



Feedback on the first round climate mitigation activities

Fields marked with * are mandatory.

Introduction

Disclaimer:

This invitation for feedback is part of DG FISMA, DG ENV, DG CLIMA and DG ENER ongoing work to develop the taxonomy, for which the Commission has set up the TEG. The [action plan on financing sustainable growth \(https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52018DC0097\)](https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52018DC0097) – action 1 – requests the group to develop the taxonomy on the basis of broad consultation of all relevant stakeholders. This feedback process is not an official Commission document nor an official Commission position. Nothing in this feedback process commits the Commission nor does it preclude any policy outcomes.

This feedback includes sectors and activities for which the TEG has been able to propose technical screening criteria from pre-existing, market-based taxonomies. The results of this work are provided for open comment.

To the extent possible, criteria for defining substantial contribution and the technical criteria for screening these activities for potential significant harm to other environmental objectives are included. This is in line with framework set out in the proposed taxonomy regulation.

The deadline for providing feedback is 22 February 2019 cob.

For further details of how economic activities were selected, please see Methodology for selecting mitigation sectors and economic activities (https://ec.europa.eu/info/sites/info/files/business_economy_euro/banking_and_finance/documents/sustainable-finance-taxonomy-feedback-and-workshops_en.pdf#methodology).

More information:

- on this feedback process (https://ec.europa.eu/info/sites/info/files/business_economy_euro/banking_and_finance/documents/sustainable-finance-taxonomy-feedback-and-

workshops_en.pdf#first)

- on the protection of personal data regime for this feedback (https://ec.europa.eu/info/files/sustainable-finance-taxonomy-consultation-privacy-statement_en)

1. Information about you

* Are you replying as:

- a private individual
- an organisation or a company
- a public authority or an international organisation

* Name of your organisation:

BVI

Contact email address:

The information you provide here is for administrative purposes only and will not be published

julia.backmann@bvi.de

* Is your organisation included in the Transparency Register?

(If your organisation is not registered, we invite you to register here (<http://ec.europa.eu/transparencyregister/public/homePage.do?locale=en>), although it is not compulsory to be registered to reply to this feedback process. Why a transparency register? (http://ec.europa.eu/transparencyregister/public/staticPage/displayStaticPage.do?locale=en&reference=WHY_TRANSPARENCY_REGISTER))

- Yes
- No

* If so, please indicate your Register ID number:

96816064173-47

* Type of organisation:

- Academic institution
- Company, SME, micro-enterprise, sole trader
- Consultancy, law firm
- Consumer organisation
- Industry association
- Media
- Non-governmental organisation
- Think tank
- Trade union
- Other

* Where are you based and/or where do you carry out your activity?

Germany

* Field of activity (if applicable):

at least 1 choice(s)

- Accounting
- Auditing
- Banking
- Credit rating agencies
- Insurance

- Pension provision
- Investment management (e.g. hedge funds, private equity funds, venture capital funds, money market funds, securities)
- Market infrastructure operation (e.g. CCPs, CSDs, Stock exchanges)
- Social entrepreneurship
- Other
- Not applicable

* Sector (if applicable):

at least 1 choice(s)

- A Agriculture, forestry and fishing
- B Mining and quarrying
- C Manufacturing
- D Electricity, gas, steam and air conditioning supply
- E Water supply; sewerage, waste management and remediation activities
- F Construction
- H Transportation and storage
- I Accommodation and food service activities
- J Information and communication
- K Financial and insurance activities
- L Real estate activities
- M Professional, scientific and technical activities
- N Administrative and support service activities
- O Public administration and defence; compulsory social security
- P Education
- Q Human health and social work activities
- Not applicable



Important notice on the publication of responses

* Contributions received are intended for publication on the Commission's website. Do you agree to your contribution being published?

(see specific privacy statement (https://ec.europa.eu/info/files/sustainable-finance-taxonomy-feedback-and-workshops-privacy-statement_en))

- Yes, I agree to my response being published under the name I indicate (*name of your organisation/company /public authority or your name if your reply as an individual*)
- No, I do not want my response to be published

2. List of activities

The proposed principles, metrics and thresholds cover the following activities.

Please tick the activities for which you would like to provide feedback:

(You will be able to answer questions for the selected activities)

A Agriculture, forestry and fishing

- Afforestation

- Rehabilitation/reforestation
- Reforestation
- Existing forest management

C Manufacturing

- Energy and resource efficiency in manufacturing
- Manufacture of renewable energy equipment
- Manufacture of low carbon transport vehicles, equipment and infrastructure
- Manufacture of energy efficiency equipment for buildings
- Manufacture of other low carbon technologies

D Electricity, gas, steam and air conditioning supply

- Energy Production (Geothermal)
- Energy Production (Hydro)
- Energy Production (Solar PV)
- Energy Production (Wind energy)
- Energy Production (Ocean Energy)
- Energy Production (Concentrated Solar Power)

H Transportation and storage

- Passenger Rail Transport (Interurban)
- Freight Rail Transport
- Urban and suburban passenger land transport (public transport)
- Infrastructure for low carbon transport
- Light passenger cars and commercial vehicles
- Freight transport services by road
- Interurban scheduled road transport services of passengers

F Construction and L Real estate activities

- Construction of new buildings (residential and non-residential)
- Renovation of existing buildings (residential and non-residential)

Sector classification and activity	
Macro-Sector	Agriculture, forestry and fishing
NACE Level	4
Code	2.1
Description	Silviculture and other forestry activities (Afforestation)

Mitigation criteria	
Principle	<ol style="list-style-type: none"> 1. Demonstrate substantial, long-term carbon sequestration from combined vegetation and soil (or above and below ground carbon), compared to a counterfactual with no conversion to forest; 2. Include forest activities where substantial mitigation is delivered considering the carbon sequestration of the forest and the emissions associated with the end-product.
Metric	<ol style="list-style-type: none"> 1. Comply with the Sustainable Forest Management requirements of the taxonomy¹: <ul style="list-style-type: none"> ○ Management of forest maintains or improves the long-term capacity of the forest to deliver multiple services (e.g. ecosystem services, timber production); ○ Management of forests maintains soil quality, soil carbon and biodiversity; ○ No conversion of high carbon stock land (i.e. old growth and primary forest, peatlands, wetlands, and grasslands) since 1994. Where the entity undertaking the afforestation was not directly or indirectly responsible for the conversion, land that was converted before 2010 may be afforested, restored or reforested; ○ All harvesting is carried out in compliance with national laws; ○ Harvested forest must be regenerated. 2. Perform GHG accounting and reporting and demonstrate year-on-year mitigation performance improvement by using an internationally recognized GHG accounting methodology (e.g. Verified Carbon Standard, Plan VIVO, Climate Action Reserve) and GHG accounting for harvesting activities (e.g. ISO 14064, FSC-PRO-30-002).
Threshold	Compliance with the metrics above

Do no significant harm assessment

Do no significant harm assessment

(2) Adaptation	<ul style="list-style-type: none">• Species resilience and adaptation:<ul style="list-style-type: none">◦ Promote close-to-nature forestry or similar concepts over monoculture depending on the local requirements and limitations;◦ Select native species or species, varieties, ecotypes and provenance of trees that adequately provide the necessary resilience to climate change, natural disasters and the biotic, pedologic and hydrologic condition of the area concerned, as well as the potential invasive character of the species under local conditions, current and projected climate change.• Forest management planning and operations identify abiotic and biotic risks (e.g. fires, droughts, pests) and reduce the risk of their occurrence.
(3) Water	<ul style="list-style-type: none">• Perform assessment of the water requirements of the forest, and water needs of downstream users (both human and natural) and at a minimum identify relevant potential impacts (e.g. quality of discharges into watercourses and quantitative impacts of water use on groundwater and surface water bodies);• A water management plan is in place to address relevant risks identified in the assessment and includes measures to protect qualitative and quantitative conditions of ground water and surface water bodies, and reduces possible flood risks for downstream communities;• Use adapted species to the local conditions (see also criteria under adaptation).
(4) Circular Economy	-
(5) Pollution	<ul style="list-style-type: none">• Chemical use: avoid active ingredients that are listed in the Stockholm Convention, the Rotterdam Convention or that are listed as classification Ia or Ib in the WHO recommended Classification of Pesticides by Hazard;• Minimise the use of pesticides and favour alternative approaches or techniques, such as non-chemical alternatives to pesticides, in line with the Directive 2009/128/EC (https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32009L0128) on the sustainable use of pesticides;• Maintain water and soil quality.

Do no significant harm assessment

(6) Ecosystems

- No conversion of habitats sensitive to biodiversity loss or of high ecological value such as grasslands and any high carbon stock area (e.g. peat lands and wetlands), and areas set aside for the restoration of such habitats;
- Forests are monitored and protected to prevent illegal logging, in compliance with national laws;
- When managing the afforested land the management plan includes provisions for managing and maintaining biodiversity and soil carbon.

Rationale

Rationale

Additional notes
on conclusions
reached

About the Principles:

Afforestation can deliver substantial GHG emission mitigation through sequestration of carbon during tree growth. Carbon is fixed above ground and below ground in the vegetation, soil, litter, dead wood and eventually in harvested wood products (HWPs) that are derived from the forest in line with the lifetime of these products. For this to contribute to the carbon sink, forests must be maintained for some time.

However, ensuring trees are planted and remain is not enough to ensure afforestation activities are delivering substantial GHG emission mitigation. The use of the wood and the management of the forest can impact the net GHG emission performance considerably.

To address the potential lifecycle emissions from wood, the carbon sequestration of the forest and the emissions associated with the end-product must both be considered. For example, if whole trees were going to bioenergy uses, emissions of the end-product would be equal to the carbon sequestration that had been achieved and therefore substantial mitigation would not be delivered. However, if most of the end-product was going to construction and some residual matter was going to bioenergy, then substantial mitigation would likely still be achieved. This assumes that the avoided emissions when comparing bioenergy to a fossil fuel alternative are not considered in the lifecycle emissions.

About the Metrics:

To ensure that the management of the forest is aligned with enabling substantial GHG mitigation, Sustainable Forest Management (SFM) requirements have been defined for the taxonomy. The Climate Bonds Initiative's Forestry Criteria and the recast of the EU Renewable Energy Directive (RED) have informed the SFM requirements. The SFM requirements address whether the forest is being managed to promote growth, general forest health, ecosystem service provision, production of timber, soil quality and carbon, forest protection, regeneration after harvesting and ensure that emissions from land use change are not incurred; all of which will impact how effective the forest is at long-term carbon sequestration.

However, ensuring trees are planted and remain is not enough to ensure afforestation activities are delivering substantial GHG emission mitigation. The use of the wood and the management of the forest can impact the net GHG emission performance considerably.

The FSC, PEFC and RED frameworks all look to carbon in a more or less direct way (RED being the most direct). However, the issue with all three approaches is that demonstration of compliance with them does not prove net carbon sequestration. By requiring GHG accounting and reporting to be completed, there is quantification that substantial mitigation is delivered. Internationally accredited forest certification schemes also have added value in terms of ensuring compliance with some of the "do no significant harm" aspects.

¹ These can be informed by using internationally accredited forest certification systems, such as e.g. Forest Stewardship Council (FSC), Programme for the Endorsement of Forest Certification schemes (PEFC), Forest EUROPE SFM principles, Sustainable Forestry Initiative (SFI), or any other national/internationally equivalent/compatible certification system, as a benchmark for

Questions on afforestation:

1. Do you agree with the proposed principle for determining a substantial contribution to climate mitigation for this activity?

- Yes
- No
- Don't know / no opinion / not relevant

2. Do you agree with the proposed metrics for assessing the extent of the mitigation contribution?

- Yes
- No
- Don't know / no opinion / not relevant

3. Where thresholds have been considered, please indicate whether you agree with the proposed thresholds for the activity to qualify for inclusion in the taxonomy.

- Yes
- No
- Don't know / no opinion / not relevant

Please explain your answer to question 3.

If relevant, you may propose alternative thresholds that could be considered.

2,000 character(s) maximum

4. Do you agree with the 'do no significant harm' criteria identified for these activities?

- Yes
- No
- Don't know / no opinion / not relevant

5. Is there any key area where significant harm needs to be avoided and which is not mentioned already?

- Yes
- No
- Don't know / no opinion / not relevant

Please explain your answer to question 5 and what requirements could be used to avoid such harm:

2,000 character(s) maximum

6. Would the proposed criteria give rise to adverse consequences, e.g. risk of stranded assets or the risk of delivering inconsistent incentives?

- Yes
- No
- Don't know / no opinion / not relevant

Please explain your answer to question 6:

2,000 character(s) maximum

7. Can the proposed criteria be used for activities outside the EU?

- Yes
- No
- Don't know / no opinion / not relevant

Additional questions on forestry:

In addition to the general questions, the following additional questions are proposed for this economic activity:

8. How feasible is end-use tracking of wood products delivered from forestry activities?

2,000 character(s) maximum

9. Do you agree with the requirements for Sustainable Forest Management of the taxonomy?

- Yes
- No
- Don't know / no opinion / not relevant

Please explain your answer to question 9:

2,000 character(s) maximum

10. Do you foresee potential challenges with the implementation of the two Metrics?

- Yes
- No
- Don't know / no opinion / not relevant

11. Do you agree with the cutoff date and rationale selected to limit the conversion of high carbon stock land?

- Yes
- No
- Don't know / no opinion / not relevant

Please explain your answer to question 11:

2,000 character(s) maximum

12. How prescriptive should the taxonomy be in recommending GHG accounting and reporting methodologies for Forestry?

2,000 character(s) maximum

13. Should the taxonomy include a requirement to limit or avoid the use of fertilizers in forests?

- Yes
- No
- Don't know / no opinion / not relevant

Please explain your answer to question 13:

2,000 character(s) maximum

14. Should the taxonomy encourage improvements to soil and water quality, where feasible?

- Yes
- No
- Don't know / no opinion / not relevant

Please explain your answer to question 14:

2,000 character(s) maximum

15. Would excluding the conversion of wetlands prevent the establishment of mangroves on existing wetlands (that can help protect from the rising sea levels)?

- Yes
- No
- Don't know / no opinion / not relevant

Please explain your answer to question 15:

2,000 character(s) maximum

Sector classification and activity	
Macro-Sector	Agriculture, forestry and fishing
NACE Level	4
Code	2.1
Description	Rehabilitation/restoration

Mitigation criteria	
Principle	<ol style="list-style-type: none">1. Demonstrate substantial, long-term carbon sequestration from combined vegetation and soil (or above and below ground carbon), compared to a counterfactual with no conversion to forest;2. Include forest activities where substantial mitigation is delivered considering the carbon sequestration of the forest and the emissions associated with the end-product.

Mitigation criteria

- Metric
1. Comply with the Sustainable Forest Management requirements of the taxonomy²:
 - Management of forest maintains or improves the long-term capacity of the forest to deliver multiple services (e.g. ecosystem services, timber production);
 - Management of forests maintains soil quality, soil carbon and biodiversity;
 - No conversion of high carbon stock land (i.e. old growth and primary forest, peatlands, wetlands, and grasslands) since 1994. Where the entity undertaking the afforestation was not directly or indirectly responsible for the conversion, land that was converted before 2010 may be afforested, restored or reforested;
 - All harvesting is carried out in compliance with national laws;
 - Harvested forest must be regenerated.
 2. Perform GHG accounting and reporting and demonstrate year-on-year mitigation performance improvement by using an internationally recognized GHG accounting methodology (e.g. Verified Carbon Standard, Plan VIVO, Climate Action Reserve) and GHG accounting for harvesting activities (e.g. ISO 14064, FSC-PRO-30-002).

Threshold Compliance with Metrics above.

Do no significant harm assessment

- (2) Adaptation
- Species resilience and adaptation:
 - Promote close-to-nature forestry or similar concepts over monoculture depending on the local requirements and limitations;
 - Select native species or species, varieties, ecotypes and provenance of trees that adequately provide the necessary resilience to climate change, natural disasters and the biotic, pedologic and hydrologic condition of the area concerned, as well as the potential invasive character of the species under local conditions, current and projected climate change.
 - Forest management planning and operations identify abiotic and biotic risks (e.g. fires, droughts, pests) and reduce the risk of their occurrence.

Do no significant harm assessment

- (3) Water
- Perform assessment of the water requirements of the forest, and water needs of downstream users (both human and natural) and at a minimum identify relevant potential impacts (e.g. quality of discharges into watercourses and quantitative impacts of water use on groundwater and surface water bodies);
 - A water management plan is in place to address relevant risks identified in the assessment and includes measures to protect qualitative and quantitative conditions of ground water and surface water bodies, and reduces possible flood risks for downstream communities;
 - Use adapted species to the local conditions (see also criteria under adaptation).

(4) Circular Economy

- (5) Pollution
- Chemical use: avoid active ingredients that are listed in the Stockholm Convention, the Rotterdam Convention or that are listed as classification Ia or Ib in the WHO recommended Classification of Pesticides by Hazard;
 - Minimise the use of pesticides and favour alternative approaches or techniques, such as non-chemical alternatives to pesticides, in line with the Directive 2009/128/EC (<https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32009L0128>) on the sustainable use of pesticides;
 - Maintain water and soil quality.

- (6) Ecosystems
- Forests are monitored and protected to prevent illegal logging, in compliance with national laws;
 - When managing the afforested land the management plan includes provisions for managing and maintaining biodiversity and soil carbon.
 - In the case of protected forests, species and habitats, the management of the forest should be carried out in a way to lead to no worsening of the conservation status of the habitats and species they are meant to be protected.

Rationale

Rationale

About the Principles:

Restoration and rehabilitation of forests can deliver substantial GHG emission mitigation through sequestration of carbon during tree growth. Carbon is fixed above ground and below ground in the vegetation, soil, litter, dead wood and eventually in harvested wood products (HWPs) that are derived from the forest in line with the lifetime of these products. For this to contribute to the carbon sink, forests must be maintained for some time.

However, ensuring trees are planted and remain is not enough to ensure restoration activities are delivering substantial GHG emission mitigation. The use of the wood and the management of the forest can impact the net GHG emission performance considerably.

To address the potential lifecycle emissions from wood, the carbon sequestration of the forest and the emissions associated with the end-product must both be considered. For example, if whole trees were going to bioenergy uses, emissions of the end-product would be equal to the carbon sequestration that had been achieved and therefore substantial mitigation would not be delivered. However, if most of the end-product was going to construction and some residual matter was going to bioenergy, then substantial mitigation would likely still be achieved. This assumes that the avoided emissions when comparing bioenergy to a fossil fuel alternative are not considered in the lifecycle emissions.

About the Metrics:

To ensure that the management of the forest is aligned with enabling substantial GHG mitigation, Sustainable Forest Management (SFM) requirements have been defined for the taxonomy. The Climate Bonds Initiative's Forestry Criteria and the recast of the EU Renewable Energy Directive (RED) have informed the SFM requirements. The SFM requirements address whether the forest is being managed to promote growth, general forest health, ecosystem service provision, production of timber, soil quality and carbon, forest protection, regeneration after harvesting and ensure that emissions from land use change are not incurred; all of which will impact how effective the forest is at long-term carbon sequestration.

The SFM requirements are mandatory across all Forestry activities. One way to inform alignment with them is through internationally accredited forest certification schemes. The Forest Stewardship Council (FSC) and Programme for the Endorsement of Forest Certification (PEFC) are the most widely used and have been evaluated against the SFM requirements and found to comply. Other certification schemes may also be used if they can demonstrate alignment with the SFM requirements.

The FSC, PEFC and RED frameworks all look to carbon in a more or less direct way (RED being the most direct). However, the issue with all three approaches is that demonstration of compliance with them does not prove net carbon sequestration. By requiring GHG accounting and reporting to be completed, there is quantification that substantial mitigation is delivered. Internationally accredited forest certification schemes also have added value in terms of ensuring compliance with some of the "do no significant harm" aspects.

Additional notes on conclusions reached

² These can be informed by using internationally accredited forest certification systems, such as e.g. Forest Stewardship Council (FSC), Programme for the Endorsement of Forest Certification schemes (PEFC), Forest EUROPE SFM principles, Sustainable Forestry Initiative (SFI), or any other national/internationally equivalent/compatible certification system, as a benchmark for application of sustainable forest management.

Questions on rehabilitation/restoration:

1. Do you agree with the proposed principle for determining a substantial contribution to climate mitigation for this activity?

- Yes
- No
- Don't know / no opinion / not relevant

2. Do you agree with the proposed metrics for assessing the extent of the mitigation contribution?

- Yes
- No
- Don't know / no opinion / not relevant

3. Where thresholds have been considered, please indicate whether you agree with the proposed thresholds for the activity to qualify for inclusion in the taxonomy.

- Yes
- No
- Don't know / no opinion / not relevant

Please explain your answer to question 3.

If relevant, you may propose alternative thresholds that could be considered.

2,000 character(s) maximum

4. Do you agree with the 'do no significant harm' criteria identified for these activities?

- Yes
- No
- Don't know / no opinion / not relevant

5. Is there any key area where significant harm needs to be avoided and which is not mentioned already?

- Yes
- No

- Don't know / no opinion / not relevant

Please explain your answer to question 5 and what requirements could be used to avoid such harm:

2,000 character(s) maximum

6. Would the proposed criteria give rise to adverse consequences, e.g. risk of stranded assets or the risk of delivering inconsistent incentives?

- Yes
- No
- Don't know / no opinion / not relevant

Please explain your answer to question 6:

2,000 character(s) maximum

7. Can the proposed criteria be used for activities outside the EU?

- Yes
- No
- Don't know / no opinion / not relevant

Additional questions on forestry:

In addition to the general questions, the following additional questions are proposed for this economic activity:

8. How feasible is end-use tracking of wood products delivered from forestry activities?

2,000 character(s) maximum

9. Do you agree with the requirements for Sustainable Forest Management of the taxonomy?

- Yes
- No
- Don't know / no opinion / not relevant

Please explain your answer to question 9:

2,000 character(s) maximum

10. Do you foresee potential challenges with the implementation of the two Metrics?

- Yes
- No
- Don't know / no opinion / not relevant

11. Do you agree with the cutoff date and rationale selected to limit the conversion of high carbon stock land?

- Yes
- No
- Don't know / no opinion / not relevant

Please explain your answer to question 11:

2,000 character(s) maximum

12. How prescriptive should the taxonomy be in recommending GHG accounting and reporting methodologies for Forestry?

2,000 character(s) maximum

13. Should the taxonomy include a requirement to limit or avoid the use of fertilizers in forests?

- Yes
- No
- Don't know / no opinion / not relevant

Please explain your answer to question 13:

2,000 character(s) maximum

14. Should the taxonomy encourage improvements to soil and water quality, where feasible?

- Yes
- No
- Don't know / no opinion / not relevant

Please explain your answer to question 14:

2,000 character(s) maximum

Sector classification and activity	
Macro-Sector	Agriculture, forestry and fishing
NACE Level	4
Code	2.1
Description	Reforestation

Mitigation criteria	
Principle	<ol style="list-style-type: none">1. Demonstrate substantial, long-term carbon sequestration from combined vegetation and soil (or above and below ground carbon), compared to a counterfactual with no conversion to forest;2. Include forest activities where substantial mitigation is delivered considering the carbon sequestration of the forest and the emissions associated with the end-product.

Mitigation criteria

Metric

1. Comply with the Sustainable Forest Management requirements of the taxonomy³:

- Management of forest maintains or improves the long-term capacity of the forest to deliver multiple services (e.g. ecosystem services, timber production);
- Management of forests maintains soil quality, soil carbon and biodiversity;
- No conversion of high carbon stock land (i.e. old growth and primary forest, peatlands, wetlands, and grasslands) since 1994. Where the entity undertaking the afforestation was not directly or indirectly responsible for the conversion, land that was converted before 2010 may be afforested, restored or reforested;
- All harvesting is carried out in compliance with national laws;
- Harvested forest must be regenerated.

2. Perform GHG accounting and reporting and demonstrate year-on-year

mitigation performance improvement by using an internationally recognized GHG accounting methodology (e.g. Verified Carbon Standard, Plan VIVO, Climate Action Reserve) and GHG accounting for harvesting activities (e.g. ISO 14064, FSC-PRO-30-002).

Threshold

Compliance with Metrics above.

Do no significant harm assessment

(2) Adaptation

- Species resilience and adaptation:
 - Promote close-to-nature forestry or similar concepts over monoculture depending on the local requirements and limitations;
 - Select native species or species, varieties, ecotypes and provenance of trees that adequately provide the necessary resilience to climate change, natural disasters and the biotic, pedologic and hydrologic condition of the area concerned, as well as the potential invasive character of the species under local conditions, current and projected climate change.
- Forest management planning and operations identify abiotic and biotic risks (e.g. fires, droughts, pests) and reduce the risk of their occurrence.

Do no significant harm assessment

- (3) Water
- Perform assessment of the water requirements of the forest, and water needs of downstream users (both human and natural) and at a minimum identify relevant potential impacts (e.g. quality of discharges into watercourses and quantitative impacts of water use on groundwater and surface water bodies);
 - A water management plan is in place to address relevant risks identified in the assessment and includes measures to protect qualitative and quantitative conditions of ground water and surface water bodies, and reduces possible flood risks for downstream communities;
 - Use adapted species to the local conditions (see also criteria under adaptation).

(4) Circular Economy

- (5) Pollution
- Chemical use: avoid active ingredients that are listed in the Stockholm Convention, the Rotterdam Convention or that are listed as classification Ia or Ib in the WHO recommended Classification of Pesticides by Hazard;
 - Minimise the use of pesticides and favour alternative approaches or techniques, such as non-chemical alternatives to pesticides, in line with the Directive 2009/128/EC (<https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32009L0128>) on the sustainable use of pesticides;
 - Maintain water and soil quality.

- (6) Ecosystems
- Forests are monitored and protected to prevent illegal logging, in compliance with national laws;
 - When managing the afforested land the management plan includes provisions for managing and maintaining biodiversity and soil carbon.
 - In the case of protected forests, species and habitats, the management of the forest should be carried out in a way to lead to no worsening of the conservation status of the habitats and species they are meant to be protected.

Rationale

Rationale

About the Principles:

Reforestation can deliver substantial GHG emission mitigation through sequestration of carbon during tree growth. Carbon is fixed above ground and below ground in the vegetation, soil, litter, dead wood and eventually in harvested wood products (HWPs) that are derived from the forest in line with the lifetime of these products. For this to contribute to the carbon sink, forests must be maintained for some time.

However, ensuring trees are planted and remain is not enough to ensure reforestation activities are delivering substantial GHG emission mitigation. The use of the wood and the management of the forest can impact the net GHG emission performance considerably.

To address the potential lifecycle emissions from wood, the carbon sequestration of the forest and the emissions associated with the end-product must both be considered. For example, if whole trees were going to bioenergy uses, emissions of the end-product would be equal to the carbon sequestration that had been achieved and therefore substantial mitigation would not be delivered. However, if most of the end-product was going to construction and some residual matter was going to bioenergy, then substantial mitigation would likely still be achieved. This assumes that the avoided emissions when comparing bioenergy to a fossil fuel alternative are not considered in the lifecycle emissions.

The Technical Expert Group is seeking further advice about whether reforestation that is legally required or part of a forestry entity's business-as-usual should be recognised in the taxonomy. The argument to include it is that, whether regulated to happen or not, reforestation delivers carbon sequestration that is needed to mitigate climate change. The argument to not include it is that, this carbon sequestration is not additional carbon sequestration as it is anyway regulated to happen (at least in the European Union).

About the Metrics:

To ensure that the management of the forest is aligned with enabling substantial GHG mitigation, Sustainable Forest Management (SFM) requirements have been defined for the taxonomy. The Climate Bonds Initiative's Forestry Criteria and the recast of the EU Renewable Energy Directive (RED) have informed the SFM requirements. The SFM requirements address whether the forest is being managed to promote growth, general forest health, ecosystem service provision, production of timber, soil quality and carbon, forest protection, regeneration after harvesting and ensure that emissions from land use change are not incurred; all of which will impact how effective the forest is at long-term carbon sequestration.

The SFM requirements are mandatory across all Forestry activities. One way to inform alignment with them is through internationally accredited forest certification schemes. The Forest Stewardship Council (FSC) and Programme for the Endorsement of Forest Certification (PEFC) are the most widely used and have been evaluated against the SFM requirements and found to comply. Other certification schemes may also be used if they can demonstrate alignment with the SFM requirements.

The FSC, PEFC and RED frameworks all look to carbon in a more or less direct

Additional notes
on conclusions
reached

Rationale	
	<p>way (RED being the most direct). However, the issue with all three approaches is that demonstration of compliance with them does not prove net carbon sequestration. By requiring GHG accounting and reporting to be completed, there is quantification that substantial mitigation is delivered. Internationally accredited forest certification schemes also have added value in terms of ensuring compliance with some of the "do no significant harm" aspects.</p>

³ These can be informed by using internationally accredited forest certification systems, such as e.g. Forest Stewardship Council (FSC), Programme for the Endorsement of Forest Certification schemes (PEFC), Forest EUROPE SFM principles, Sustainable Forestry Initiative (SFI), or any other national/internationally equivalent/compatible certification system, as a benchmark for application of sustainable forest management.

Questions on reforestation:

1. Do you agree with the proposed principle for determining a substantial contribution to climate mitigation for this activity?

- Yes
- No
- Don't know / no opinion / not relevant

2. Do you agree with the proposed metrics for assessing the extent of the mitigation contribution?

- Yes
- No
- Don't know / no opinion / not relevant

3. Where thresholds have been considered, please indicate whether you agree with the proposed thresholds for the activity to qualify for inclusion in the taxonomy.

- Yes
- No
- Don't know / no opinion / not relevant

Please explain your answer to question 3.

If relevant, you may propose alternative thresholds that could be considered.

2,000 character(s) maximum

4. Do you agree with the 'do no significant harm' criteria identified for these activities?

- Yes
- No
- Don't know / no opinion / not relevant

5. Is there any key area where significant harm needs to be avoided and which is not mentioned already?

- Yes
- No
- Don't know / no opinion / not relevant

Please explain your answer to question 5 and what requirements could be used to avoid such harm:

2,000 character(s) maximum

6. Would the proposed criteria give rise to adverse consequences, e.g. risk of stranded assets or the risk of delivering inconsistent incentives?

- Yes
- No
- Don't know / no opinion / not relevant

Please explain your answer to question 6:

2,000 character(s) maximum

7. Can the proposed criteria be used for activities outside the EU?

- Yes
- No
- Don't know / no opinion / not relevant

Additional questions on forestry:

In addition to the general questions, the following additional questions are proposed for this economic activity:

8. How feasible is end-use tracking of wood products delivered from forestry activities?

2,000 character(s) maximum

9. Do you agree with the requirements for Sustainable Forest Management of the taxonomy?

- Yes
- No
- Don't know / no opinion / not relevant

Please explain your answer to question 9:

2,000 character(s) maximum

10. Do you foresee potential challenges with the implementation of the two Metrics?

- Yes
- No
- Don't know / no opinion / not relevant

11. Do you agree with the cutoff date and rationale selected to limit the conversion of high carbon stock land?

- Yes
- No
- Don't know / no opinion / not relevant

Please explain your answer to question 11:

2,000 character(s) maximum

12. How prescriptive should the taxonomy be in recommending GHG accounting and reporting methodologies for Forestry?

2,000 character(s) maximum

13. Should the taxonomy include a requirement to limit or avoid the use of fertilizers in forests?

- Yes
- No
- Don't know / no opinion / not relevant

Please explain your answer to question 13:

2,000 character(s) maximum

14. Should the taxonomy encourage improvements to soil and water quality, where feasible?

- Yes
- No
- Don't know / no opinion / not relevant

Please explain your answer to question 14:

2,000 character(s) maximum

Sector classification and activity	
Macro-Sector	Agriculture, forestry and fishing
NACE Level	4
Code	2.1
Description	Existing forest management

Mitigation criteria	
Principle	<ol style="list-style-type: none">1. Demonstrate substantial, long-term carbon sequestration from combined vegetation and soil (or above and below ground carbon), compared to a counterfactual with no conversion to forest;2. Include forest activities where substantial mitigation is delivered considering the carbon sequestration of the forest and the emissions associated with the end-product.

Mitigation criteria

- Metric
1. Comply with the Sustainable Forest Management requirements of the taxonomy⁴:
 - Management of forest maintains or improves the long-term capacity of the forest to deliver multiple services (e.g. ecosystem services, timber production);
 - Management of forests maintains soil quality, soil carbon and biodiversity;
 - No conversion of high carbon stock land (i.e. old growth and primary forest, peatlands, wetlands, and grasslands) since 1994. Where the entity undertaking the afforestation was not directly or indirectly responsible for the conversion, land that was converted before 2010 may be afforested, restored or reforested;
 - All harvesting is carried out in compliance with national laws;
 - Harvested forest must be regenerated.
 2. Perform GHG accounting and reporting and demonstrate year-on-year mitigation performance improvement by using an internationally recognized GHG accounting methodology (e.g. Verified Carbon Standard, Plan VIVO, Climate Action Reserve) and GHG accounting for harvesting activities (e.g. ISO 14064, FSC-PRO-30-002).

Threshold

Demonstrate a positive trend over a given period.

Do no significant harm assessment

(2) Adaptation

- Species resilience and adaptation:
 - Promote close-to-nature forestry or similar concepts over monoculture depending on the local requirements and limitations;
 - Select native species or species, varieties, ecotypes and provenance of trees that adequately provide the necessary resilience to climate change, natural disasters and the biotic, pedologic and hydrologic condition of the area concerned, as well as the potential invasive character of the species under local conditions, current and projected climate change.
- Forest management planning and operations identify abiotic and biotic risks (e.g. fires, droughts, pests) and reduce the risk of their occurrence.

Do no significant harm assessment

- (3) Water
- Perform assessment of the water requirements of the forest, and water needs of downstream users (both human and natural) and at a minimum identify relevant potential impacts (e.g. quality of discharges into watercourses and quantitative impacts of water use on groundwater and surface water bodies);
 - A water management plan is in place to address relevant risks identified in the assessment and includes measures to protect qualitative and quantitative conditions of ground water and surface water bodies, and reduces possible flood risks for downstream communities;
 - Promote adapted species to the local conditions (see also criteria under adaptation).

(4) Circular Economy

- (5) Pollution
- Chemical use: avoid active ingredients that are listed in the Stockholm Convention, the Rotterdam Convention or that are listed as classification Ia or Ib in the WHO recommended Classification of Pesticides by Hazard;
 - Minimise the use of pesticides and favour alternative approaches or techniques, such as non-chemical alternatives to pesticides, in line with the Directive 2009/128/EC (<https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32009L0128>) on the sustainable use of pesticides;
 - Maintain water and soil quality.

- (6) Ecosystems
- No conversion of habitats sensitive to biodiversity loss or of high ecological value such as old-growth and primary forests (e.g. no encroachment into protected areas of the forestry concession);
 - Forests are monitored and protected to prevent illegal logging, in compliance with national laws;
 - When managing the afforested land the management plan includes provisions for managing and maintaining biodiversity and soil carbon.
 - In the case of protected forests, species and habitats, the management of the forest should be carried out in a way to lead to no worsening of the conservation status of the habitats and species they are meant to be protected.

Rationale

Rationale

About the Principles:

Existing forest management can contribute substantially to the mitigation of climate change and limiting warming well below 2-degrees by maintaining essential carbon sinks. Carbon is fixed above ground and below ground in the vegetation, soil, litter, dead wood and eventually in harvested wood products (HWPs) that are derived from the forest in line with the lifetime of these products. To mitigate climate change there must be substantial additional GHG emissions mitigation, but it is also imperative that existing carbon sinks, such as forests, are maintained and improved. This applies to both planted and natural forests.

From a practical point of view, a substantial portion of forestry activities will fall under the bracket of existing forest management. Therefore, it is proposed that existing forest management is recognised in the taxonomy, provided it can demonstrate improvement in the forest carbon sink.

To address the potential lifecycle emissions from wood, the carbon sink of the forest and the emissions associated with the end-product must both be considered. For example, if whole trees were going to bioenergy uses, emissions of the end-product would be equal to the carbon sequestration that had been achieved and therefore substantial mitigation would not be delivered. However, if most of the end-product was going to construction and some residual matter was going to bioenergy, then substantial mitigation would likely still be achieved. This assumes that the avoided emissions when comparing bioenergy to a fossil fuel alternative are not considered in the lifecycle emissions.

About the Metrics:

To ensure that the management of the forest is aligned with maintaining the carbon sink, Sustainable Forest Management (SFM) requirements have been defined for the taxonomy. The Climate Bonds Initiative's Forestry Criteria and the recast of the EU Renewable Energy Directive (RED) have informed the SFM requirements. The SFM requirements address whether the forest is being managed to promote growth, general forest health, ecosystem service provision, production of timber, soil quality and carbon, forest protection, regeneration after harvesting and ensure that emissions from land use change are not incurred; all of which will impact how effective the forest is as a long-term carbon sink.

The SFM requirements are mandatory across all Forestry activities. One way to inform alignment with these requirements is through internationally accredited forest certification schemes. The Forest Stewardship Council (FSC) and Programme for the Endorsement of Forest Certification (PEFC) are the most widely used and have been evaluated against the Sustainable Forest Management requirements and found to comply. Other certification schemes may also be used if they can demonstrate alignment with the Sustainable Forest Management requirements.

The 'no conversion of high carbon stock land' requirement in the Sustainable Forest Management requirements is considered for existing forest management activities in the sense that the taxonomy would not want to recognise forestry operations that had converted high carbon stock land, such as peatlands or wetlands, in the last few years.

Additional notes
on conclusions
reached

Rationale	
	The FSC, PEFC and RED frameworks all look to carbon in a more or less direct way (RED being the most direct). However, the issue with all three approaches is that demonstration of compliance with them does not prove the carbon sink is maintained. By requiring GHG accounting and reporting to be completed, there is quantification of this. Internationally accredited forest certification schemes also have added value in terms of ensuring compliance with some of the "do no significant harm" aspects.

⁴ These can be informed by using internationally accredited forest certification systems, such as e.g. Forest Stewardship Council (FSC), Programme for the Endorsement of Forest Certification schemes (PEFC), Forest EUROPE SFM principles, Sustainable Forestry Initiative (SFI), or any other national/internationally equivalent/compatible certification system, as a benchmark for application of sustainable forest management.

Questions on existing forest management:

1. Do you agree with the proposed principle for determining a substantial contribution to climate mitigation for this activity?

- Yes
- No
- Don't know / no opinion / not relevant

2. Do you agree with the proposed metrics for assessing the extent of the mitigation contribution?

- Yes
- No
- Don't know / no opinion / not relevant

3. Where thresholds have been considered, please indicate whether you agree with the proposed thresholds for the activity to qualify for inclusion in the taxonomy.

- Yes
- No
- Don't know / no opinion / not relevant

Please explain your answer to question 3.

If relevant, you may propose alternative thresholds that could be considered.

2,000 character(s) maximum

4. Do you agree with the ‘do no significant harm’ criteria identified for these activities?

- Yes
- No
- Don't know / no opinion / not relevant

5. Is there any key area where significant harm needs to be avoided and which is not mentioned already?

- Yes
- No
- Don't know / no opinion / not relevant

Please explain your answer to question 5 and what requirements could be used to avoid such harm:

2,000 character(s) maximum

6. Would the proposed criteria give rise to adverse consequences, e.g. risk of stranded assets or the risk of delivering inconsistent incentives?

- Yes
- No
- Don't know / no opinion / not relevant

Please explain your answer to question 6:

2,000 character(s) maximum

7. Can the proposed criteria be used for activities outside the EU?

- Yes
- No
- Don't know / no opinion / not relevant

Additional questions on forestry:

In addition to the general questions, the following additional questions are proposed for this economic activity:

8. How feasible is end-use tracking of wood products delivered from forestry activities?

2,000 character(s) maximum

9. Do you agree with the requirements for Sustainable Forest Management of the taxonomy?

- Yes
- No
- Don't know / no opinion / not relevant

Please explain your answer to question 9:

2,000 character(s) maximum

10. Do you foresee potential challenges with the implementation of the two Metrics?

- Yes
- No
- Don't know / no opinion / not relevant

11. Do you agree with the cutoff date and rationale selected to limit the conversion of high carbon stock land?

- Yes
- No
- Don't know / no opinion / not relevant

Please explain your answer to question 11:

2,000 character(s) maximum

12. How prescriptive should the taxonomy be in recommending GHG accounting and reporting methodologies for Forestry?

2,000 character(s) maximum

13. Should the taxonomy include a requirement to limit or avoid the use of fertilizers in forests?

- Yes
- No
- Don't know / no opinion / not relevant

Please explain your answer to question 13:

2,000 character(s) maximum

14. Should the taxonomy encourage improvements to soil and water quality, where feasible?

- Yes
- No
- Don't know / no opinion / not relevant

Please explain your answer to question 14:

2,000 character(s) maximum

15. Would excluding the conversion of wetlands prevent the establishment of mangroves on existing wetlands (that can help protect from the rising sea levels)?

- Yes
- No
- Don't know / no opinion / not relevant

Please explain your answer to question 15:

2,000 character(s) maximum

16. Do you agree the taxonomy should only include existing forest management activities that can demonstrate improvement in forest carbon sink (as opposed to maintenance of carbon sink)?

- Yes
- No
- Don't know / no opinion / not relevant

Please explain your answer to question 16:

2,000 character(s) maximum

16.a What threshold would be best appropriate to measure improvement of existing forest management, and over what period?

Sector classification and activity	
Macro-Sector	Manufacturing
NACE Level	1
Code	C
Description	Manufacturing activities no sector specific criteria apply

Mitigation criteria	
Principle	Demonstrate substantial GHG emissions reductions for both new and upgrades of existing industrial facilities and production processes through improvements in energy and resource efficiency or other mitigation measures.
Metric	<p>The following metrics are being considered:</p> <ul style="list-style-type: none"> • % reduction in GHG emissions per unit of production • % reduction in energy consumption per unit of production • Monetary value of GHG savings (calculated using a shadow price of CO₂) over the economic life of the asset is worth > XX% of investment cost • Implementation of defined best available techniques (BAT) or energy efficiency technologies meeting high standards such as combined heat and power (CHP), efficient compressed air, variable-speed drives etc.
Threshold	To be determined

Do no significant harm assessment	
(2) Adaptation	To be determined. Given the breadth and diversity of manufacturing activities considered, a detailed analysis is still in progress.
(3) Water	To be determined
(4) Circular Economy	To be determined
(5) Pollution	Minimise emissions of pollutants to air, soil and water. For activities covered by BREF documents ⁵ , limit emissions of pollutants to air, soil and water to value within the BATAEL ⁶ ranges given in the relevant BREF.
(6) Ecosystems	To be determined

Rationale

Rationale

The principles and potential quantitative metrics presented relate to improvements in existing manufacturing facilities as well as to the construction of efficient new manufacturing facilities over a defined baseline. They apply to GHG reductions from energy efficiency, resource efficiency and other measures in manufacturing sectors that are not covered by sector specific criteria in the taxonomy. Dedicated criteria for selected sectors with high greenhouse gases emissions will be considered separately. Manufacturing of eligible low carbon technologies are also considered separately.

The pros and cons of the four possible approaches are considered below:

- **% reduction in GHG emissions per unit of production. Set against a possible baseline of current asset performance, market average or likely alternative scenario.**
 - **Possible advantages:** Fairer approach than a volume threshold in catering for range of sectors and company/facility sizes, straightforward to understand and in most cases straightforward to implement (although see note on resource efficiency)
 - **Possible disadvantages:** No guarantee on scale of GHG reduction in absolute terms i.e. a large % reduction could be small in absolute terms if the total baseline emissions are low. The per unit of production element would need to be selected for each individual activity by the users of the taxonomy. The TEG may provide a number of options e.g. weight, volume, number of finished products. However, as this is a percentage threshold, the potential problem of companies being able to choose the most advantageous metric is partially mitigated. As with all GHG metrics, need reference to methodology, definition of baseline and definition of scope. Whilst scope 1 and 2 would be enough in many cases, for resource efficiency improvements often scope 3 is also needed to account for indirect benefits from input material or waste reductions which adds a layer of complication for those types of mitigation benefits
- **% energy consumption reduction per unit of production. Set against a possible baseline of current asset performance, market average or likely alternative scenario.**
 - **Possible advantages:** Energy metrics potentially easier to calculate than GHG savings as does not require conversion from Energy to GHG. Energy metrics are independent of national energy mix of electricity. Manufacturing companies usually monitor energy use so information should be readily available
 - **Possible disadvantages:** In low carbon electricity grid countries, the actual GHG emissions saving may be marginal compared to the energy savings (although likely to be other resource benefits)
- **Monetary value of GHG savings (calculated using a shadow price of**

Additional notes
on conclusions
reached

Rationale

CO₂) over the economic life of the asset is worth > XX% of investment cost. Set against a possible baseline of current asset performance, market average or likely alternative scenario.

- **Possible advantages:** Ensures in project investments that GHG benefits are substantial, as considers significance of carbon savings in relation to size of investment, so investments where GHG benefits are marginal would not be eligible.
 - **Possible disadvantages:** Requires definition of carbon price and economic life of projects. More complex than % change options. Project focussed so less applicable to other types of investment. As with all GHG metrics, need reference to methodology, definition of baseline and definition of scope. Whilst scope 1 and 2 would be enough in many cases, for resource efficiency improvements often scope 3 is also needed to account for indirect benefits from input material or waste reductions which adds a layer of complication for those types of mitigation benefits
- **Implementation of defined best available techniques (BAT) or energy efficiency technologies meeting high standards.**
- **Possible advantages:** Where appropriate standards can be identified, this is easy to understand and implement for users of the taxonomy. Does not require setting baselines or GHG calculations.
 - **Possible disadvantages:** It may be difficult to assess the relevance of BAT, identified for large industrial installations, to smaller facilities. Some BAT assessments are several years old and so may not reflect the latest technologies. Whilst technology standards can be identified, it may be difficult to cover the range of technologies needed across the wide array of manufacturing sectors. If a range of standards are applied, it may be difficult knowing how consistently robust those standards are, and what actual impact they will have in terms of GHG emissions

⁵ BREF documents refer to Best Available Techniques Reference Documents developed according to the Industrial Emissions Directive (IED). BREF documents are available here (<http://eippcb.jrc.ec.europa.eu/reference/>).

⁶ BATAELs refer to the Best Available Techniques Associated Emissions Levels defined in the BREF documents.

Questions on energy and resource efficiency in manufacturing:

1. Do you agree with the proposed principle for determining a substantial contribution to climate mitigation for this activity?

- Yes
- No

- Don't know / no opinion / not relevant

2. Do you agree with any of the proposed metrics for assessing the extent of the mitigation contribution?

- Yes
- No
- Don't know / no opinion / not relevant

3. Thresholds have not yet been developed for this activity. You may propose thresholds that could be considered:

2,000 character(s) maximum

4. Do you agree with the 'do no significant harm' criteria identified for these activities?

- Yes
- No
- Don't know / no opinion / not relevant

5. Is there any key area where significant harm needs to be avoided and which is not mentioned already?

- Yes
- No
- Don't know / no opinion / not relevant

Please explain your answer to question 5 and what requirements could be used to avoid such harm:

2,000 character(s) maximum

6. Would the proposed criteria give rise to adverse consequences, e.g. risk of stranded assets or the risk of delivering inconsistent incentives?

- Yes
- No
- Don't know / no opinion / not relevant

Please explain your answer to question 6:

2,000 character(s) maximum

7. Can the proposed criteria be used for activities outside the EU?

- Yes
- No
- Don't know / no opinion / not relevant

Sector classification and activity	
Macro-Sector	Manufacturing
NACE Level	To be determined
Code	To be determined
Description	Manufacture of products, key components, equipment and machinery for eligible renewable energy technologies

Mitigation criteria	
Principle	The manufacture of low carbon technologies that result in substantial GHG emission reductions in other sectors of the economy and including private households is eligible.
Metric	Manufacture of products, key components, equipment and machinery for the following renewable energy technologies is eligible: <ul style="list-style-type: none">• Geothermal Power• Hydropower• Solar Concentrated Power (CSP)• Solar Photovoltaic (PV)• Wind energy• Ocean energy (see energy activities for definition).
Threshold	No threshold applies

Do no significant harm assessment	
(2) Adaptation	To be determined.
(3) Water	To be determined

Do no significant harm assessment	
(4) Circular Economy	<ul style="list-style-type: none"> • Adopt design solutions aimed at improving durability⁷, reparability and recyclability of the products manufactured. • Implement production line quality inspection and testing in order to minimise early stage failures of components/products in the field
(5) Pollution	Minimise emissions of pollutants to air, soil and water. For activities covered by BREF documents ⁸ , limit emissions of pollutants to air, soil and water to value within the BATAEL ⁹ ranges given in the relevant BREF.
(6) Ecosystems	To be determined

Rationale	
Additional notes on conclusions reached	<p>The TEG has proposed eligibility for the manufacture of those specific products, key components, equipment and machinery that are essential for the deployment of technologies that are needed to achieve the climate mitigation goals defined in the 2015 UNFCCC Paris Climate Change Agreement. Eligibility is based on those technologies eligible in the section of the taxonomy on energy production.</p> <p>Manufacture of equipment/components for bio energy, energy storage, power (electricity) to gas equipment and fuel cells will be considered during subsequent rounds (see information on round 2 sectors in the feedback document (https://ec.europa.eu/info/sites/info/files/business_economy_euro/banking_and_finance/documents/sustainable-finance-taxonomy-feedback-and-workshops_en.pdf#sectors)) based on definition of eligibility for operation of those activities currently under development by the TEG.</p> <p>The TEG is considering options to define boundaries, and potentially thresholds, that will address the manufacture of products, key components, equipment and machinery along the supply chain that are essential to the eligible low carbon renewable energy technology but not necessarily include the manufacture of those components/materials that are used by both low carbon renewable energy technology and non-low carbon energy technology.</p>

⁷ To improve durability, examples of measures that could be implemented are: developing components/products that have undergone accelerated life testing to demonstrate durability and low degradation for their expected lifespan in the field (e.g. at least 15 years for inverters); implementing production line quality inspection and testing in order to minimise early stage failures of components/products in the field.

⁸ BREF documents refer to Best Available Techniques Reference Documents developed according to the Industrial Emissions Directive (IED). BREF documents are available here (<http://eippcb.jrc.ec.europa.eu/reference/>).

⁹ BATAELs refer to the Best Available Techniques Associated Emissions Levels defined in the BREF documents.

Questions on manufacture of renewable energy equipment:

1. Do you agree with the proposed principle for determining a substantial contribution to

climate mitigation for this activity?

- Yes
- No
- Don't know / no opinion / not relevant

2. Do you agree with the proposed metrics for assessing the extent of the mitigation contribution?

- Yes
- No
- Don't know / no opinion / not relevant

3. Where thresholds have been considered, please indicate whether you agree with the proposed thresholds for the activity to qualify for inclusion in the taxonomy.

- Yes
- No
- Don't know / no opinion / not relevant

Please explain your answer to question 3.

If relevant, you may propose alternative thresholds that could be considered.

2,000 character(s) maximum

4. Do you agree with the 'do no significant harm' criteria identified for these activities?

- Yes
- No
- Don't know / no opinion / not relevant

5. Is there any key area where significant harm needs to be avoided and which is not mentioned already?

- Yes
- No
- Don't know / no opinion / not relevant

Please explain your answer to question 5 and what requirements could be used to avoid such harm:

2,000 character(s) maximum

6. Would the proposed criteria give rise to adverse consequences, e.g. risk of stranded assets or the risk of delivering inconsistent incentives?

- Yes
- No
- Don't know / no opinion / not relevant

Please explain your answer to question 6:

2,000 character(s) maximum

7. Can the proposed criteria be used for activities outside the EU?

- Yes
- No
- Don't know / no opinion / not relevant

Sector classification and activity	
Macro-Sector	Manufacturing
NACE Level	To be determined
Code	To be determined
Description	Manufacture of zero direct emissions road vehicles and rail transport

Mitigation criteria	
Principle	The manufacture of low carbon technologies that result in substantial GHG emission reductions in other sectors of the economy and including private households is eligible.
Metric	Manufacture of products, key components, equipment and infrastructure that are essential for zero direct emission road vehicles and/or land transport (i.e. zero emissions LRT, metro, hydrogen bus etc) is eligible.
Threshold	No threshold applies

Do no significant harm assessment	
(2) Adaptation	To be determined.
(3) Water	To be determined

Do no significant harm assessment	
(4) Circular Economy	To be determined
(5) Pollution	Minimise emissions of pollutants to air, soil and water. For activities covered by BREF documents ¹⁰ , limit emissions of pollutants to air, soil and water to value within the BATAEL ¹¹ ranges given in the relevant BREF.
(6) Ecosystems	To be determined

Rationale	
Additional notes on conclusions reached	<p>The TEG has proposed eligibility for the manufacture of those specific products, key components, equipment and machinery that are essential for the deployment of technologies that are needed to achieve the climate mitigation goals defined in the 2015 UNFCCC Paris Climate Change Agreement. Eligibility is based on those technologies eligible in the section of the taxonomy on energy production.</p> <p>The manufacture of other types of transportation fleets and infrastructure will be considered at a later stage based on definition of eligibility in the transport section of the taxonomy.</p> <p>The TEG is considering options to define boundaries, and potentially thresholds, that will address the manufacture of products, key components, equipment and machinery along the supply chain that are essential to the eligible low carbon renewable energy technology but not necessarily include the manufacture of those components/materials that are used by both low carbon renewable energy technology and non-low carbon energy technology.</p>

¹⁰ BREF documents refer to Best Available Techniques Reference Documents developed according to the Industrial Emissions Directive (IED). BREF documents are available here (<http://eippcb.jrc.ec.europa.eu/reference/>).

¹¹ BATAELs refer to the Best Available Techniques Associated Emissions Levels defined in the BREF documents.

Questions on manufacture of low carbon transport vehicles, equipment and infrastructure:

1. Do you agree with the proposed principle for determining a substantial contribution to climate mitigation for this activity?

- Yes
- No
- Don't know / no opinion / not relevant

2. Do you agree with the proposed metrics for assessing the extent of the mitigation contribution?

- Yes

- No
- Don't know / no opinion / not relevant

3. Where thresholds have been considered, please indicate whether you agree with the proposed thresholds for the activity to qualify for inclusion in the taxonomy.

- Yes
- No
- Don't know / no opinion / not relevant

Please explain your answer to question 3.

If relevant, you may propose alternative thresholds that could be considered.

2,000 character(s) maximum

4. Do you agree with the 'do no significant harm' criteria identified for these activities?

- Yes
- No
- Don't know / no opinion / not relevant

5. Is there any key area where significant harm needs to be avoided and which is not mentioned already?

- Yes
- No
- Don't know / no opinion / not relevant

Please explain your answer to question 5 and what requirements could be used to avoid such harm:

2,000 character(s) maximum

6. Would the proposed criteria give rise to adverse consequences, e.g. risk of stranded assets or the risk of delivering inconsistent incentives?

- Yes
- No
- Don't know / no opinion / not relevant

Please explain your answer to question 6:

7. Can the proposed criteria be used for activities outside the EU?

- Yes
- No
- Don't know / no opinion / not relevant

Sector classification and activity	
Macro-Sector	Manufacturing
NACE Level	To be determined
Code	To be determined
Description	Manufacture of energy efficiency equipment for buildings

Mitigation criteria	
Principle	The manufacture of low carbon technologies that result in substantial GHG emission reductions in other sectors of the economy and including private households is eligible.
Metric	Various, see below

Mitigation criteria

Manufacture of the following products (with thresholds where appropriate) and their key components is eligible:

- High efficiency windows (U-value better than e.g. 0.7 W/m²K)
- High efficiency doors (U-value better than 1.2/m²K)
- Insulation solutions, external cladding and roofing systems with high insulation values (e.g. for external walls, basements and ground floors 0.2 W/m²K where possible, otherwise 0.5 W/m²K, roofs 0.1 – 0.3 W/m²K),
- Hot water fittings that are verified or labelled as being efficient (e.g. taps, showers)
- Appliances that are labelled according to EU regulations as being the most efficient (e.g. washing machines, dishwashers)
- High efficiency lighting with daylight and presence controls that are labelled according to EU regulations as being the most efficient
- Space heating and domestic hot water systems that are labelled according to EU regulations as being the most efficient
- Cooling and ventilation systems that are labelled according to EU regulations as being the most efficient
- Façade and roofing elements with a solar shading or solar control function, including those that support the growing of vegetation
- Smart monitoring and control equipment and technologies, in particular the most energy-efficient (according to EN 15232 standard) building automation and control systems for commercial buildings.
- Zoned thermostats and devices for the smart monitoring of the main electricity loads for residential buildings, as well as products for heat metering and thermostatic controls for individual homes connected to district heating systems.

Threshold

Do no significant harm assessment

(2) Adaptation	To be determined
(3) Water	To be determined
(4) Circular Economy	To be determined
(5) Pollution	Minimise emissions of pollutants to air, soil and water. For activities covered by BREF documents ¹² , limit emissions of pollutants to air, soil and water to value within the BATAEL ¹³ ranges given in the relevant BREF.

Do no significant harm assessment

(6) Ecosystems To be determined

Rationale

Additional notes on conclusions reached

The TEG has proposed eligibility for the manufacture of those specific products, key components, equipment and machinery that are essential for the deployment of technologies that are needed to achieve the climate mitigation goals defined in the 2015 UNFCCC Paris Climate Change Agreement. Eligibility is based on those technologies eligible in the section of the taxonomy on energy production.

The manufacture of other energy efficiency equipment for buildings is under consideration by the TEG. Manufacture of renewable energy equipment, which may be installed on buildings, is considered separately under manufacture of renewable energy equipment.

The TEG is considering options to define boundaries, and potentially thresholds, that will address the manufacture of products, key components, equipment and machinery along the supply chain that are essential to the eligible low carbon renewable energy technology but not necessarily include the manufacture of those components/materials that are used by both low carbon renewable energy technology and non-low carbon energy technology.

¹² BREF documents refer to Best Available Techniques Reference Documents developed according to the Industrial Emissions Directive (IED). BREF documents are available here (<http://eippcb.jrc.ec.europa.eu/reference/>).

¹³ BATAELs refer to the Best Available Techniques Associated Emissions Levels defined in the BREF documents.

Questions on manufacture of energy efficiency equipment for buildings:

1. Do you agree with the proposed principle for determining a substantial contribution to climate mitigation for this activity?

- Yes
- No
- Don't know / no opinion / not relevant

2. Do you agree with the proposed metrics for assessing the extent of the mitigation contribution?

- Yes
- No
- Don't know / no opinion / not relevant

3. Where thresholds have been considered, please indicate whether you agree with the

proposed thresholds for the activity to qualify for inclusion in the taxonomy.

- Yes
- No
- Don't know / no opinion / not relevant

Please explain your answer to question 3.

If relevant, you may propose alternative thresholds that could be considered.

2,000 character(s) maximum

4. Do you agree with the 'do no significant harm' criteria identified for these activities?

- Yes
- No
- Don't know / no opinion / not relevant

5. Is there any key area where significant harm needs to be avoided and which is not mentioned already?

- Yes
- No
- Don't know / no opinion / not relevant

Please explain your answer to question 5 and what requirements could be used to avoid such harm:

2,000 character(s) maximum

6. Would the proposed criteria give rise to adverse consequences, e.g. risk of stranded assets or the risk of delivering inconsistent incentives?

- Yes
- No
- Don't know / no opinion / not relevant

Please explain your answer to question 6:

2,000 character(s) maximum

7. Can the proposed criteria be used for activities outside the EU?

- Yes
- No
- Don't know / no opinion / not relevant

Sector classification and activity	
Macro-Sector	Manufacturing
NACE Level	To be determined
Code	To be determined
Description	Manufacture of low carbon technologies that result in substantial GHG emission reductions in other sectors of the economy including private households and are not classified in other categories for manufacture of low carbon technologies

Mitigation criteria	
Principle	The manufacture of low carbon technologies that result in substantial GHG emission reductions in other sectors of the economy and including private households is eligible
Metric	Demonstrate substantial GHG emission reductions through a life cycle carbon footprint
Threshold	To be determined

Do no significant harm assessment	
(2) Adaptation	To be determined
(3) Water	To be determined
(4) Circular Economy	To be determined
(5) Pollution	To be determined
(6) Ecosystems	To be determined

Rationale

Rationale	
Additional notes on conclusions reached	<p>The inclusion of other low carbon technologies is intended to allow the taxonomy to be dynamic over time and able to consider eligible other technologies than those explicitly listed. This could cover end-game technologies and, more broadly, all the technological development demonstrating substantial GHG reductions. Such dynamic criterion comes in addition to the explicit criteria for renewable energy equipment, low carbon transport equipment and energy efficiency in building technologies.</p> <p>The TEG will define a metric that builds on existing lifecycle carbon footprint standards. Standards currently being reviewed include:</p> <ul style="list-style-type: none"> • ISO 14067:2018 - Greenhouse gases -- Carbon footprint of products -- Requirements and guidelines for quantification • GHG Protocol - Product Life Cycle Accounting and Reporting Standard • PAS 2050:2011 - Specification for the assessment of the life cycle greenhouse gas emissions of goods and services • The Product Environmental Footprint (PEF) and Organisational Environmental Footprint (OEF) method, defined in 2013/179/EU: Commission Recommendation of 9 April 2013 on the use of common methods to measure and communicate the life cycle environmental performance of products and organisations (https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32013H0179).

Questions on manufacture of other low carbon technologies:

1. Do you agree with the proposed principle for determining a substantial contribution to climate mitigation for this activity?

- Yes
- No
- Don't know / no opinion / not relevant

2. Do you agree with the proposed metrics for assessing the extent of the mitigation contribution?

- Yes
- No
- Don't know / no opinion / not relevant

3. Where thresholds have been considered, please indicate whether you agree with the proposed thresholds for the activity to qualify for inclusion in the taxonomy.

- Yes
- No
- Don't know / no opinion / not relevant

Please explain your answer to question 3.

If relevant, you may propose alternative thresholds that could be considered.

2,000 character(s) maximum

4. Please indicate any key area where significant harm needs to be avoided. Please explain and propose criteria where appropriate.

2,000 character(s) maximum

5. Would the proposed criteria give rise to adverse consequences, e.g. risk of stranded assets or the risk of delivering inconsistent incentives?

- Yes
- No
- Don't know / no opinion / not relevant

Please explain your answer to question 5:

2,000 character(s) maximum

6. Can the proposed criteria be used for activities outside the EU?

- Yes
- No
- Don't know / no opinion / not relevant

Sector classification and activity	
Macro-Sector	D) Energy
NACE Level	4
Code	35.11
Description	Energy Production (Geothermal)

Mitigation criteria

Principle	Demonstrate substantial avoidance of GHG emissions
Metric	Direct GHG emissions - gCO ₂ e/kWh
Threshold	Direct GHGs from electricity generation <125gCO ₂ e/kWh

Do no significant harm assessment

(2) Adaptation	-
(3) Water	Minimise consequences on local water quality and consumption from contaminants and changes in the hydraulic regime. Requirements for management or mitigation of potential impacts will require further analysis.
(4) Circular Economy	-
(5) Pollution	Minimise emissions of pollutants from geothermal fluids and, in case of hybrid (geothermal + combustion) plants, from fuel combustion. Requirements for management or mitigation of potential impacts will require further analysis.
(6) Ecosystems	Perform geological risks assessments to avoid or mitigate the risk of geological hazard directly caused by the activity. Requirements for management or mitigation of potential impacts will require further analysis.

Rationale

Rationale	
Additional notes on conclusions reached	<p>Electricity generation from geothermal energy can cause emissions of greenhouse gases (GHG). These emissions are generally much lower than emissions from electricity generation from fossil fuels. Direct emissions of carbon dioxide (and to a lesser extent methane) result from the release of naturally occurring non-condensable gases from geothermal fluid during the energy extraction process. The emissions threshold of 125gCO₂e/kWh has been selected because it represents approximately the international weighted average emissions for geothermal energy generation (according to an International Geothermal Association survey from - Bertani and Thain, 2002), which is 122gCO₂e/kWh. The purpose of setting a threshold that does not automatically make all geothermal energy generation eligible for the Taxonomy, is to encourage better performing assets and management activities. The threshold also applies for geothermal electricity plants which are hybridized with fossil or waste combustion processes.</p> <p>Note that combined Heat and Power production from geothermal will be treated separately (cf. NACE code D35.3)</p> <p>The international Energy Agency 2 Degree Scenario identifies an average emissions intensity across the global electricity sector in 2050 of 35 gCO₂e/kWh (down from 519 gCO₂e/kWh in 2014). It is likely that thresholds for geothermal energy plants will need to be reduced in future.</p>

Questions on energy production (geothermal):

1. Do you agree with the proposed principle for determining a substantial contribution to climate mitigation for this activity?

- Yes
- No
- Don't know / no opinion / not relevant

2. Do you agree with the proposed metrics for assessing the extent of the mitigation contribution?

- Yes
- No
- Don't know / no opinion / not relevant

3. Where thresholds have been considered, please indicate whether you agree with the proposed thresholds for the activity to qualify for inclusion in the Taxonomy.

- Yes
- No
- Don't know / no opinion / not relevant

Please explain your answer to question 3.

If relevant, you may propose alternative thresholds that could be considered.

2,000 character(s) maximum

4. Do you agree with the 'do no significant harm' criteria identified for these activities?

- Yes
- No
- Don't know / no opinion / not relevant

5. Is there any key area where significant harm needs to be avoided and which is not mentioned already?

- Yes
- No
- Don't know / no opinion / not relevant

Please explain your answer to question 5 and what requirements could be used to avoid such harm:

2,000 character(s) maximum

6. Would the proposed criteria give rise to adverse consequences, e.g. risk of stranded assets or the risk of delivering inconsistent incentives?

- Yes
- No
- Don't know / no opinion / not relevant

Please explain your answer to question 6:

2,000 character(s) maximum

7. Can the proposed criteria be used for activities outside the EU?

- Yes
- No
- Don't know / no opinion / not relevant

Sector classification and activity

Mitigation criteria

Principle	Demonstrate substantial avoidance of GHG emissions
Metric	<ul style="list-style-type: none">• Power density Watt/m²; and/or• Direct GHG emissions from the reservoir (gCO₂e/kWh).
Threshold	<p>If the hydropower plant has no reservoir, or it is built on an existing reservoir without introducing any new reservoirs, i.e. the plant does not lead to additional reservoir emissions, the plant is considered eligible. In other cases, the hydropower plant is eligible if it meets the following thresholds:</p> <ul style="list-style-type: none">• Direct GHGs from electricity generation <125 gCO₂e/kWh; and/or• The threshold for power density [$>x$ W/m²]. The threshold will be considered in the 2nd Round.

Do no significant harm assessment

(2) Adaptation	<ul style="list-style-type: none">• Ensure resilience to extreme weather events;• Assessment of design and operation to avoid contributing to water and food insecurity, erosion, poor flood control, which exacerbate climate change impacts.
(3) Water	<p>Construction Phase impacts: Ensure that the river catchment assessment shows no significant adverse impacts on upstream and downstream quantitative and qualitative water resources and uses.</p> <p>General impacts: Operation of the hydro power plant must adhere to the principles of the UNECE Convention on the Protection and Use of Transboundary Watercourses and International Lakes.</p>
(4) Circular Economy	Minimise construction-related waste and ensure appropriate recycling/treatment for waste generated.

Do no significant harm assessment

Maintain the quality of the waters at baseline concentrations and to a quality that protects and supports fish life and aquatic habitats.

Parameters and acceptable limits/ranges and necessary sampling and measuring

(5) Pollution

frequency are contained in EU Directive 2006/44/EC (<https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32006L0044>) and should be observed. These address the Quality of Freshwaters needing Protection or Improvement in order to support fish life and relevant parameters contained in the WFD surface water chemical monitoring and chemical monitoring of sediment and biota.

Operational Phase Criteria:

1. Projects located in or affecting designated protected areas, or areas of high nature and biodiversity value and vulnerability, shall be assessed with a higher scrutiny in compliance with the provisions of the EU Habitats and Birds Directives according to which projects may be implemented only if they do not have a significant negative effect on the conservation objectives for which the sites have been designated;
2. Implement appropriate mitigation measures to minimise possible impacts, such as:
 - a. restoration of river continuity,
 - b. fish passes,
 - c. restoration of ecological flow,
 - d. establishment of monitoring systems,
 - e. measures to guarantee the connectivity between linked river basins, consider cumulative impacts and avoid fragmentation and isolation of terrestrial species,
 - f. erosion and sedimentation;
3. No risk of invasive and non-native species introduction is demonstrated;

(6) Ecosystems

Construction Phase Criteria:

1. Adheres to the operational phase criteria of Objective 6 above;
2. The area of inundation for the reservoir/dam does not adversely impact on terrestrial ecosystems, particularly wetlands and forests.

Rationale	
Additional notes on conclusions reached	<p>On average, hydropower is a low-emitting source of generation. Evidence to date suggests a median direct emissions intensity across hydropower of 24-28 gCO₂e/kWh compared to around 310-350 gCO₂e/kWh for even the most efficient combined cycle gas turbine (CCGT) power station. According to International Hydropower Association 84% of the stations emit less than 100 gCO₂e/kWh, the global median was 18.5 gCO₂e/kWh.</p> <p>Considering these data, the threshold has been set at a level where hydropower plants would be eligible unless the emissions from their reservoirs are considerably higher than emissions levels caused by most other renewable energy technologies. The value of 125 gCO₂e/kWh has been selected to ensure consistency with the mitigation requirement for geothermal. This provides comparability across lower carbon energy sources.</p> <p>The criteria for HEP as a source of renewable energy build on High Level Expert Group principles, Climate Bonds Initiative thresholds, and European Investment Bank criteria, CDM, and EU guidance note (http://ec.europa.eu/environment/nature/natura2000/management/docs/Hydro%20final%20June%202018.pdf).</p> <p>Scope of emissions: there is no requirement for a life cycle assessment. The GHG emissions threshold only includes scope 1 – direct emissions from reservoirs. Scope 2 – indirect GHG emissions from consumption of purchased electricity, and scope 3 – embedded emissions, mainly from production of materials used to construct dams, are negligible on a per kWh basis¹⁵.</p> <p>Power density: Power density is proposed as an alternative threshold because it is easier to calculate, has an inversely proportional relationship to emissions intensity, and is also used by the CDM assessment methodology. Therefore, it could be used as a proxy to reduce the need for GHG assessments which take time and resources. Data show that hydropower facilities which have power density higher than 5W/m² are likely to have GHG emissions well below the threshold of 125gCO₂e/kWh¹⁶.</p>

¹⁵ Figures compiled by the IPCC suggest that the median of construction and operation emissions is 4 gCO₂e/kWh. Other studies suggest they are typically low < 10 gCO₂e/kWh. Reference: Kumar, A., T. Schei, A. Ahenkorah, R. Caceres Rodriguez, J.-M. Devernay, M. Freitas, D. Hall, Å. Killingtveit, Z. Liu (2011), Hydropower, in IPCC Special Report on Renewable Energy Sources and Climate Change Mitigation; Hertwich et al. (2015), 'Integrated life cycle assessment of electricity supply scenarios confirms global environmental benefit of low-carbon technologies', PNAS May 19, 2015. 112 (20) 6277-6282; Raadal, H., Gagnon, L., Modahl, I., & Hanssen, O. (2011). Life cycle greenhouse gas (GHG) emissions from the generation of wind and hydro power. Renewable and Sustainable Energy Reviews, 15(7), 3417-3422.

¹⁶ International Hydropower Association G-res database (2017).

Questions on energy production (hydro):

1. Do you agree with the proposed principle for determining a substantial contribution to climate mitigation for this activity?

- Yes
- No
- Don't know / no opinion / not relevant

2. Do you agree with the proposed metrics for assessing the extent of the mitigation contribution?

- Yes
- No
- Don't know / no opinion / not relevant

3. Where thresholds have been considered, please indicate whether you agree with the proposed thresholds for the activity to qualify for inclusion in the Taxonomy.

- Yes
- No
- Don't know / no opinion / not relevant

Please explain your answer to question 3.

If relevant, you may propose alternative thresholds that could be considered.

2,000 character(s) maximum

4. Do you agree with the 'do no significant harm' criteria identified for these activities?

- Yes
- No
- Don't know / no opinion / not relevant

5. Is there any key area where significant harm needs to be avoided and which is not mentioned already?

- Yes
- No
- Don't know / no opinion / not relevant

Please explain your answer to question 5 and what requirements could be used to avoid such harm:

2,000 character(s) maximum

6. Would the proposed criteria give rise to adverse consequences, e.g. risk of stranded assets or the risk of delivering inconsistent incentives?

- Yes
- No

- Don't know / no opinion / not relevant

Please explain your answer to question 6:

2,000 character(s) maximum

7. Can the proposed criteria be used for activities outside the EU?

- Yes
- No
- Don't know / no opinion / not relevant

Sector classification and activity	
Macro-Sector	D) Energy
NACE Level	4
Code	35.11
Description	Energy Production (Solar photovoltaic)

Mitigation criteria	
Principle	Demonstrate substantial avoidance of GHG emissions
Metric	Direct GHG emissions - gCO2e/kWh
Threshold	No threshold applies

Do no significant harm assessment	
(2) Adaptation	-
(3) Water	-

Do no significant harm assessment	
(4) Circular Economy	<ul style="list-style-type: none"> • Ensure the reparability of the solar photovoltaic (PV) installation or plant thanks to accessibility and exchangeability of the components, e.g. capacitors or boards in inverters, or the bypass diodes in the module junction boxes. • Implement field inspection and monitoring tools at the system level to prevent failures to occur or for early detection of faults. • Select modules and inverter components that have undergone accelerated life testing to demonstrate durability and low degradation for their expected lifespan in the field (e.g. 15 years for inverters, 25 years for modules)
(5) Pollution	Select solar PV modules manufactured to the highest environmental standards. Efforts should be made to select the least polluting materials and technology based on life cycle impact assessment.
(6) Ecosystems	<p>PV panels should not be installed on forest or wetlands. Panels can be installed on e.g. agricultural land, if the agricultural production yields a low output or if demonstrating that combined land use is resource efficient¹⁷.</p> <p>Give preference to installing PV panel on buildings and other roofs.</p>

Rationale	
Additional notes on conclusions reached	<p>Solar PV uses a renewable energy source and has zero direct emissions.</p> <p>The criteria build on High Level Expert Group principles, Climate Bonds Initiative thresholds, and European Investment Bank criteria.</p> <p>The mitigation criteria outlined in this table considers only energy generation from PV, not taking into account emissions from PV manufacturing. Solar PV emissions can vary between 20g and 200g CO₂-eq/kWh depending on the on the manufacturing processes implemented and, on the materials, used. Further consideration of how to capture emissions from manufacturing and materials will be addressed in the 2nd Round.</p>

¹⁷ Combined land use of solar PV and agriculture could actually boost production if the panels are mounted high enough to allow crops planted below to receive as much sunshine as possible (<https://www.ise.fraunhofer.de/en/press-media/press-releases/2017/harvesting-the-sun-for-power-and-produce-agrophotovoltaics-increases-the-land-use-efficiency-by-over-60-percent.html>).

Questions on energy production (solar photovoltaic):

1. Do you agree with the proposed principle for determining a substantial contribution to climate mitigation for this activity?

- Yes
- No
- Don't know / no opinion / not relevant

2. Do you agree with the proposed metrics for assessing the extent of the mitigation contribution?

- Yes
- No
- Don't know / no opinion / not relevant

3. Where thresholds have been considered, please indicate whether you agree with the proposed thresholds for the activity to qualify for inclusion in the Taxonomy.

- Yes
- No
- Don't know / no opinion / not relevant

Please explain your answer to question 3.

If relevant, you may propose alternative thresholds that could be considered.

2,000 character(s) maximum

4. Do you agree with the 'do no significant harm' criteria identified for these activities?

- Yes
- No
- Don't know / no opinion / not relevant

5. Is there any key area where significant harm needs to be avoided and which is not mentioned already?

- Yes
- No
- Don't know / no opinion / not relevant

Please explain your answer to question 5 and what requirements could be used to avoid such harm:

2,000 character(s) maximum

6. Would the proposed criteria give rise to adverse consequences, e.g. risk of stranded assets or the risk of delivering inconsistent incentives?

- Yes
- No
- Don't know / no opinion / not relevant

Please explain your answer to question 6:

2,000 character(s) maximum

7. Can the proposed criteria be used for activities outside the EU?

- Yes
- No
- Don't know / no opinion / not relevant

Sector classification and activity	
Macro-Sector	D) Energy
NACE Level	4
Code	35.11
Description	Energy Production (Wind energy)

Mitigation criteria	
Principle	Demonstrate substantial avoidance of GHG emissions
Metric	Direct GHG emissions - gCO ₂ e/kWh
Threshold	No threshold applies

Do no significant harm assessment	
(2) Adaptation	-
(3) Water	-
(4) Circular Economy	-

Do no significant harm assessment	
(5) Pollution	Minimise operational and maintenance activities causing pollution (e.g. minimise transportation needs to offshore wind farms by implementing automated monitoring and maintenance techniques).
(6) Ecosystems	<p>Consider and minimise:</p> <ul style="list-style-type: none"> • the impact on landscape of the installed wind turbines; • the collision risk for birds and bats population with the blades of wind turbines; • the noise and vibrations generated during installation and operation of wind turbines; • the impact of off-shore wind farms to fishery resources related to e.g. noise, vibration and electromagnetic field generated by submarines power cables

Rationale	
Additional notes on conclusions reached	<p>Wind (on and offshore) is a renewable energy source. The direct emissions of wind energy are zero, therefore no threshold for maximum emissions is set.</p> <p>The criteria builds on HLEG principles, CBI thresholds, EIB criteria, and EU guidance note (http://ec.europa.eu/environment/nature/natura2000/management/docs/Wind_farms.pdf).</p> <p>The criteria refers to energy generation from wind. Production of wind energy components is covered in the manufacturing section of the taxonomy under manufacturing of renewable energy equipment.</p>

Questions on energy production (wind energy):

1. Do you agree with the proposed principle for determining a substantial contribution to climate mitigation for this activity?

- Yes
- No
- Don't know / no opinion / not relevant

2. Do you agree with the proposed metrics for assessing the extent of the mitigation contribution?

- Yes
- No

- Don't know / no opinion / not relevant

3. Where thresholds have been considered, please indicate whether you agree with the proposed thresholds for the activity to qualify for inclusion in the Taxonomy.

- Yes
- No
- Don't know / no opinion / not relevant

Please explain your answer to question 3.

If relevant, you may propose alternative thresholds that could be considered.

2,000 character(s) maximum

4. Do you agree with the 'do no significant harm' criteria identified for these activities?

- Yes
- No
- Don't know / no opinion / not relevant

5. Is there any key area where significant harm needs to be avoided and which is not mentioned already?

- Yes
- No
- Don't know / no opinion / not relevant

Please explain your answer to question 5 and what requirements could be used to avoid such harm:

2,000 character(s) maximum

6. Would the proposed criteria give rise to adverse consequences, e.g. risk of stranded assets or the risk of delivering inconsistent incentives?

- Yes
- No
- Don't know / no opinion / not relevant

Please explain your answer to question 6:

2,000 character(s) maximum

7. Can the proposed criteria be used for activities outside the EU?

- Yes
- No
- Don't know / no opinion / not relevant

Sector classification and activity	
Macro-Sector	D) Energy
NACE Level	4
Code	35.11
Description	Energy Production (Ocean energy)

Mitigation criteria	
Principle	Demonstrate substantial avoidance of GHG emissions
Metric	Direct GHG emissions - gCO ₂ e/kWh
Threshold	No threshold applies

Do no significant harm assessment	
(2) Adaptation	-
(3) Water	-
(4) Circular Economy	-
(5) Pollution	Minimise toxicity of some components, especially the paints. For instance, some deep-water tidal elements are covered in anti-fouling paint and biocides which can be highly toxic.

Do no significant harm assessment

Consider and minimise the effect of:

(6) Ecosystems

- turbines on fishery resources (i.e. injuries and fatalities caused by turbines);
- noise on animal's capacity to navigate, communicate, and hunt in marine environments;
- electro-magnetic fields generated especially by cables and underwater substations; this can be problematic as some animals, like crustaceans, use the earth's natural magnetic fields to navigate and communicate;
- energy removal from the water, which can also disturb marine life.
- if marine current or waves are removed, sediment transportation is disturbed, as well as some animal transportation and reproduction techniques.
- tidal power production removes or changes some of the currents and flows.

Rationale

Additional notes on conclusions reached

Ocean Energy has some of the lowest GHG emission rates at 4g CO₂e/kWh. The direct emissions of ocean energy are non-material, therefore no threshold for maximum emissions is set. Ocean Energy includes:

- Wave energy (energy from the wave motion),
- Tidal energy (energy from marine currents due to the tides),
- Ocean thermal (gradient of ocean surface / depth), - Salinity gradient,
- Ocean currents (deep sea currents)

This list of included technologies will need to be revisited as new technologies emerge.

Questions on energy production (ocean energy):

1. Do you agree with the proposed principle for determining a substantial contribution to climate mitigation for this activity?

- Yes
- No
- Don't know / no opinion / not relevant

2. Do you agree with the proposed metrics for assessing the extent of the mitigation contribution?

- Yes
- No
- Don't know / no opinion / not relevant

3. Where thresholds have been considered, please indicate whether you agree with the proposed thresholds for the activity to qualify for inclusion in the Taxonomy.

- Yes
- No
- Don't know / no opinion / not relevant

Please explain your answer to question 3.

If relevant, you may propose alternative thresholds that could be considered.

2,000 character(s) maximum

4. Do you agree with the 'do no significant harm' criteria identified for these activities?

- Yes
- No
- Don't know / no opinion / not relevant

5. Is there any key area where significant harm needs to be avoided and which is not mentioned already?

- Yes
- No
- Don't know / no opinion / not relevant

Please explain your answer to question 5 and what requirements could be used to avoid such harm:

2,000 character(s) maximum

6. Would the proposed criteria give rise to adverse consequences, e.g. risk of stranded assets or the risk of delivering inconsistent incentives?

- Yes
- No

- Don't know / no opinion / not relevant

Please explain your answer to question 6:

2,000 character(s) maximum

7. Can the proposed criteria be used for activities outside the EU?

- Yes
- No
- Don't know / no opinion / not relevant

Sector classification and activity	
Macro-Sector	D) Energy
NACE Level	
Code	D35.11
Description	Energy Production (Concentrated Solar Power – 100% CSP plants)

Mitigation criteria	
Principle	Demonstrate substantial avoidance of GHG emissions
Metric	Direct GHG emissions - gCO2e/kWh
Threshold	No threshold applies for 100% CSP plants

Do no significant harm assessment	
(2) Adaptation	-
(3) Water	<p>Some CSP technologies can require water to clean solar surfaces and/or use in the process, for steam or cooling purposes. This can be problematic especially knowing that CSP plants are generally built in water-scarce areas.</p> <p>Some CSP technologies have low water consumption such as the dish-type stirling plants, while others, especially solar towers that need water cooling, can use up to 4500 litres of water per MWh. In those cases, air cooling should be preferred as it allows for a drastic reduction of water used.</p> <p>The use of water should be minimised, and the plant's consumption should not have a negative impact on local water reserves.</p>

Do no significant harm assessment	
(4) Circular Economy	-
(5) Pollution	-
(6) Ecosystems	<p>CSP plants require extensive land to concentrate enough heat. Efforts should be made to ensure that affected land is dedicated to such facilities.</p> <p>Land use can also be a problem as CSP plants require extensive land to concentrate enough heat. Efforts should be made to ensure that the land dedicated to plants is not forest nor agriculture land.</p> <p>CSP plant managers should ensure that during standby, solar reflectors aim at different directions to avoid concentrated heat. This technique has proved to reduce the number of bird kills.</p>

Rationale	
Additional notes on conclusions reached	<p>CSP is a renewable energy. 100% CSP-only plants have a life cycle emission rate of 10-35g CO₂e/kWh, one of the lowest emissions rates for all energy sources.</p> <p>Further criteria will be investigated for hybrid plants and/or fossil fuel use in CSP plants.</p>

Questions on energy production (concentrated solar power):

1. Do you agree with the proposed principle for determining a substantial contribution to climate mitigation for this activity?

- Yes
- No
- Don't know / no opinion / not relevant

2. Do you agree with the proposed metrics for assessing the extent of the mitigation contribution?

- Yes
- No
- Don't know / no opinion / not relevant

3. Where thresholds have been considered, please indicate whether you agree with the proposed thresholds for the activity to qualify for inclusion in the Taxonomy.

- Yes
- No
- Don't know / no opinion / not relevant

Please explain your answer to question 3.

If relevant, you may propose alternative thresholds that could be considered.

2,000 character(s) maximum

4. Do you agree with the 'do no significant harm' criteria identified for these activities?

- Yes
- No
- Don't know / no opinion / not relevant

5. Is there any key area where significant harm needs to be avoided and which is not mentioned already?

- Yes
- No
- Don't know / no opinion / not relevant

Please explain your answer to question 5 and what requirements could be used to avoid such harm:

2,000 character(s) maximum

6. Would the proposed criteria give rise to adverse consequences, e.g. risk of stranded assets or the risk of delivering inconsistent incentives?

- Yes
- No
- Don't know / no opinion / not relevant

Please explain your answer to question 6:

2,000 character(s) maximum

7. Can the proposed criteria be used for activities outside the EU?

- Yes

- No
- Don't know / no opinion / not relevant

Sector classification and activity	
Macro-Sector	Transport
NACE Level	4
Code	49.10
Description	Passenger rail transport (Interurban)

Mitigation criteria	
Principle	Demonstrate substantial GHG emission reduction
Metric	CO2 emissions per passenger kilometre (gCO2/pkm)
Threshold	<p>Zero direct emissions rail and fleet is eligible.</p> <p>Low emissions intensity rail activities are eligible if the emissions intensity is below the threshold. Threshold levels will be discussed and set in the 2nd round.</p>

Do no significant harm assessment	
(2) Adaptation	Resilience to increased risk of extreme weather events (e.g. floods, rain, wind and snowfall as well as temperature stress).
(3) Water	-
(4) Circular Economy	<ul style="list-style-type: none"> • Adopt separate passenger waste collection, • Recycle waste from maintenance and operation.
(5) Pollution	For non-zero emission transport, minimise emissions of PM, NOx, PN and other air pollutants to air.
(6) Ecosystems	Reduce use of herbicides.

Rationale

Rationale	
Additional notes on conclusions reached	<p>Passenger rail transport with zero direct emissions or with low and reducing emission intensities contributes substantially to climate mitigation and is aligned with Article 6. 1. (c): ‘increasing clean or climate-neutral mobility’ and Article 6. 1. (f) phasing out anthropogenic emissions of greenhouse gases, including from fossil fuels.</p> <p>Zero direct emissions rail (e.g. electric, hydrogen) is eligible because:</p> <ul style="list-style-type: none"> • With the present energy mix, the overall emissions associated with zero direct emissions rail transport (i.e. electric or hydrogen) are among the lowest compared with other transport modes. • The generation of the energy carriers used by zero direct emissions transport is assumed to become low or zero carbon in the near future (for instance, in the scenario called EUCO 30 (https://ec.europa.eu/energy/sites/ener/files/documents/20170125_-_technical_report_on_euco_scenarios_primes_corrected.pdf) that meets the EU targets in the clean energy package, 70% of electricity in the EU is generated from decarbonised sources in 2030). Further work on this assumption is needed to validate it for activities taking place outside the EU. <p>In line with current market practice (such as Climate Bonds Initiative) and European legislation, the TEG is considering setting thresholds that reduce over time. Threshold levels, scope of emissions included, and metrics will be considered further in the 2nd round.</p>

Questions on passenger rail transport (interurban):

1. Do you agree with the proposed principle for determining a substantial contribution to climate mitigation for this activity?

- Yes
- No
- Don't know / no opinion / not relevant

2. Do you agree with the proposed metrics for assessing the extent of the mitigation contribution?

- Yes
- No
- Don't know / no opinion / not relevant

3. Where thresholds have been considered, please indicate whether you agree with the

proposed thresholds for the activity to qualify for inclusion in the Taxonomy.

- Yes
- No
- Don't know / no opinion / not relevant

Please explain your answer to question 3.

If relevant, you may propose alternative thresholds that could be considered.

2,000 character(s) maximum

4. Do you agree with the 'do no significant harm' criteria identified for these activities?

- Yes
- No
- Don't know / no opinion / not relevant

5. Is there any key area where significant harm needs to be avoided and which is not mentioned already?

- Yes
- No
- Don't know / no opinion / not relevant

Please explain your answer to question 5 and what requirements could be used to avoid such harm:

2,000 character(s) maximum

6. Would the proposed criteria give rise to adverse consequences, e.g. risk of stranded assets or the risk of delivering inconsistent incentives?

- Yes
- No
- Don't know / no opinion / not relevant

Please explain your answer to question 6:

2,000 character(s) maximum

7. Can the proposed criteria be used for activities outside the EU?

- Yes
- No
- Don't know / no opinion / not relevant

Sector classification and activity	
Macro-Sector	Transport
NACE Level	4
Code	49.20
Description	Freight Rail Transport

Mitigation criteria	
Principle	Demonstrate substantial GHG emission reduction
Metric	CO2 emissions per tonne-kilometre (gCO2/pkm)
Threshold	<p>Zero direct emissions rail and fleet is eligible.</p> <p>Low emissions intensity rail activities are eligible if the emissions intensity is below the threshold. Threshold levels will be discussed and set in the 2nd round.</p> <p>Rail that is predominantly dedicated to the transport of fossil fuels (more than 50%) is not eligible even if meeting the criteria above.</p>

Do no significant harm assessment	
(2) Adaptation	Resilience to increased risk of extreme weather events (e.g. floods, rain, wind and snowfall as well as temperature stress).
(3) Water	-
(4) Circular Economy	Recycle waste from maintenance and operation.
(5) Pollution	For non-zero emission transport, minimise emissions of PM, NOx, PN and other air pollutants to air.
(6) Ecosystems	Reduce use of herbicides.

Rationale

Rationale	
Additional notes on conclusions reached	<p>Freight rail transport with zero direct emissions or with low and reducing emission intensities contributes substantially to climate mitigation and are aligned with Article 6. 1. (c): ‘increasing clean or climate-neutral mobility’ and Article 6. 1. (f) phasing out anthropogenic emissions of greenhouse gases, including from fossil fuels.</p> <p>Zero direct emissions rail (e.g. electric, hydrogen) is eligible because:</p> <ul style="list-style-type: none"> • With the present energy mix, the overall emissions associated with zero direct emissions rail transport (i.e. electric or hydrogen) are among the lowest compared with other transport modes. • The generation of the energy carriers used by zero direct emissions transport is assumed to become low or zero carbon in the near future (for instance, in the scenario called EUCO 30 (https://ec.europa.eu/energy/sites/ener/files/documents/20170125_-_technical_report_on_euco_scenarios_primes_corrected.pdf) that meets the EU targets in the clean energy package, 70% of electricity in the EU is generated from decarbonised sources in 2030). Further work on this assumption is needed to validate it for activities taking place outside the EU. <p>In line with current market practice (such as Climate Bonds Initiative) and European legislation, the TEG is considering setting thresholds that reduce over time. Threshold levels, scope of emissions included, and metrics will be considered further in the 2nd round.</p>

Questions on freight rail transport:

1. Do you agree with the proposed principle for determining a substantial contribution to climate mitigation for this activity?

- Yes
- No
- Don't know / no opinion / not relevant

2. Do you agree with the proposed metrics for assessing the extent of the mitigation contribution?

- Yes
- No
- Don't know / no opinion / not relevant

3. Where thresholds have been considered, please indicate whether you agree with the

proposed thresholds for the activity to qualify for inclusion in the Taxonomy.

- Yes
- No
- Don't know / no opinion / not relevant

Please explain your answer to question 3.

If relevant, you may propose alternative thresholds that could be considered.

2,000 character(s) maximum

4. Do you agree with the 'do no significant harm' criteria identified for these activities?

- Yes
- No
- Don't know / no opinion / not relevant

5. Is there any key area where significant harm needs to be avoided and which is not mentioned already?

- Yes
- No
- Don't know / no opinion / not relevant

Please explain your answer to question 5 and what requirements could be used to avoid such harm:

2,000 character(s) maximum

6. Would the proposed criteria give rise to adverse consequences, e.g. risk of stranded assets or the risk of delivering inconsistent incentives?

- Yes
- No
- Don't know / no opinion / not relevant

Please explain your answer to question 6:

2,000 character(s) maximum

7. Can the proposed criteria be used for activities outside the EU?

- Yes
- No
- Don't know / no opinion / not relevant

Sector classification and activity	
Macro-Sector	Transport
NACE Level	4
Code	49.31
Description	Urban and suburban passenger land transport services (public transport)

Mitigation criteria	
Principle	Demonstrate substantial GHG emission reduction
Metric	CO2 emissions per passenger kilometre OR per kilometre (gCO2/pkm or gCO2/km)
Threshold	<ul style="list-style-type: none"> ● Zero direct emissions land transport activities (e.g. electric light rail transit, metro, tram, trolleybus, bus and rail) are eligible. ● Other land transport activities are eligible if the emissions intensity is below the threshold. Threshold levels will be discussed and set in the 2nd round.

Do no significant harm assessment	
(2) Adaptation	-
(3) Water	-
(4) Circular Economy	Ensure the vehicles, their parts and specifically the batteries are sent for re-use or recycling at the end of their useful life.
(5) Pollution	<ul style="list-style-type: none"> ● Reduce impact on air quality through adhering to strictest available standards, ● Adopt measures to reduce noise pollution.
(6) Ecosystems	-

Rationale	
Additional notes on conclusions reached	<p>Urban and suburban passenger public transport with zero direct emissions or with low and reducing emission intensities contributes substantially to climate mitigation and is aligned with Article 6. 1. (c): ‘increasing clean or climate-neutral mobility’ and Article 6. 1. (f) phasing out anthropogenic emissions of greenhouse gases, including from fossil fuels.</p> <p>Zero direct emissions urban and suburban passenger land transport rail (e.g. electric, hydrogen) is eligible because:</p> <ul style="list-style-type: none"> • With the present energy mix, the overall emissions associated with zero direct emissions urban and suburban passenger land rail transport (i.e. electric or hydrogen) are lower than comparable technologies (https://www.transportenvironment.org/sites/te/files/publications/Electric_buses_arrive_on_time.pdf). • The generation of the energy carriers used by zero direct emissions transport is assumed to become low or zero carbon in the near future (for instance, in the scenario called EUCO 30 (https://ec.europa.eu/energy/sites/ener/files/documents/20170125_-_technical_report_on_euco_scenarios_primes_corrected.pdf) that meets the EU targets in the clean energy package, 70% of electricity in the EU is generated from decarbonised sources in 2030). Further work on this assumption is needed to validate it for activities taking place outside the EU. • For vehicles with non-zero direct emissions, the TEG will discuss and set the thresholds during round 2. Although the threshold selected may need to be based on direct emissions because of data availability, the TEG will consider taking into account well-to-wheel emissions as well as, where possible, life cycle emissions in the analysis it will carry out, in order to ensure that the technologies offering the overall best available mitigation options are considered eligible. <p>In line with current market practice (such as Climate Bonds Initiative) and European legislation the TEG is considering setting thresholds that reduce over time. Threshold levels, scope of emissions included, and metrics will be considered further in the 2nd round.</p>

Questions on urban and suburban passenger land transport (public transport):

1. Do you agree with the proposed principle for determining a substantial contribution to climate mitigation for this activity?

- Yes
- No
- Don't know / no opinion / not relevant

2. Do you agree with the proposed metrics for assessing the extent of the mitigation contribution?

- Yes
- No
- Don't know / no opinion / not relevant

3. Where thresholds have been considered, please indicate whether you agree with the proposed thresholds for the activity to qualify for inclusion in the Taxonomy.

- Yes
- No
- Don't know / no opinion / not relevant

Please explain your answer to question 3.

If relevant, you may propose alternative thresholds that could be considered.

2,000 character(s) maximum

4. Do you agree with the 'do no significant harm' criteria identified for these activities?

- Yes
- No
- Don't know / no opinion / not relevant

5. Is there any key area where significant harm needs to be avoided and which is not mentioned already?

- Yes
- No
- Don't know / no opinion / not relevant

Please explain your answer to question 5 and what requirements could be used to avoid such harm:

2,000 character(s) maximum

6. Would the proposed criteria give rise to adverse consequences, e.g. risk of stranded assets or the risk of delivering inconsistent incentives?

- Yes
- No

- Don't know / no opinion / not relevant

Please explain your answer to question 6:

2,000 character(s) maximum

7. Can the proposed criteria be used for activities outside the EU?

- Yes
- No
- Don't know / no opinion / not relevant

Sector classification and activity	
Macro-Sector	Transport
NACE Level	4
Code	42.11; 42.12; 42.13
Description	Infrastructure for low carbon transport

Mitigation criteria	
Principle	Demonstrate substantial GHG emission reduction
Metric	CO2 emissions per passenger-kilometre, per tonne-kilometre, or per kilometre (gCO2/pkm, gCO2/tkm or gCO2/km)
Threshold	<p>The construction and operation of transport infrastructure is eligible in the following cases:</p> <ol style="list-style-type: none"> 1. Infrastructure that is required for zero direct emissions transport (e.g. electric charging points or hydrogen fuelling stations) is eligible 2. Infrastructure and equipment for active mobility (walking and cycling) are eligible 3. Infrastructure that is dedicated to low-carbon transport is eligible if the emissions intensity of the fleet that uses the infrastructure is below the threshold <p>Infrastructure that is predominantly dedicated to the transport of fossil fuels (more than 50%) is not eligible even if meeting the criteria above.</p> <p>Threshold levels will be discussed and set in in the 2nd round.</p>

Do no significant harm assessment	
(2) Adaptation	Resilience to increased risk of extreme weather events. This could include floods, rain, wind and snowfall as well as temperature stress.
(3) Water	<ul style="list-style-type: none"> • Minimise possible contamination to water during construction and with a focus on: <ul style="list-style-type: none"> ◦ prevention of emissions of harmful substances such as diesel and oil, paint, solvents, cleaners and other harmful chemicals; ◦ prevention of construction debris entering water courses. • Minimise the Impact of underground structures on the flow of groundwater
(4) Circular Economy	Maximise opportunities to re-use materials and minimise waste during construction of the transport infrastructure.
(5) Pollution	Minimise emissions of pollutants to air, water and soil from the construction site, e.g. address transport emissions during the construction phase
(6) Ecosystems	Minimise the impacts on biodiversity during the construction phase as well as during the future use of the transport infrastructure (e.g. consider the impact of granting easier access to protected land, such as a nature conservation area, ensure solutions to potential impacts due to habitat fragmentation and barriers to migration).

Rationale	
Additional notes on conclusions reached	<p>Infrastructure for low carbon transport contributes substantially to climate mitigation and are aligned with Article 6. 1. (c) increasing clean or climate-neutral mobility; Article 6. 1. (f) phasing out anthropogenic emissions of greenhouse gases, and (g) establishing energy infrastructure required for enabling decarbonisation of energy systems.</p> <p>The construction of infrastructure for low carbon transport is considered eligible because this is considered a key enabling factor for improving the uptake of the transport modes that are considered eligible under the rest of the transport section of the taxonomy.</p> <p>However, further analysis is needed to assess whether criteria should be put in place setting the right conditions for the construction of infrastructure (i.e. specifying which infrastructure would be eligible, in which cases) as well as whether threshold for the emissions from the construction of the infrastructure are needed. The analysis should be based on a comparison of emissions from the construction and operations of the low carbon transport infrastructure with the emissions savings that are obtained thanks to the use of such infrastructure by low carbon vehicles compared to different transport modes.</p>

Questions on infrastructure for low carbon transport:

1. Do you agree with the proposed principle for determining a substantial contribution to climate mitigation for this activity?

- Yes
- No
- Don't know / no opinion / not relevant

2. Do you agree with the proposed metrics for assessing the extent of the mitigation contribution?

- Yes
- No
- Don't know / no opinion / not relevant

3. Where thresholds have been considered, please indicate whether you agree with the proposed thresholds for the activity to qualify for inclusion in the Taxonomy.

- Yes
- No
- Don't know / no opinion / not relevant

Please explain your answer to question 3.

If relevant, you may propose alternative thresholds that could be considered.

2,000 character(s) maximum

4. Do you agree with the 'do no significant harm' criteria identified for these activities?

- Yes
- No
- Don't know / no opinion / not relevant

5. Is there any key area where significant harm needs to be avoided and which is not mentioned already?

- Yes
- No
- Don't know / no opinion / not relevant

Please explain your answer to question 5 and what requirements could be used to avoid

such harm:

2,000 character(s) maximum

6. Would the proposed criteria give rise to adverse consequences, e.g. risk of stranded assets or the risk of delivering inconsistent incentives?

- Yes
- No
- Don't know / no opinion / not relevant

Please explain your answer to question 6:

2,000 character(s) maximum

7. Can the proposed criteria be used for activities outside the EU?

- Yes
- No
- Don't know / no opinion / not relevant

Sector classification and activity	
Macro-Sector	Transport
NACE Level	No specific NACE codes available
Code	No specific NACE codes available
Description	Light passenger cars and commercial vehicles

Mitigation criteria	
Principle	Demonstrate substantial GHG emission reductions contributing to climate mitigation
Metric	CO2 emissions per vehicle kilometre gCO2/km or gCO2/passenger-km or gCO2/tonne-km

Mitigation criteria

Threshold

- Zero direct emissions vehicles (e.g. hydrogen, electric) are eligible,
- Other vehicles are eligible if the emissions intensity of the vehicle is below the threshold. The level of these thresholds will be discussed and set in the 2nd round.

Do no significant harm assessment

(2) Adaptation	-
(3) Water	-
(4) Circular Economy	Ensure the vehicles, their parts and specifically the batteries are sent for re-use or recycling at the end of their useful life.
(5) Pollution	<ul style="list-style-type: none">• For non-zero direct emission vehicles, minimise emissions to air of PM, NOx, PN and other air pollutants from combustion, breaks and tyres,• Adopt measures to reduce noise pollution.
(6) Ecosystems	-

Rationale

Rationale

This activity includes vehicles classified as M1, N1 and L vehicles, as defined by Regulation (EU) 2018/858 (<https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32018R0858>).

Zero direct emission vehicles and vehicles with low and reducing emission intensities contribute substantially to climate mitigation and are aligned with Article 6. 1. (c) increasing clean or climate-neutral mobility, and Article 6. 1. (f) phasing out anthropogenic emissions of greenhouse gases, including from fossil fuels, including from fossil fuels.

Zero direct emissions vehicles (e.g. electric, hydrogen) are eligible because:

- The generation of the energy carriers used by zero direct emissions transport is assumed to become low or zero carbon in the near future (for instance, in the scenario called EUCO 30 (https://ec.europa.eu/energy/sites/ener/files/documents/20170125_-_technical_report_on_euco_scenarios_primes_corrected.pdf) that meets the EU targets in the clean energy package, 70% of electricity in the EU is generated from decarbonised sources in 2030). Further work on this assumption is needed to validate it for activities taking place outside the EU.
- According to the European Environment Agency (<https://www.eea.europa.eu/publications/electric-vehicles-from-life-cycle>), across its life cycle, a typical battery electric vehicle (BEV) in Europe offers a reduction in greenhouse gas (GHG) emissions compared with its internal combustion engine vehicle (ICEV) equivalent (e.g. Hawkins et al, 2013; ICCT, 2018b). The extent of the difference can depend on a number of factors, including the size of vehicle considered, the electricity mix and whether the BEV is compared with a petrol or diesel conventional vehicle. Hawkins et al. (2013) reported life-cycle GHG emissions from BEVs charged using the average European electricity mix, 17-21 % and 26-30 % lower than similar diesel and petrol vehicles, respectively. This is broadly in line with more recent assessments based on the average European electricity mix (e.g. Ellingsen et al., 2016; Ellingsen and Hung, 2018).

For vehicles with non-zero direct emissions, the TEG will discuss and set the thresholds during the 2nd round. Although the threshold selected may need to be based on direct emissions because of data availability, the TEG will consider taking into account well-to-wheel emissions as well as, where possible, life cycle emissions in the analysis it will carry out, in order to ensure that the technologies offering the overall best available mitigation options are considered eligible. In line with current market practice (such as Climate Bonds Initiative) and European legislation, the TEG is considering setting thresholds that reduce over time.

Additional notes
on conclusions
reached

Questions on light passenger cars and commercial vehicles:

1. Do you agree with the proposed principle for determining a substantial contribution to

climate mitigation for this activity?

- Yes
- No
- Don't know / no opinion / not relevant

2. Do you agree with the proposed metrics for assessing the extent of the mitigation contribution?

- Yes
- No
- Don't know / no opinion / not relevant

3. Where thresholds have been considered, please indicate whether you agree with the proposed thresholds for the activity to qualify for inclusion in the Taxonomy.

- Yes
- No
- Don't know / no opinion / not relevant

Please explain your answer to question 3.

If relevant, you may propose alternative thresholds that could be considered.

2,000 character(s) maximum

4. Do you agree with the 'do no significant harm' criteria identified for these activities?

- Yes
- No
- Don't know / no opinion / not relevant

5. Is there any key area where significant harm needs to be avoided and which is not mentioned already?

- Yes
- No
- Don't know / no opinion / not relevant

Please explain your answer to question 5 and what requirements could be used to avoid such harm:

2,000 character(s) maximum

6. Would the proposed criteria give rise to adverse consequences, e.g. risk of stranded assets or the risk of delivering inconsistent incentives?

- Yes
- No
- Don't know / no opinion / not relevant

Please explain your answer to question 6:

2,000 character(s) maximum

7. Can the proposed criteria be used for activities outside the EU?

- Yes
- No
- Don't know / no opinion / not relevant

Sector classification and activity	
Macro-Sector	Transport
NACE Level	4
Code	49.41
Description	Freight transport services by road

Mitigation criteria	
Principle	Demonstrate substantial GHG emissions reductions contributing to climate mitigation
Metric	CO2 emissions per kilometre - gCO2/km or CO2 per tonne-kilometre (gCO2/tkm)
Threshold	<ul style="list-style-type: none">• Zero direct emission vehicles (e.g. hydrogen, electric) are eligible• Other vehicles are eligible if the emissions intensity is below the threshold. The level of these thresholds will be discussed and set in the 2nd round• Fleets predominantly (more than 50%) dedicated to transport fossil fuels are not eligible even if meeting the criteria above.

Do no significant harm assessment

(2) Adaptation	-
(3) Water	-
(4) Circular Economy	Ensure the vehicles, their parts and specifically the batteries are sent for re-use or recycling at the end of their useful life.
(5) Pollution	<ul style="list-style-type: none">• For non-zero direct emission vehicles, minimise emissions to air of PM, NOx, PN and other air pollutants from combustion, breaks and tyres,• Adopt measures to reduce noise pollution.
(6) Ecosystems	-

Rationale

Rationale	
Additional notes on conclusions reached	<p>This activity includes vehicles classified as N2 and N3 vehicles, as defined by Regulation (EU) 2018/858 (https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32018R0858).</p> <p>Zero direct emission vehicles and vehicles with low and reducing emission intensities contribute substantially to climate mitigation and are aligned with Article 6. 1. (c) increasing clean or climate-neutral mobility, and Article 6. 1. (f) phasing out anthropogenic emissions of greenhouse gases, including from fossil fuels, including from fossil fuels. Note that at the time of writing, zero emissions trucks are not believed to be available at a commercial level on the market.</p> <p>Zero direct emissions vehicles (e.g. electric, hydrogen) are eligible because:</p> <ul style="list-style-type: none"> the generation of the energy carriers used by zero direct emissions transport is assumed to become low or zero carbon in the near future (for instance, in the scenario called EUCO 30 (https://ec.europa.eu/energy/sites/ener/files/documents/20170125_-_technical_report_on_euco_scenarios_primes_corrected.pdf) that meets the EU targets in the clean energy package, 70% of electricity in the EU is generated from decarbonised sources in 2030). Further work on this assumption is needed to validate it for activities taking place outside the EU. <p>For vehicles with non-zero direct emissions, the TEG will discuss and set the thresholds during the 2nd round. Although the threshold selected may need to be based on direct emissions because of data availability, the TEG will consider taking into account well-to-wheel emissions as well as, where possible, life cycle emissions in the analysis it will carry out, in order to ensure that the technologies offering the overall best available mitigation options are considered eligible. In line with current market practice (such as Climate Bonds Initiative) and European legislation, the TEG is considering setting thresholds that reduce over time.</p>

Questions on freight transport services by road:

1. Do you agree with the proposed principle for determining a substantial contribution to climate mitigation for this activity?

- Yes
- No
- Don't know / no opinion / not relevant

2. Do you agree with the proposed metrics for assessing the extent of the mitigation contribution?

- Yes
- No

- Don't know / no opinion / not relevant

3. Where thresholds have been considered, please indicate whether you agree with the proposed thresholds for the activity to qualify for inclusion in the Taxonomy.

- Yes
- No
- Don't know / no opinion / not relevant

Please explain your answer to question 3.

If relevant, you may propose alternative thresholds that could be considered.

2,000 character(s) maximum

4. Do you agree with the 'do no significant harm' criteria identified for these activities?

- Yes
- No
- Don't know / no opinion / not relevant

5. Is there any key area where significant harm needs to be avoided and which is not mentioned already?

- Yes
- No
- Don't know / no opinion / not relevant

Please explain your answer to question 5 and what requirements could be used to avoid such harm:

2,000 character(s) maximum

6. Would the proposed criteria give rise to adverse consequences, e.g. risk of stranded assets or the risk of delivering inconsistent incentives?

- Yes
- No
- Don't know / no opinion / not relevant

Please explain your answer to question 6:

2,000 character(s) maximum

7. Can the proposed criteria be used for activities outside the EU?

- Yes
- No
- Don't know / no opinion / not relevant

Sector classification and activity	
Macro-Sector	Transport
NACE Level	6
Code	49.39.11
Description	Interurban scheduled road transport services of passengers

Mitigation criteria	
Principle	Demonstrate substantial GHG emission reductions
Metric	CO2 emissions per vehicle kilometre gCO2/km or gCO2/passenger-km
Threshold	<ul style="list-style-type: none">• Zero direct emission vehicles (e.g. hydrogen, electric) are eligible• Other vehicles are eligible if the emissions intensity of the vehicle is below the threshold. The level of these thresholds will be discussed and set in the 2nd round

Do no significant harm assessment	
(2) Adaptation	-
(3) Water	-
(4) Circular Economy	Ensure the vehicles, their parts and specifically the batteries are sent for re-use or recycling at the end of their useful life.
(5) Pollution	<ul style="list-style-type: none">• Reduce impact on air quality through adhering to strictest available standards,• Adopt measures to reduce noise pollution.

Do no significant harm assessment

(6) Ecosystems -

Rationale

Additional notes on conclusions reached

This category includes M2 and M3 vehicles, as defined by Regulation (EU) 2018/858 (<https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32018R0858>).

Zero direct emission vehicles and vehicles with low and increasingly decreasing emission intensities contribute substantially to climate mitigation and are aligned with Article 6. 1. (c) increasing clean or climate-neutral mobility, and Article 6. 1. (f) phasing out anthropogenic emissions of greenhouse gases, including from fossil fuels, including from fossil fuels.

In line with current market practice (such as Climate Bonds Initiative) and European legislation the TEG is considering absolute thresholds becoming stricter over time. Threshold levels, scope of emissions included, and metrics will be considered further in the 2nd round.

Zero direct emissions vehicles (e.g. electric, hydrogen) is eligible because:

- the generation of the energy carriers used by zero direct emissions transport is assumed to become low or zero carbon in the near future (for instance, in the scenario called EUCO 30 (https://ec.europa.eu/energy/sites/ener/files/documents/20170125_-_technical_report_on_euco_scenarios_primes_corrected.pdf) that meets the EU targets in the clean energy package, 70% of electricity in the EU is generated from decarbonised sources in 2030). Further work on this assumption is needed to validate it for activities taking place outside the EU.
- with the present energy mix, the overall emissions associated with zero direct emissions passenger land transport (i.e. electric or hydrogen) are lower than comparable technologies (for instance, for a comparison of well-to-wheel CO₂ emissions of electric buses and diesel buses, see figures 10 and 11 (<https://www.transportenvironment.org/sites/te/files/publications/Electric%20buses%20arrive%20on%20time.pdf>)).

For vehicles with non-zero direct emissions, the TEG will discuss and set the thresholds during round 2. Although the threshold selected may need to be based on direct emissions because of data availability, the TEG will consider taking into account well-to-wheel emissions as well as, where possible, life cycle emissions in the analysis it will carry out, in order to ensure that the technologies offering the overall best available mitigation options are considered eligible.

Questions on interurban scheduled road transport services of passengers:

1. Do you agree with the proposed principle for determining a substantial contribution to climate mitigation for this activity?

- Yes
- No
- Don't know / no opinion / not relevant

2. Do you agree with the proposed metrics for assessing the extent of the mitigation contribution?

- Yes
- No
- Don't know / no opinion / not relevant

3. Where thresholds have been considered, please indicate whether you agree with the proposed thresholds for the activity to qualify for inclusion in the Taxonomy.

- Yes
- No
- Don't know / no opinion / not relevant

Please explain your answer to question 3.

If relevant, you may propose alternative thresholds that could be considered.

2,000 character(s) maximum

4. Do you agree with the 'do no significant harm' criteria identified for these activities?

- Yes
- No
- Don't know / no opinion / not relevant

5. Is there any key area where significant harm needs to be avoided and which is not mentioned already?

- Yes
- No
- Don't know / no opinion / not relevant

Please explain your answer to question 5 and what requirements could be used to avoid such harm:

2,000 character(s) maximum

6. Would the proposed criteria give rise to adverse consequences, e.g. risk of stranded assets or the risk of delivering inconsistent incentives?

- Yes
- No
- Don't know / no opinion / not relevant

Please explain your answer to question 6:

2,000 character(s) maximum

7. Can the proposed criteria be used for activities outside the EU?

- Yes
- No
- Don't know / no opinion / not relevant

Buildings - Construction of new buildings (residential and non-residential)

Sector classification and activity	
Macro-Sector	F – Construction Note that construction of new buildings relevant to any economic activity should be aligned with these thresholds.
NACE Level	2
Code	41, 43
Description	Construction of buildings (residential and non-residential); Specialised construction activities.

Mitigation criteria

Mitigation criteria	
Principle	<p>Construction of highly efficient new buildings can make a substantial contribution to climate mitigation objectives by avoiding emissions.</p> <p>The top performing buildings in a country based on GHG emissions or energy efficiency, should be eligible for the taxonomy.</p> <p>In-use monitoring of actual performance is required to demonstrate that the building performs as designed. This should be measured and adjusted according to the national calculation method or the ISO 52000 standard series (e.g. normalised occupancy patterns and normalised average climate conditions over a time-span of at least 2-3 years). Lock-in should be avoided¹⁸.</p> <p>The TEG has adopted a precautionary principle to exclude buildings dedicated to fossil fuel projects. According to the IEA's World Energy Outlook, no CO₂-emitting energy infrastructure is to be developed in the coming years if the Paris Agreement target is to be met, as emissions from existing infrastructure will already cover 95% of the global carbon budget (ref. IEA World Energy Outlook 2018; see also this article from The Guardian (https://www.theguardian.com/business/2018/nov/13/world-has-no-capacity-to-absorb-new-fossil-fuel-plants-warns-iaa)).</p>
Metric	<p>The TEG will investigate using in-use carbon performance (CO₂e/m²/yr) or in-use energy performance (kWh/m²/yr). Compliance with Member State definitions for Nearly-Zero Energy Buildings (NZEB) will be used where the above approach is not yet in place.</p>
Threshold	<p>The TEG will undertake additional work to investigate country specific thresholds for carbon and energy performance. Where the national methodology defining Nearly Zero Energy Buildings (NZEB) under the Energy Performance of Buildings Directive meets the relevant threshold, it will be considered to comply with the taxonomy. Where the threshold above is exceeded by the local NZEB methodology, the NZEB methodology will be the taxonomy standard.</p> <p>In the absence of additional thresholds, the NZEB standard will be the taxonomy standard.</p>

Do no significant harm assessment	
(2) Adaptation	<ul style="list-style-type: none"> • Thermal resilience of the interior environment of the building and exterior environment around the building. This can be achieved using e.g. green infrastructures of different types • Resilience to increased risk of extreme weather events. This could include floods, rain, wind and snowfall as well as temperature stress. • Minimisation of flood risks and improved property protection (including natural water retention and drainage areas)

Do no significant harm assessment

(3) Water

- In water scarce areas (see EEA water scarcity mapping) water consumption during the use phase is minimised. Examples of measures include: low-flow taps and showers, appliances, toilets and urinals, rain-water harvesting and grey water recycling.
- Minimise possible contamination to water during construction and with a focus on:
 - prevention of emissions of harmful substances such as diesel and oil, paint, solvents, cleaners and other harmful chemicals;
 - prevention of construction debris entering water courses.

(4) Circular Economy

- Maximise opportunities to re-use materials and minimise waste during construction and demolition.
- Increase life span of building, adopting design solution for making easy the adaptation of the building.
- Maximise the future potential of building material reuse and recycling, adopting design solutions for ease of deconstruction¹⁹.

(5) Pollution

- Select location of building taking into account the demand of transport, e.g. by siting the building close to public transport system. For commercial buildings, implement of staff travel plans and infrastructure to support electric vehicles and cycling.
- Minimise emissions to air, water and soil from the construction site, e.g. address transport emissions during the construction phase.
- Select fit-out and finishes to reduce indoor pollution (VOC, radon, etc.);
- Design ventilation in order to ensure healthy air and minimise the intake of external air pollution.

Do no significant harm assessment

Minimise the impacts on biodiversity by:

(6) Ecosystems

- Ensuring that new buildings are not constructed on protected land.
- Avoid building on arable or greenfield land of recognised high biodiversity or agricultural value.
- Avoid urban sprawl by, e.g. preferring brownfield over greenfield sites.
- Where significant quantities of timber are used for construction purposes, this should be certified according to FSC/PECF standards or equivalent.

Rationale

Rationale	
Additional notes on conclusions reached	<p>The mitigation principles reflect the fundamental Taxonomy aim of identifying economic activities which contribute substantially to climate change mitigation. The TEG is proposing thresholds which will encourage rapid transition of existing building stock while promoting high performance new buildings.</p> <p>Almost all new buildings in the EU as of 1 January 2021 (some limited exceptions are permitted by the legislation) will need to be NZEB as defined in the Energy Performance of Buildings Directive and Member State implementation standards. There are considerable advantages to aligning with an established legislative standard which is flexible, comprehensive and dynamic, taking into account building category, typology, physical boundary, type and period of balance, included energy uses, renewable energy sources (RES), cost optimality, etc. Regional variation however is also a challenge as it may mean that some national NZEB definitions are not sufficiently ambitious to include in the Taxonomy. The TEG notes that setting additional thresholds could address this issue and proposes to investigate this further.</p> <p>The Energy Performance Certificates (EPCs) are widely used in Europe to certify the level of energy performance of a building. Like with NZEB, the national definitions and classifications used for EPCs vary across EU Member States. The TEG also proposes to undertake additional research on Energy Performance Certificates (EPCs) to consider their use as a proxy when evaluating taxonomy compliance.</p> <p>For very high efficiency new buildings, embodied carbon can be significant. For this reason, a lifecycle metric would be preferable. International standard methodologies do exist for lifecycle emissions measurement, but data is limited and agreed thresholds are not available. For this reason, the Sustainable Finance Platform should work towards lifecycle thresholds in future iterations of the Taxonomy. Building bill of materials (kg) was considered as a proxy, but it was felt that this does not strongly enough correlate with embodied carbon or reflect possible choices for less carbon-intensive building materials.</p> <p>In-use monitoring is required as the energy and carbon performance of buildings often varies substantially between design and use phase (for example, see analysis by the Better Buildings Partnership (http://www.betterbuildingspartnership.co.uk/our-priorities/measuring-reporting)).</p>

¹⁸ Defined as: decisions which result in loss of economically viable choices for reducing energy demand in the future. Source: Global Buildings Performance Network.

¹⁹ Verification of design solutions shall be with reference to the Checklists provided in the European Commission's Level(s) framework. The checklists can be found in table 2.2.2/2.2.5 of the Level 1 common performance assessment guidance (C:\Users\Nathan.Fabian\OneDrive - PRI Association\Nathans PRI\PRI\1. Policy\EU Technical group\The work part\Mitigation activities and criteria\the Level 1 common performance assessment guidance). Other semi-quantitative indices, scoring or calculator tools may also be used provided that they address as a minimum the majority of the design aspects covered by Level(s).

Questions on construction of new buildings (residential and non-residential)

1. Do you agree with the proposed principle for determining a substantial contribution to

climate mitigation for this activity?

- Yes
- No
- Don't know / no opinion / not relevant

If you do not agree with the proposed principle for determining a substantial contribution to climate mitigation for this activity, what alternatives do you propose and why?

2,000 character(s) maximum

The definition of a "top performing building" is not clear.

2. Do you agree with the proposed metrics for assessing the extent of the mitigation contribution?

- Yes
- No
- Don't know / no opinion / not relevant

If you do not agree with the proposed metrics for assessing the extent of the mitigation contribution, what alternatives do you propose and why?

2,000 character(s) maximum

Currently, measurement of property - such as homes, offices or shopping centres - varies significantly. For example, in some jurisdictions it is established practice to include common space (lift shafts; communal hallways etc) in floor area measurements; in others off-site parking might be included or even swimming pools. The different methods of measurement make it difficult for property users, investors, tenants and developers to compare space accurately. Hence, any metrics need to take into account that property is not measured consistently. Operation of buildings fulfilling a high standard as of today should also be recognisable as sustainable activity.

3. Where thresholds have been considered, please indicate whether you agree with the proposed thresholds for the activity to qualify for inclusion in the Taxonomy.

- Yes
- No
- Don't know / no opinion / not relevant

Please explain your answer to question 3.

If relevant, you may propose alternative thresholds that could be considered.

2,000 character(s) maximum

Not all European countries let alone all jurisdictions worldwide have NZEB buildings defined. Therefore, alternative metrics/thresholds will be required.

4. Do you agree with the 'do no significant harm' criteria identified for these activities?

- Yes
- No
- Don't know / no opinion / not relevant

If you do not agree with the 'do no significant harm' criteria identified for these activities, what alternative approach or requirements do you propose (e.g. referring to existing market initiatives and best practices) and why?

2,000 character(s) maximum

Since it is unclear what will be considered "significant", it is hard to assess the activities. It should be clear that not any fulfillment of a "do not significant harm" criterion should result in the economic activity to be not considered sustainable. In this respect, it should be taken into account that the building is within responsibilities and control of the developer, while the tenants significantly influence the interior and the water/energy consumption etc.

5. Is there any key area where significant harm needs to be avoided and which is not mentioned already?

- Yes
- No
- Don't know / no opinion / not relevant

Please explain your answer to question 5 and what requirements could be used to avoid such harm:

2,000 character(s) maximum

6. Would the proposed criteria give rise to adverse consequences, e.g. risk of stranded assets or the risk of delivering inconsistent incentives?

- Yes
- No
- Don't know / no opinion / not relevant

Please explain your answer to question 6:

2,000 character(s) maximum

For asset managers, the operation/construction of a building still needs to be economically viable. The incentives set with the use of the Taxonomy therefore need to be balanced. Inconsistent incentives could create crowding of specific investments to the detriment of the investor.

7. Can the proposed criteria be used for activities outside the EU?

- Yes
- No
- Don't know / no opinion / not relevant

If according to you the proposed criteria cannot be used for activities outside the EU, please propose alternative wording that could be considered:

2,000 character(s) maximum

The main challenge will be to collect the data required in order to fulfil the criteria. While this might already be difficult for the EU, it will be hard in other jurisdictions. In this respect, the Taxonomy needs to take into account that building standards vary throughout the world. A German standard might be considered a very demanding requirement in other countries. Furthermore, GDPR restrictions have to be taken into account.

Buildings - Renovation of existing buildings (residential and non-residential)

Sector classification and activity	
Macro-Sector	F – Construction Note that renovation of buildings relevant to any economic activity should be aligned with these thresholds.
NACE Level	2
Code	41, 43
Description	Renovation of existing buildings (residential and non-residential). Note this relates to activities in two NACE codes: construction of buildings (residential and non-residential) and Specialised Construction Activities.

Mitigation criteria

Mitigation criteria

Principle	<p>Renovation of existing buildings can make a substantial contribution to climate mitigation by increasing energy and carbon efficiency.</p> <p>Renovation of existing buildings should be eligible in two cases;</p> <ul style="list-style-type: none">• Buildings with high carbon or energy performance which can be renovated to achieve the highest performance standards.• Buildings with lower carbon or energy performance which can make substantial improvements. <p>In-use monitoring of actual performance is required to demonstrate that the building performs as designed. This should be measured and adjusted according to the national calculation method or the ISO 52000 standard series (e.g. normalised occupancy patterns and normalised average climate conditions over a time-span of at least 2-3 years). Lock-in should be avoided²⁰.</p> <p>The TEG has adopted a precautionary principle to exclude buildings dedicated to fossil fuel projects. According to the IEA's World Energy Outlook, no CO₂-emitting energy infrastructure is to be developed in the coming years if the Paris Agreement target is to be met, as emissions from existing infrastructure will already cover 95% of the global carbon budget (ref. IEA World Energy Outlook 2018; see also this article from The Guardian (https://www.theguardian.com/business/2018/nov/13/world-has-no-capacity-to-absorb-new-fossil-fuel-plants-warns-iaa)).</p>
Metric	<p>The TEG will investigate using in-use carbon performance (CO₂e/m²/yr) or in-use energy performance (kWh/m²/yr), calculated according to the national calculation method or the ISO 52000 standard series.</p> <p>Alignment with Nearly-Zero Energy Buildings (NZEB) standards will be used as a proxy in cases where the above approach is not viable.</p>

Mitigation criteria

The renovation should target either:

Threshold

- Absolute performance: As with construction of new buildings, the TEG will investigate the feasibility of setting a country-specific threshold for renovation of buildings which already demonstrate high carbon or energy efficiency. Renovation to NZEB standards is accepted in the absence of this standard.
- Relative performance: A percentage reduction in energy consumption or carbon emissions performance of 50% should be achieved.

A thorough building survey and the setup of an accurate energy model are required, to ensure that the extent of the improvement works required to improve the building's performance can be accurately determined based on the thermal performance of the existing building fabric.

Do no significant harm assessment

(2) Adaptation²¹

- Thermal resilience of the interior environment of the building and exterior environment around the building. This can be achieved using e.g. green infrastructures of different types
- Resilience to increased risk of extreme weather events. This could include floods, rain, wind and snowfall as well as temperature stress.
- Minimisation of flood risks and improved property protection (including natural water retention and drainage areas)

(3) Water

- In water scarce areas (see EEA water scarcity mapping) water consumption during the use phase is minimised. Examples of measures include: low-flow taps and showers, appliances, toilets and urinals, rain-water harvesting and grey water recycling.
- Minimise possible contamination to water during construction and with a focus on:
 - prevention of emissions of harmful substances such as diesel and oil, paint, solvents, cleaners and other harmful chemicals;
 - prevention of construction debris entering water courses.

Do no significant harm assessment

(4) Circular Economy

- Maximise opportunities to re-use materials and minimise waste during construction and demolition.
- Increase life span of building, adopting design solution for making easy the adaptation of the building.
- Maximise the future potential of building material reuse and recycling, adopting design solutions for ease of deconstruction²².

(5) Pollution

- For commercial buildings, implement of staff travel plans and infrastructure to support electric vehicles and cycling.
- Minimise emissions to air, water and soil from the construction site, e.g. address transport emissions during the construction phase.
- Select fit-out and finishes to reduce indoor pollution (VOC, radon, etc.);
- Design ventilation in order to ensure healthy air and minimise the intake of external air pollution.

(6) Ecosystems

Where significant quantities of timber are used for construction purposes, this should be certified according to FSC/PECF standards or equivalent.

Rationale

Rationale

Additional notes
on conclusions
reached

The mitigation principles reflect the fundamental taxonomy aim of identifying economic activities that contribute substantially to climate change mitigation. The TEG is proposing thresholds that will encourage rapid transition of existing building stock while promoting high performance new buildings.

There should be renovation pathways towards deep renovation which avoid lock-in effects in the future. Many of the buildings being renovated in the coming years will not be renovated again before 2050.

The TEG proposes two thresholds for buildings:

- An absolute threshold for buildings which can be renovated to high standards;
- A percentage reduction in carbon emissions or energy consumption to allow renovation of inefficient building stock to be eligible under the taxonomy.

The threshold of 50% is based on the experiences of the Climate Bonds Initiative in the Australian and US markets and feasible improvements based on local buildings performance standards.

The Energy Performance Certificates (EPCs) are widely used in Europe to certify the level of energy performance of a building. The national definitions and classifications used for EPCs vary across EU Member States. The TEG is undertaking research to assess Energy Performance Certificates (EPC) and to consider their use as a proxy when evaluating taxonomy compliance.

In the vast majority of cases, embedded emissions from renovation materials will not be material in the context of overall emissions savings from renovation, so a lifecycle metric is not proposed here.

In-use monitoring is required as the energy and carbon performance of buildings often varies substantially between design and use phase (for example, see analysis by the Better Buildings Partnership (<http://www.betterbuildingspartnership.co.uk/our-priorities/measuring-reporting>)).

Management of a portfolio of buildings

The majority of building stock improvements are made across a portfolio of buildings. Where a portfolio of buildings is considered, the approach taken at a portfolio level should be coherent with the standards for construction and renovation of individual buildings. The group proposes to develop user guidance to enable end-users of the taxonomy to interpret the standards proposed for individual buildings.

²⁰ Defined as: decisions which result in loss of economically viable choices for reducing energy demand in the future. Source: Global Buildings Performance Network.

²¹ This input, for establishing criteria for no significant harm to the climate change adaptation objective, will be subject to further work and review by the Technical Expert Group with assistance from adaptation experts who respond to the concurrent call for experts.

²² Verification of design solutions shall be with reference to the Checklists provided in the European Commission's Level(s) framework. The checklists can be found in table 2.2.2/2.2.5 of the Level 1 common performance assessment guidance (C:\Users\Nathan.Fabian\OneDrive - PRI Association\Nathans PRI\PRI\1. Policy\EU Technical group\The work part\Mitigation activities and criteria\the Level 1 common performance assessment guidance). Other semi-quantitative indices, scoring or calculator tools may also be used provided that they address as a minimum the majority of the design aspects covered by Level(s).

Questions on renovation of existing buildings (residential and non-residential)

1. Do you agree with the proposed principle for determining a substantial contribution to climate mitigation for this activity?

- Yes
- No
- Don't know / no opinion / not relevant

If you do not agree with the proposed principle for determining a substantial contribution to climate mitigation for this activity, what alternatives do you propose and why?

2,000 character(s) maximum

The proposed principle does not define whether owners are required to renovate properties that have not yet reached the high standards. Forced renovations may (financially) not be possible for owners and tenants. The term "renovation" needs to be defined. Most capital expenditures do not directly relate to energy savings. Regarding "in-use-monitoring of the actual performance" the willingness of the tenants must be taken into account.

2. Do you agree with the proposed metrics for assessing the extent of the mitigation contribution?

- Yes
- No
- Don't know / no opinion / not relevant

If you do not agree with the proposed metrics for assessing the extent of the mitigation contribution, what alternatives do you propose and why?

2,000 character(s) maximum

Currently, measurement of property - such as homes, offices or shopping centres - varies significantly. For example, in some jurisdictions it is established practice to include common space (lift shafts; communal hallways etc) in floor area measurements; in others off-site parking might be included or even swimming pools. The different methods of measurement make it difficult for property users, investors, tenants and developers to compare space accurately. Hence, any metrics need to take into account that property is not measured consistently.

The most important aspect is a credible comparability across all metrics.

Another critical factor is the tenants' willingness to share data.

3. Where thresholds have been considered, please indicate whether you agree with the proposed thresholds for the activity to qualify for inclusion in the Taxonomy.

- Yes
- No
- Don't know / no opinion / not relevant

Please explain your answer to question 3.

If relevant, you may propose alternative thresholds that could be considered.

2,000 character(s) maximum

The proposed limit values appear very ambitious. A great deal of effort must be put into fulfilling these principles. We fear that excessively high thresholds may even have a counterproductive effect: The incentive for renovation of existing buildings will not be effective if the thresholds are too ambitious and can only be achieved in rare cases. Since already a smaller improvement can contribute to a more sustainable world, we would suggest that also such improvements should be recognised. Relative performance is mainly driven by tenants and not in the owner's influence (i. e. technical equipment and habits). Also, the thresholds need to take into account that the assets vary, for instance different thresholds might be required for shopping center than residential buildings.

4. Do you agree with the 'do no significant harm' criteria identified for these activities?

- Yes
- No
- Don't know / no opinion / not relevant

If you do not agree with the 'do no significant harm' criteria identified for these activities, what alternative approach or requirements do you propose (e.g. referring to existing market initiatives and best practices) and why?

2,000 character(s) maximum

Since it is unclear what will be considered "significant", it is hard to assess the activities. It should be clear that not any fulfillment of a "do not significant harm" criterion should result in the economic activity not to be considered sustainable. In this respect, it should be taken into account that the building is within the responsibility and control of the owner, while the tenants significantly influence the interior and the water/energy consumption, waste production etc.

5. Is there any key area where significant harm needs to be avoided and which is not mentioned already?

- Yes
- No
- Don't know / no opinion / not relevant

Please explain your answer to question 5 and what requirements could be used to avoid such harm:

2,000 character(s) maximum

6. Would the proposed criteria give rise to adverse consequences, e.g. risk of stranded assets or the risk of delivering inconsistent incentives?

- Yes
- No
- Don't know / no opinion / not relevant

Please explain your answer to question 6:

2,000 character(s) maximum

For asset managers, the operation/construction of a building still needs to be economically viable. The incentives set with the use of the Taxonomy therefore need to be balanced. Inconsistent incentives could create crowding of specific investments to the detriment of the investor.

7. Can the proposed criteria be used for activities outside the EU?

- Yes
- No
- Don't know / no opinion / not relevant

If according to you the proposed criteria cannot be used for activities outside the EU, please propose alternative wording that could be considered:

2,000 character(s) maximum

The main challenge will be to collect the data required in order to fulfil the criteria. While this might already be difficult for the EU, it will be hard in other jurisdictions. In this respect, the Taxonomy needs to take into account that building standards vary throughout the world. A German standard might be considered a very demanding requirement in other countries. Furthermore, GDPR restrictions have to be taken into account.

Useful links

More on the Transparency register (<http://ec.europa.eu/transparencyregister/public/homePage.do?locale=en>) (<http://ec.europa.eu/transparencyregister/public/homePage.do?locale=en>)

Feedback process details (https://ec.europa.eu/info/sites/info/files/business_economy_euro/banking_and_finance/documents/sustainable-finance-taxonomy-feedback-and-workshops_en.pdf#first) (https://ec.europa.eu/info/sites/info/files/business_economy_euro/banking_and_finance/documents/sustainable-finance-taxonomy-feedback-and-workshops_en.pdf#first)

Specific privacy statement (<https://ec.europa.eu/info/files/sustainable-finance-taxonomy-consultation-privacy->

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