions, so fall under point (a) ('*the trains and passenger coaches have zero direct (tailpipe) CO2 emissions'*).

Recommendation: The draft DA should follow the TEG recommendations, reinstate the TEG emissions threshold of 50 g CO2/vkm, and point (b) should be deleted in the draft DA.

For more information, please contact:
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Marjolein van Dillen, Change Finance, mvandillen@hotmail.com

6.2 Freight rail transport

Technical Analysis:

The draft DA removes the TEG emissions threshold of 50 g CO2/vkm. There are no specific norms for trains without zero emission infrastructure, and conventional engines are allowed. This is very problematic.

Problematically bi-mode trains are allowed (point (b): '*the trains and passenger coaches have zero direct tailpipe CO2 emission when operated on a track with necessary infrastructure, and use a conventional engine where such infrastructure is not available (bimode)'*). This means that a passenger or freight train with a hybrid powertrain, which uses the overhead lines above the rail tracks to propel an electric motor when available and a conventional diesel engine on non-electrified parts of the network, is defined as environmentally sustainable. In the case of the currently non-electrified track sections where train movements and service frequencies are too low, battery electric and hydrogen fuel cell trains can offer a cheaper solution compared to equipping those sections with overhead lines.

Therefore, the correct options should be: 1) battery electric train, if the non-electrified 'islands' aren't too long, or 2) alternatively hydrogen fuel cell electric trains. Both of them have zero direct tailpipe emissions, so fall under point (a) ('*the trains and passenger coaches have zero direct (tailpipe) CO2 emissions'*).

Recommendation: The draft DA should follow the TEG recommendations, reinstate the TEG emissions threshold of 50 g CO2/vkm, and point (b) should be deleted in the draft DA.

For more information, please contact:
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6.3 Urban, suburban and road passenger transport

Technical Analysis:

Only zero emissions vehicles are eligible, which is positive.

Recommendation: The draft DA is fine.

For more information, please contact:
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6.4 Operation of personal mobility devices

Technical Analysis:

This is an additional category, explicitly naming human powered vehicles as an option besides electric transport, which is positive. This includes bikes which were not covered by the TEG recommendations.

Recommendation: The draft DA is fine and should be maintained.

For more information, please contact:
Luca Bonaccorsi, Transport & Environment, luca.bonaccorsi@transportenvironment.org
Marjolein van Dillen, Change Finance, mvandillen@hotmail.com

6.5 Passenger cars and commercial vehicles

Technical Analysis:

The draft DA fellows the TEG recommendation.

Recommendation: The draft DA is fine.

For more information, please contact:
Luca Bonaccorsi, Transport & Environment, luca.bonaccorsi@transportenvironment.org

6.6 Freight Transport services by road

Technical Analysis:

The draft DA improves the TEG recommendation. Low-emission vehicles and biofuels are not eligible anymore, which is positive.

Recommendation: The draft DA is fine and should be maintained.

For more information, please contact:
Luca Bonaccorsi, Transport & Environment, luca.bonaccorsi@transportenvironment.org

6.7 Inland passenger water transport

Technical Analysis:

The draft DA removes the TEG threshold for vehicles with tailpipe emission intensity of 50 g CO2/km to be eligible until 2025, without setting norms that would exclude conventional engines. Furthermore, it introduces a limitation of 50% of the fuel mass that allows, essentially, the use of biofuels until 2025.

This is completely misaligned with the Paris Agreement's objectives and risks encouraging 'business as usual' in the transport sector being counted as sustainable.

Recommendation: The draft DA should follow the TEG recommendations.

For more information, please contact:
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Marjolein van Dillen, Change Finance, mvandillen@hotmail.com

6.8 Inland freight water transport

Technical Analysis:

The draft DA introduces extremely unambitious targets requiring vessels to be 50% more efficient than heavy-duty vehicles (HDV). This refers to trucks' energy efficiency - which is a criterion that is extremely easy for water vessels to meet. In doing so, the draft DA essentially labels as green most vessels.

CE Delft average emission factor for the medium-weight bulk and container category of the largest type (large Rhine vessel) is 14 and 15 gCO2e/tkm. Preliminary certification data from ACEA for HDVs subgroup 5-LH indicates average reference emissions of 56.5 gCO2/tkm. This means that the proposed standard would be worse than existing efficient diesel barges.

Given that alternative technologies are already available and that the taxonomy's purpose is to steer investments in this more sustainable direction, we strongly recommend that, consistently with what is defined for land freight (trucks), the minimum emission reduction required should be 50% when compared to the most efficient existing vessels (7 gCO2/tkm).

Recommendation: The DA should either increase its threshold requirement from 50% to 90% more efficient than Heavy Duty Vehicles L-5 or replace it with a benchmark with emission levels of best-performing existing vessels.

For more information, please contact:
Luca Bonaccorsi, Transport & Environment, luca.bonaccorsi@transportenvironment.org
Marjolein van Dillen, Change Finance, mvandillen@hotmail.com

6.9 Retrofitting of inland water passenger and freight transport

Technical Analysis:

The draft DA adds a new activity which does not respect the TEG recommendation that emissions be 50% lower than average HDVs. The draft DA only requires that any 10% reduction in fuel consumption should be made eligible, which is extremely weak.

Recommendation: The draft DA needs to follow the TEG recommendation.

For more information, please contact:
Luca Bonaccorsi, Transport & Environment, luca.bonaccorsi@transportenvironment.org
Marjolein van Dillen, Change Finance, mvandillen@hotmail.com

6.10 Sea and coastal freight water transport (new activity compared to TEG) & 6.11. Sea and coastal passenger water transport

Overall Analysis:
The draft DA inserts an activity which was not analysed by the TEG and sets extremely low thresholds. This looks like an attempt by sectoral interests to include their activities without undergoing a rigorous assessment process. The activity should be removed from the draft DA and analysed by the Platform on Sustainable Finance to avoid greenwashing.

Technical Analysis:

The draft DA includes **very weak criteria on substantial contribution**, amounting to **alignment with existing regulation**.

The draft DA requires **50% of fuel "by mass"** as opposed to 50% Well-to-Wheel (WTW) emissions reduction per "total energy energy used". This is extremely weak and would even allow biofuels that simply meet the EU's sustainability criteria to be used.

Point c) requires coastal ships to be more than **50% below the EEDI standard** (which are design CO2 standards), when most coastal ships already are. It is illogical to claim that a standard which has already been widely reached by the market should count as 'substantial contribution'.

Point d), which states that ships which meet the **2022 EEDI** standard should qualify for the taxonomy until end-2025 is similarly weak: many ships already over-achieve the 2022 EEDI standard today, and some manage this by a considerable margin without even taking up new innovative technologies.

Recommendation: The activity was not analysed with due care by an expert group. It must be removed from the draft DA and analysed by the Platform on Sustainable Finance.

For more information, please contact:
Luca Bonaccorsi, Transport & Environment, luca.bonaccorsi@transportenvironment.org

6.11. Sea and coastal passenger water transport

See analysis provided in section 6.10.

6.13. Infrastructure for personal mobility

Technical Analysis:

The draft DA uses a different wording from the TEG recommendations, with more attention for active mobility.

It uses different NACE codes (now including F71.1 &71.20). It is unclear whether zero emissions infra (charging points, hydrogen fuel stations, etc) would still be included.

The draft DA does not include the TEG recommendation "Infrastructure dedicated to transport of fossil fuels is not eligible", which is negative: this is not consistent with the exclusion of fossil fuels in the draft DA.

Recommendation: The draft DA should include the TEG recommendation to exclude infrastructure dedicated to transport of fossil fuels.

For more information, please contact:
Marjolein van Dillen, Change Finance, mvandillen@hotmail.com

6.14. Infrastructure for rail transport

Technical Analysis:

The draft DA improves the TEG recommendations for electrified rail and "*non-electrified rail infrastructure with an existing plan for electrification or use of alternatively powered trains*". The former remained and the latter is addressed by a clearer formulation in point 1 a (i) and 1 a (ii) ("*trackside infrastructure and associated subsystems where there is a plan for electrification or the infrastructure will be fit for use by zero tailpipe CO2 emission trains within 10 years from the beginning of the activity*").

However, the draft DA adds two more criteria (1b and 1c), which broaden the scope and include infrastructure dedicated to transferring freight or passengers from other modes to rail. While infrastructure for freight (1b) is relatively precisely addressed (*terminal infrastructure and superstructures for loading, unloading and transhipment of goods*), the wording for infrastructure dedicated to transfer passengers from other modes to rail (1c) remains vague. The latter could open a loophole for various types of roads (e.g. roads connecting airports and train stations or any roads that are in proximity to a train station).

Infrastructure related to the transport of fossil fuels is still explicitly excluded.

Recommendation: The draft DA should delete the point (c) which is as of nows a carte blanche to roads in proximity to a train station or airport.

For more information, please contact:
Malte Hessenius, Climate&Company, malte@climcom.de

6.15. Infrastructure enabling low-carbon road transport

Technical Analysis:

The draft DA slightly improves the vague phrasing of the TEG ("*infrastructure predominantly used for low-carbon transport*"), that is clarified as follows:

a) infrastructure dedicated to zero CO2 emissions vehicles (electric charging points, hydrogen fuelling station, ...);
b) infrastructure dedicated to transhipment freight between modes,
c) dedicated to public passenger transport.

Infrastructure related to the transport of fossil fuels is explicitly excluded.

Recommendation: The draft DA is fine.

For more information, please contact:
Malte Hessenius, Climate&Company, malte@climcom.de

7. CONSTRUCTION AND REAL ESTATE ACTIVITIES

7.1. Construction of new buildings

Technical Analysis:

The draft DA introduces a minor change compared to the TEG recommendation: two additional requirements for buildings larger than 5000 m2 - both seem to be related to transparency issues only.

However, the draft DA changed the **DNSH criterion on water resources**:

- The TEG recommended the use of the industry-led 'European water label'; the draft DA no longer refers to this label, which is positive;
- The draft DA requires further improvements on the proposed DNSH criterion, on indent (a) on water flow of installed taps and showers. The measurement of water flow rates and some technical parameters indirectly related to the functional performance of showers (spread area and spray force from showers) are available for taps and showers.
  Put simply, if taps and showers have no pressure, they might end up using more water for the same rinsing activity.
  A new European standard on the measurement of functional performance for taps and showers is underway and will enable the measurement of water flow with efficiency aspects. NGOs have long called for the development of such a robust methodology. The draft DA should make reference to this issue, as these additional elements will contribute to the combined energy and water savings and related costs benefiting consumers in particular.

Recommendation: The draft DA should include actual environmental performance indicators and request further amendments to point (a) of the water resource related DNSH criterion, so as to include the performance and functionality aspect of taps and showers. Concretely, we propose the following addition to indent (a):

> "In addition to the water flow, functional performance aspects shall be included, such as:
>
> 1. energy consumption per time unit: for example [kWh/s] or [kWh/min];
> 2. rinsing performance: for example the time to perform a rinsing activity [s] for taps (including washbasins, kitchen, bidets);
> 3. water and energy efficiency: for example, water and energy consumption associated to certain activities, against a standard benchmark;
> 4. performance of time flow regulators (automatic closure of water flow after fixed time)".

For more information, please contact:
Mathilde Crepy, ECOS, mathilde.crepy@ecostandard.org

7.3 Installation, maintenance & repair of EE equipment

Technical Analysis:

The draft DA includes the "installation and replacement of heating, ventilation and air-conditioning (HVAC) and water heating systems, including equipment related to district heating services, with highly efficient technologies'.

This is an improvement on the TEG recommendations, which specifically mentioned condensing boilers, which was completely inconsistent with climate neutrality.

However, it still leaves space for highly efficient fossil fuel heating systems, coming from a coal boiler, a condensing boiler is highly efficient. Furthermore, there is a risk that gas fired district heating could be eligible.

Point d) is problematic as it risks including fossil fuel heaters (including condensing boilers) as well as portable air conditioners, which are the least efficient. These should be explicitly excluded.

Recommendations: the draft DA:

- Improves recommendations on condensing boilers, which is positive and should be maintained;
- Should tighten criteria to prevent the risk that fossil fuel heating systems and gas-fired district heating are included;
- Should explicitly exclude fossil-fuel heaters, such as condensing gas boilers and air conditioners.

8. INFORMATION AND COMMUNICATION

8.1. Data processing, hosting and related activities

Technical Analysis:

The draft DA essentially mirrors the TEG recommendations but adds more detailed requirements on the warming potential of cooling agents. Furthermore, it adds requirements for water use in the DNSH assessment, stipulating that water can be used as a cooling agent. This is a positive development.

We acknowledge major energy saving potential with respect to inefficient data processing and operations. This potential should be researched and addressed by the European Code of Conduct on Data Centre Energy Efficiency in the future, while not hampering the potential of AI and machine learning, which heavily rely on 'big data'.

Recommendation: The draft DA is fine.

For more information, please contact:
Malte Hessenius, Climate&Company, malte@climcom.de
Marjolein van Dillen, Change Finance, mvandillen@hotmail.com

8.2. Data-driven solutions for GHG emissions reductions

Technical Analysis:

The draft DA improves TEG criteria (in the TEG report the activity was ‘per se environmentally sustainable’ if it matched the description). The relevant “ICT solutions” are described in more detail. Plus, a demonstration is required that life-cycle GHG emissions are substantially reduced compared to the best performing alternative on the market.

Recommendation: The draft DA is fine and this improvement should be maintained.

For more information, please contact:
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Marjolein van Dillen, Change Finance, mvandillen@hotmail.com

9. PROFESSIONAL, SCIENTIFIC AND TECHNICAL ACTIVITIES

9.1. Research, development and innovation

Technical analysis:

The draft DA on mitigation defines Research & Innovation as an environmentally sustainable activity : it makes a circular reference to the Annex excluding transition and enabling activities, which is positive. Furthermore, it looks to future solutions which are, over their life-cycle, better than best commercial technologies. This is an improvement of the TEG report, which only dealt with Science R&D in adaptation.

Recommendation: The draft DA is fine and this improvement should be maintained.

Please see more detailed analysis in the Annex at the end of the document.

For more information, please contact:
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III. ADDITIONAL ANALYSIS (NOT BY ACTIVITY)

Nuclear: not included in the draft DA (DA itself, Annex I and Annex II)

Technical analysis:

Recital 16 in the Delegated Act states: "*For nuclear energy, that assessment is still ongoing and the Commission will report on its results in the context of the review of this Regulation*."

Recommendation: The draft DA maintains a separate process for nuclear. NGOs consider that nuclear energy is not environmentally sustainable and are concerned that this tailor-made, separate process may create a dangerous precedent.

For more information, please contact:
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Clarification of whether an activity is 'transitional' or not (new compared to TEG)

Technical analysis:

Positively, the draft DA clarifies systematically whether the considered activity is transitional, enabling or 'own performance': out of 90 activities for climate mitigation:

- 27 are classified as transition (30%)
- 24 are enabling (27%) and
- 39 are 'own performance' (43%).

This was not very clear in the TEG recommendations. Such transparency is relevant and useful.

It also makes clear that the taxonomy is not only 'dark green' (less than half of the activities) and is already addressing the broad transition issue from unsustainable to sustainable business models.

Recommendation: The draft DA is fine and this clarification should be maintained.

For more information, please contact:
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Cross-cutting Do no significant Harm criteria for Biodiversity

On the DNSH for biodiversity/ecosystems (TEG recommendation: EIA + due diligence on Key Biodiversity Areas and Unesco WOrld Heritage Sites), the draft DA uses identical language to the TEG's proposal. These DNSH criteria have been kept everywhere relevant (i.e. 54 our 90 activities), which is acceptable.

However, the draft DA also slightly alters the TEG DNSH criteria on Biodiversity/Ecosystems. While it does refer to Environmental Impact Assessment and Appropriate Assessments (which are already of low ambition), and to the implementation of necessary mitigation measures, it does not ensure these are done to a high standard.

To ensure a high standard, it should require alignment of the Appropriate Assessments with the conservation objectives of the Birds and Habitats Directive. For biodiversity-sensitive areas this includes creating a site-level biodiversity management plan and ensuring that a robust, appropriately designed, and long-term biodiversity monitoring and evaluation programme exists and is implemented - which is crucial as it is rarely done.

Finally, the draft DA should reintroduce the TEG's strict criteria for third countries (i.e. the mention of '...whatever stricter'), which the TEG had originally proposed but are weakened in the DA.

Recommendation: Key DNSH criteria have been kept everywhere relevant (i.e. 54 our 90 activities), which is acceptable. The draft DA should include a requirement to align with the Birds and Habitats Directive's conservation objectives and stronger wording on third countries.

For more information, please contact:
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Ensuring that Adaptation criteria for power and heating are not used as loopholes

By design, the adaptation criteria are broad and take into account the necessary qualitative considerations when determining which economic activities are eligible under the sustainable finance taxonomy. However, the draft DAs as they currently stand do not include sufficient checks and balances to safeguard the climate impact of taxonomy eligible investments under adaptation.

Unclear wording leaves room for creative interpretation of the adaptation criteria, and at worst creates loopholes that enable investments into stranded assets and fossil fuels not in line with the intention of the sustainable finance taxonomy. It threatens to incentivise continued operation of high-emitting activity, delaying a transition to more renewable alternatives. Such investments could in fact be able to claim eligibility under the taxonomy - while improving the activities' business-case and life-span. The loopholes are particularly prevalent in the delegated act sections on energy as it pertains to electricity generation from hydropower, geothermal energy and gaseous and liquid fuels, as well as the transmission and distribution of electricity, the cogeneration and production of heat/cool and power from geothermal, gaseous and liquid fuels.

This is a complex issue, and to illustrate we have chosen the example of a gas power plant facing water stress as a result of climate change (a physical climate risk identified by the DA). As the DAs are currently written, the gas power plant could invest in new turbines and generators under the guise of sustainability and adaptation - prolonging the life-span of the facility. The 270g/kWh DNSH could be reached by burning a share of hydrogen, numbers by the think-tank Ember suggest a share of 20% hydrogen and 80% fossil gas.

Another alternative is to take use of point a) provided in the adaptation significant contribution criteria, setting out that for projects with a life-span below 10 years, reduced climate projections should be used. As it stands, it is possible that a *planned* shift to low-carbon activity in 10 years could make the project eligible for stated reduced climate projections under point a). This would lead to the activity meeting the 270g/kWh threshold for adaptation, effectively making investments which prolong the life-span of unabated fossil fuels eligible under the taxonomy. The susceptibility of gas infrastructure here being excluded from the taxonomy on the grounds of lock-in is put into question as a gas power plant could claim to be suitable to transport/use hydrogen in the future.

Recommendations:

- The DA should ensure that the DNSH criteria of 270g/kWh is linked with the European electricity carbon intensity average by the IEA, as recommended by the TEG;
- The language included in the adaptation criteria should be reviewed closely to identify potential loopholes, and the European Commission should publish a set of guidelines outlining the intent behind the text, as well as how the adaptation criteria should be interpreted and implemented;
- Point a) under the criteria regarding substantial contribution to climate change adaptation should be removed, or at the very least amended to ensure that it cannot incentivise or prolong the life-span of high-emitting activity, delaying its transition and emission reduction.

For more information, please contact:
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GHG emissions accounting methodologies

Overall analysis

The draft DA leaves a lot of choice to taxonomy users regarding the methodology they use to account Greenhouse Gas emissions, which creates real problems from a comparability, consistency and reliability point of view. This needs to be tackled and the draft DA should propose that, for each of these activities, users employ the Product Environmental Footprint (PEF) methodology, the harmonised European way of carrying out a Life Cycle Assessment.

Technical analysis:

For around 15 activities listed in the taxonomy, the delegated act gives 3 options to measure GHG emissions: Commission Recommendation 2013/179/EU (referring to the 'Product Environmental Footprint', the European harmonised way of carrying out a Life Cycle Assessment) or ISO 14067 (the ISO methodology on carbon footprint of products) or ISO 14064-1 (the ISO methodology to account GHG emissions of organisations).

The following activities are subject to this option:

- Manufacture of other low carbon technologies
- Manufacture of chlorine
- Manufacture of organic basic chemicals
- Manufacture of plastics in primary form (both in the climate mitigation and adaptation taxonomy)
- Electricity generation from hydropower
- Electricity generation from geothermal energy
- Electricity generation from gaseous and liquid fuels
- Cogeneration of heat/cool and power from geothermal energy
- Cogeneration of heat/cool and power from gaseous and liquid fuels
- Production of heat/cool from geothermal energy
- Production of heat/cool from gaseous and liquid fuels
- Data-driven solutions for GHG emissions reductions
- Research, development and innovation

The activity ‘Manufacture of hydrogen’ refers in part to other methodologies (in both the annexes on mitigation and adaptation), recommendations on GHG emissions accounting methodologies are made as part of this specific activity.

Depending on the activity, TEG successfully recommended the use of Product Environmental Footprint, ISO 14040, ISO 14067, and the GHG protocol (product standard). The draft DA introduces the (almost) systematic reference to the product environmental footprint, which we welcome. However, the draft DA does still leave a lot of choices to the taxonomy users which is a problem from a comparability, consistency and reliability point of view. This needs to be tackled.

We are concerned that taxonomy users have various options to measure GHG emissions, as these methodologies can (and will likely lead) to very different results, whether the focus is on products, or organisations ; or depending on how prescriptive methodologies are.

First regarding ISO 14064-1, it is not clear to what extent ISO 14064-1 would be applicable or comparable to the other two methodologies since it applies to organisations rather than products. The GHG emission thresholds in the taxonomy are products/activity-thresholds which seem to better fit with the PEF or Carbon footprint.
Therefore, unless the GHG threshold in the taxonomy refers to a single life-cycle stage of the product/activity rather than the life cycle emissions, we recommend the deletion of ISO 14064-1 from the delegated act.

Second, regarding ISO 14067, the methodology is suited to assess life-cycle emissions of products. However, this ISO methodology leaves many methodological choices up to the practitioner, such as the system boundaries, cut-off criteria, allocation methodologies, etc. As a result of all these choices, ISO 14067 carbon footprint results vary significantly.

The Product Environmental Footprint of the European Commission on the other hand, is more prescriptive and harmonises to a great extent Life Cycle Assessment (and hence carbon footprinting exercises).
The PEF method provides for a greater degree of methodological consistency and establishes unambiguous requirements, hence facilitating increased consistency, comparability and reproducibility of results (see Manfredi et al., 2015).

Recommendation:
To avoid the risk of taxonomy users cherry picking the GHG emissions accounting methodology providing the best results, and ensure comparability and consistency in the use of the taxonomy, improve both the DA and the TEG recommendation by requiring the sole use of the product environmental footprint throughout the taxonomy.

For further information, please contact:
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ANNEX. ADDITIONAL TECHNICAL ANALYSIS FOR SPECIFIC ACTIVITIES

3.4. Manufacture of energy efficiency equipment for buildings

The economic activity manufactures one or more of the following products and their key components:
(a) windows with U-value lower or equal to 0.7 W / m 2 K;
In DENMARK: the U-value is only a small factor in the overall approval of windows. Pr. On 1 January 2021, it is only permitted to install energy class A windows, which have an energy balance (Eref) of at least 0 kWh / m2. Eref = gw - Uw (heat supplement - heat loss). To put this in perspective, windows that comply with the requirements of the new subsidy scheme for private homeowners typically have a U-value of between 0.68-0.96 W / m 2 K, cf. the attached positive list prepared by the Danish Energy Agency after a screening of the Danish market. The values must be observed for a reference window of 1.23 x 1.48 m. **A fixed U-value requirement for windows does not really make sense in a Danish context, and can be difficult to comply with for many types of windows, as windows are assessed on the energy balance Eref.**
(b) doors with U-value lower or equal to 1.2 W / m 2 K;
In DENMARK: BR18 requirements per. 1. January 2021: External doors with glass: 1.0 W / m2K. Exterior doors without glass: 0.8 W / m2K. Calculated for a reference door of 1.23x2.18 m
The DA requirement will therefore be met for all exterior doors installed in Denmark after 1 January 2021.
(c) external cladding with U-value lower or equal to 0.5 W / m 2 K;
DENMARK: The building regulations (BR18) set a requirement for a maximum U-value of 0.30 W / m 2 K for exterior walls in new construction. **Typically, the U-values will have to be far below the general minimum requirements for the climate screen in order to meet the energy framework and the requirements for the dimensioning transmission loss.** For renovations, e.g. replacement of the entire facade, the requirement is a maximum U value of 0.18 W / m 2 K . If you simply renovate the facade (and do not replace it), you are only required to make profitable energy improvements. However, in the vast majority of cases it will be profitable to insulate to a better U-value than 0.5 W / m2K if you renovate. **The requirement of 0.5 W / m2K will therefore most often be complied with in Denmark for renovation and always for new construction.**
(d) roofing systems with U-value lower or equal to 0.3 W / m 2 K;
DENMARK: The building regulations (BR18) set requirements for a maximum U-value di of 0.20 W / m 2 K for roof constructions in new construction. Typically, the U-values will have to be far below the general minimum requirements for the climate screen in order to meet the energy framework and the requirements for the dimensioning transmission loss. For renovations, e.g. replacement of the entire roof structure, the requirement is a maximum U value of 0.12 W / m 2 K . If you simply replace the roof surface and not the load-bearing structure, you are only required to make profitable energy improvements. However, in the vast majority of cases it will be profitable to insulate to a better U-value than 0.3 W / m2K if you renovate the roof
Requirements of 0.3 W / m2K will therefore almost always be complied with in Denmark for renovation and always for new construction.
(e) household appliances falling into the top two energy efficiency classes in accordance with Regulation (EU) 2017/1369 of the European Parliament and of the Council 121 ;
The inclusion of (e) household appliances rated in the top 2 energy labelling class is surprising as it covers products such as TVs or tumble driers. These are not necessary items, and investments into the manufacturing of TVs or tumble driers should not be labelled as ‘sustainable’.
(f) lighting appliances rated in the top two energy labeling class in accordance with Regulation (EU) 2017/1369;
This is regulated at EU level and will be uniform in all EU countries
(g) space heating and domestic hot water systems rated in the top energy labeling class in accordance with Regulation (EU) 2017/1369;

This is regulated at EU level and will be uniform in all EU countries

(h) cooling and ventilation systems rated in the top two energy labeling class in accordance with Regulation (EU) 2017/1369;

Note top 2 energy labelling class in Regulation (EU) 626/2011, should exclude single duct air conditioners energy labels as described in Annex III, section 5 of Regulation (EU) 626/2011*;*

DENMARK: BR18 sets requirements for the electricity consumption for air transport in the total ventilation system calculated at the SEL value (J / m3) (does not apply to industrial processes)

- 1,800 J / m³ outdoor air for ventilation systems with constant air output. From 1 January 2021 1,500 J / m3 outdoor air.
- 2,100 J / m³ outdoor air at maximum pressure drop for systems with variable air output. From 1 January 2021 1,800 J / m3 outdoor air .
- 1,500 J / m³ outdoor air at the basic air change for ventilation systems for multi-storey dwellings. From 1 January 2021 1,200 J / m3 outdoor air
- 600 J / m³ at maximum pressure drop for extraction systems without mechanical outdoor air supply .
- In Denmark, the focus is primarily on the overall system in terms of energy consumption and not so much on the units themselves.

(i) presence and daylight controls for lighting systems;

DENMARK: Seen in advance often in current renovations and new constructions. It is on the control of light (daylight and lighting) that more builders really see a saving opportunity, now that lighting has already become effective. Control of the light with zones, sensors etc. is where you can really get a saving. BR18 only requires lighting intensities and that "daylight control, motion detectors and zoning work as intended."

(j) heat pumps compliant with the technical screening criteria set out in Section 4.16 of this Annex;

(k) façade and roofing elements with a solar shading or solar control function, including those that support the growing of vegetation;

DENMARK: BR18 requires overheating. However, this only applies to residential properties. For offices and other things, the client must determine the requirements for overheating (number of hours per year above 26 and 27 degrees, respectively), but often the rules of the Danish Working Environment Authority are used, which state a maximum of 100 hours per year with more than 26 degrees and a maximum of 25 hours above 27 degrees. You therefore often see a form of sun protection (either physically or with a film in the windows which reduces the incidence of light) in order to comply with the requirements and minimize the use of active cooling.

Green roofs and facades can provide some plus points in a DGNB certification

(l) energy-efficient building automation and control systems for commercial buildings;

DENMARK: A lot of building automation is generally used to keep energy consumption down and comply with the energy framework. **So requirements make good sense**

(m) zoned thermostats and devices for the smart monitoring of the main electricity loads for residential buildings, and sensoring equipment;

Makes good sense. One can learn and improve a lot by focusing on energy load over the hours of the day. Probably also in interaction with the energy system of the future with varying prices.

(n) products for heat metering and thermostatic controls for individual homes connected to district heating systems and individual flats connected to central heating systems serving a whole building.

DENMARK: Here we are already quite good in Denmark, at least in relation to thermostats. However, we still lag behind in relation to individual measurement of heat consumption in apartments etc, where most often an area distribution of heat consumption is still made. However, individual heat meters are gaining more and more traction. It is basically also a requirement unless it entails an unreasonable financial burden. And it often does.

For more information, please contact:
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Extended technical analysis by Partnership for Policy Integrity, reflecting their position, for all activities below:

- **4.8. Electricity generation from bioenergy**
- **4.13. Manufacture of biogas and biofuels for use in transport**
- **4.20. Cogeneration of heat/cool and power from bioenergy**
- **4.24. Production of heat/cool from bioenergy**

Burning forest biomass - wood sourced directly from forests - contradicts the TEG report, which states (p. 10) that the goal of the report is to present a "*list of economic activities which can make a **substantial contribution to climate change mitigation** and criteria to do no significant harm to other environmental objectives. It also presents a framework for evaluating substantial contribution to climate change adaptation*."

The report clarifies (page 29) that "*An economic activity shall be considered to contribute substantially to climate change mitigation where that activity substantially contributes to the stabilization of greenhouse gas concentrations in the atmosphere at a level which prevents dangerous anthropogenic interference with the climate system by avoiding or reducing greenhouse gas emissions or enhancing greenhouse gas removals*."

"Forest biomass" does not include mill wastes such as sawdust, offcuts and black liquor. These materials could continue to be used if forest biomass eligibility were ended.

Burning biomass generally emits more CO_2 per unit of useful energy than burning fossil fuels. This basic physical fact means that in order for bioenergy to constitute "a substantial contribution to climate change mitigation" or "adaptation", there must be some way to offset those emissions in a short period of time. Typically, this offset is assumed to occur through regrowth of the feedstock, or, if the feedstock is a waste or residue that would otherwise decompose, the "mitigation" comes from burning it for energy, counting those emissions as essentially equivalent to the emissions that would occur if it were allowed to decompose or be burned without energy recovery, and then assuming that this has displaced some fossil fuel use and thus contributed to less fossil fuel CO_2 in the atmosphere.

The idea that biomass from forests can mitigate climate change based on its regrowth is obviously hugely problematic, as acknowledged in an 2016 impact assessment on bioenergy sustainability by European Commission science staff:
"*compared to crops which regrow over short periods, forest biomass is part of a much longer carbon cycle. A forest stand typically takes between decades and a century to reach maturity. Recent studies have found that when greenhouse gas emissions and removals from combustion, decay and plant growth (so-called biogenic emissions from various biological pools) are also taken into account, the use of certain forest biomass feedstocks for energy purposes can lead to substantially reduced or even negative greenhouse gas savings compared to the use of fossil fuels in a given time period (**e.g. 20 to 50 years or even up to centuries**)*."

The assessment specifically rejected the equivalence of "sustainability" and carbon neutrality:
"*Certain forest management practices can enhance the carbon sink, but ensuring that the harvest level stays below the growth rate of the forest is not sufficient to ensure climate change mitigation*."

Accordingly, this report essentially rejected the premise that "sustainable" use of bioenergy produces carbon neutrality. As this false concept of "sustainability" underpins the RED II biomass criteria, the EC report is essentially saying that the RED II criteria do not ensure biomass produces climate mitigation.

Mitigating climate change requires not only reducing emissions, but also increasing the carbon sink. Here, burning forest biomass again fails to deliver. As the EU Communication on "Stepping up Europe's 2030 climate ambition" states,

"*We need a growing sink in order for the EU to achieve climate neutrality by 2050. Reversing the current trend requires significant short-term action due to long lead times, especially in forestry… However, over recent years the EU's sink has come under pressure from increased economic use and the adverse effects of climate change…* ***There are significant risks for the sink of rising negative impacts from natural hazards such as fires and pests due to a changing climate as well as increasing economic demand for forest biomass, which also negatively affect biodiversity.***"

Here the EU's own communication is making it clear that burning forest biomass fails to meet the SFT criteria for climate mitigation by "enhancing removals." Instead, the communication clearly identifies biomass harvesting as contributing to degradation of the forest carbon sink. It clearly wans that business as usual constitutes a danger to both climate and biodiversity.

In line with this assessment, the TEG correctly recognized that biomass for electricity "*can deliver mitigation benefits, but if done incorrectly can have no net positive impact or even a negative impact*." They recognized that the RED II sustainability and GHG criteria for forest biomass are not capable of ensuring GHG savings, thus to ensure the SFT criteria set a higher standard than business-as-usual, they recommended biomass feedstocks qualifying under the taxonomy be restricted to "advanced bioenergy" feedstocks listed in Annex IX of the RED II. This list includes municipal biowastes, straw, manure, stripped corn cobs, nut shells, and mill residues including bark, sawdust, and black liquor. The list does include wood sourced directly from forests, which is restricted to pre-commercial forest thinnings and "other ligno-cellulosic material except saw logs and veneer logs."

The DA disregarded the TEG's recommendation, supplanting it with criteria for biomass and particularly forest biomass as set out in the RED II. However, the criteria set out in the RED are completely inadequate to deliver climate mitigation and adaptation, as explained in detail elsewhere.

The deficiencies of the RED II are increasingly recognized in light of a number of statements and actions by the EU. For instance, the European Environment Agency's website states: "*Further continued expansion of forest fellings may result in unsustainable production. For instance, an increase in the demand for bioenergy would require an increase in the import of wood from outside Europe in order to allow forest biomass resources to be rebuilt to a sustainable level. However, such displacement of land use is very likely to lead to the collapse of forest resources, in the form of deforestation, in other parts of the world*."

The EU's Biodiversity Strategy acknowledges the problems that have been raised with the current treatment of forest biomass, stating

"*To better understand and monitor the potential climate and biodiversity risks, the Commission is assessing the EU and global biomass supply and demand and related sustainability. As part of its increased ambition to protect and restore forest ecosystems, the Commission will publish the results of this work on the use of forest biomass for energy production by the end of 2020. This will inform the Commission's policy-making, including the review and revision, where necessary, of the level of ambition of the Renewable Energy Directive, the Emissions Trading Scheme, and the Regulation on land use, land use change and forestry (LULUCF) set for 2021… In line with the Renewable Energy Directive, the Commission will also develop operational guidance in 2021 on the new sustainability criteria on forest biomass for energy*."

The Biodiversity Strategy calls for the use of whole trees to be minimized, something the RED II is not capable of doing, since the entire goal of the REDII criteria is to promote the use of forest biomass for energy. It also states that "all forms of bioenergy" should be utilizing "residues and non-reusable and non-recyclable waste" – in other words, the very types of materials that the TEG was trying to promote for use as fuel under the SFT.

Rather than opening the door to essentially unlimited use of forest biomass, the Commission should follow the science, build on rather than reject the more cautious approach of the TEG. 'the TEG proposals are not nearly strict enough but would be a very modest step in the right direction and should be retained pending a full reform of the renewable energy directive next year.'

Calling for a science-based renewable energy policy, more than 100 NGOs and counting have signed a statement calling for elimination of forest biomass as an eligible fuel under the Renewable Energy Directive, because the sustainability and GHG criteria in the REDII are not sufficient to protect forests and the climate.

Additionally, the final Delegated Act should curtail the use of electricity-only bioenergy, as this is extremely inefficient, wasteful, and polluting. Only combined heat and power plants with a minimum efficiency threshold of at least 65% should qualify, as these use biomass more efficiently and tend to be relatively small, it being difficult to find a "heat customer" that can utilize the heat generated by a larger plant. The UK adopted such a policy in 2018 for new plants wanting to qualify for renewable energy subsidies. Regarding fossil lifecycle emissions of manufactured biomass fuels, the goal of 80% reduction in the SFT is largely meaningless because it does not include most of the major emissions factors, including combustion emissions. The UK also adopted a new biomass lifecycle standard (considering only fossil fuel emissions from harvest, manufacture and transport of biomass) of 29 g CO_2 kWh^{-1}, which appears to eliminate eligibility for imported wood pellets. Coupled with the decision to only grant subsidies to combined heat and power (CHP), the new UK policy will serve to constrain some of the most damaging effects of bioenergy. Since the UK currently burns more imported biomass than any EU country, the SFT would do well to pay attention to the lessons that UK policy makers appear to have learned.

Finally, the Delegated Act should include a review of the bioenergy criteria upon the revision of relevant environmental, climate- and energy regulations as well as the expected Joint Research Centre report on biomass sustainability.

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9.1. Research, development and innovation

The DA strengthens the TEG's recommendations with new language:

1. 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 in accordance with Articles 10(1), point (i), and 10(2) of Regulation EU 2020/852, to meet those respective criteria for substantial contribution to climate change mitigation, while respecting the relevant criteria for doing no significant harm to other environmental objectives.
2. The ability of the research, development and innovation to reduce, remove or avoid GHG emissions through RD&I solutions in the target economic activities has at least been demonstrated in a relevant environment, satisfying at least the criteria for substantial contribution to climate change mitigation for the target activities.
3. The economic activity aims at bringing to market a solution that is not yet in the market and has better performance in terms of lifecycle GHG emissions than best commercially available technologies based on public or market information. The implementation of the technologies, products or other solutions being researched results in overall net GHG emissions reductions over their lifecycle.
Life-cycle GHG emissions are calculated using Commission Recommendation 2013/179/EU or, alternatively, using ISO 14067:2018 or ISO 14064-1:2018.

Quantified life-cycle GHG emissions are verified by an independent third party.

4. Where the researched, developed or innovated technology, product or other solution already enables an activity or several activities addressed in this Annex to meet the technical screening criteria in the applicable Section of this Annex, the research, development and innovation activity focuses on the development of equally low- or lower-emission technologies, products or other solutions with new significant advantages, such as lower cost.

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