



## SUMMARY PAPER

*by the Energy Community Secretariat*

### on the Energy and Buildings aspects of the EU Taxonomy Delegated Acts

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## A. Background

The main aim of this summary paper is to provide Energy Community (EnC) Contracting Parties (CPs) and stakeholders with a brief non-exhaustive overview of the recent developments in the context of EU Taxonomy, with emphasis on energy related topics, and thus facilitate the CPs access to investments that are needed for the green economic transition and allow for the opportunities it offers to be seized. The paper starts by giving a brief introduction to the development of sustainable finance policies in the EU, notably the EU Green Taxonomy Regulation. Next, it sheds light on its impacts on the CPs. Finally, it provides an overview of the energy and buildings related aspects of the regulation.

### a) Introducing the EU Taxonomy Regulation

The European Commission put forward the Action Plan on Financing Sustainable Growth (the EU Action Plan)<sup>1</sup> in March 2018, which supports the European Union's (EU) ambitious climate and energy targets to reduce greenhouse gas (GHG) emissions to net zero carbon by 2050 and halve emissions by 2030. The EU Action Plan aims to establish an EU-wide classification system of sustainable activities, i.e. an EU taxonomy. Following the publication of the EU Action Plan in May 2018, the EC set about developing the taxonomy under the direction of a Technical Expert Group (TEG) on sustainable finance<sup>2</sup>. Following consultations with more than 200 industry specialists and scientists, the TEG published a technical report, which was updated based on feedback from the market. The final report was published on 9 March 2020<sup>3</sup>. In some cases, the TEG identified technical screening criteria, to be defined by future delegated acts.

On 22 June 2020, Regulation (EU) 2020/852 on the Establishment of a Framework to Facilitate Sustainable Investment (the Taxonomy Regulation)<sup>4</sup> was published. The Taxonomy Regulation will help create the world's first-ever 'green list' of environmentally

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<sup>1</sup> Communication from the Commission: Action Plan: Financing Sustainable Growth, 8 March 2020, available: <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52018DC0097>.

<sup>2</sup> EU taxonomy for sustainable activities, Works in view of the establishment of an EU classification system for sustainable activities, i.e. an EU taxonomy, available: [https://ec.europa.eu/info/business-economy-euro/banking-and-finance/sustainable-finance/eu-taxonomy-sustainable-activities\\_en](https://ec.europa.eu/info/business-economy-euro/banking-and-finance/sustainable-finance/eu-taxonomy-sustainable-activities_en).

<sup>3</sup> Taxonomy: Final report of the Technical Expert Group on Sustainable Finance, March 2020, available: [https://knowledge4policy.ec.europa.eu/publication/sustainable-finance-teg-final-report-eu-taxonomy\\_en](https://knowledge4policy.ec.europa.eu/publication/sustainable-finance-teg-final-report-eu-taxonomy_en).

<sup>4</sup> Regulation (EU) 2020/852 of the European Parliament and of the Council, 18 June 2020, available: <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32020R0852>.

sustainable activities in the form of an EU-wide classification system (or taxonomy) that will provide more clarity for investors, especially concerning financial products which purport to invest in sustainable activities or to promote environmental objectives. The Taxonomy Regulation also amends Regulation (EU) 2019/2088 on Sustainability-Related Disclosures in the Financial Services Sector (the Disclosure Regulation)<sup>5</sup> by introducing new disclosure obligations for a wide range of entities, including financial market participants and large non-financial companies.

In order to be considered as sustainable under the Taxonomy Regulation, an economic activity has to contribute to at least one of the following objectives:



In addition, a sustainable economic activity must cause no significant harm to any of the other environmental objectives listed in the Taxonomy Regulation and comply with minimum safeguards, such as UN Guiding Principles and OECD Guidelines.



Source: EU Platform on Sustainable Finance

<sup>5</sup> Regulation (EU) 2019/2088 of the European Parliament and of the Council, 27 November 2019, available: <https://eur-lex.europa.eu/eli/reg/2019/2088/oj>.

In summary, the EU taxonomy is a classification system that provides specific criteria for economic activities that can be perceived as sustainable in order to provide reliable information to investors. It recognizes as sustainable the economic activities that make a substantial contribution to one of the six environmental objectives and at the same time not significantly harm any of the other objectives. The specific criteria are being further developed by delegated acts.

The EU Taxonomy is not a mandatory list of economic activities for investors to invest in, meaning, investing in economic activities that are not EU Taxonomy aligned, will not become illegal. Investors may still choose what to invest in. However, the expected long-term consequences of the EU Taxonomy are to redirect (all) investments towards sustainable projects.

The first drafts of the first two Delegated Acts were published on 20 November 2020, which were followed by a public consultation resulting in 46,591 answers. Based on the examination of the feedback received, a targeted recalibration of some of the criteria, as well as other improvements and modifications, were made to the Commission's draft. The criteria for the energy sector has received the most comments, followed by the agriculture and transport sectors.<sup>6</sup> The Commission Delegated Regulation (EU) .../... of 4.6.2021 (Delegated Regulation) states, that following the public consultation process, *'The cross-cutting 100gCO<sub>2</sub>e/kWh lifecycle emissions threshold for energy activities from the first draft was maintained, except where evidence clearly showed relevant technologies to be well below this level. As a result, some topics such as bioenergy are no longer labelled as transitional. The criteria for hydropower are now more context-specific and aligned more closely with applicable EU law.'*<sup>7</sup> Furthermore, the EC has also decided that following the recommendations of the Technical Expert Group (TEG), the buildings within the top 15% in terms of energy performance on a national or regional scale were also included. Some specific activities – such as Retrofit of Gas Transmission and Distribution Networks or Production of Electricity from Natural Gas - that were included in the TEG report are not included in this Delegated Act, because separate discussions are still ongoing on the role of gas in EU taxonomy.

In the first Delegated Regulation, the criteria for the first two objectives of the Taxonomy Regulation (climate change mitigation and climate change adaptation) are provided.

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<sup>6</sup> A complete summary of the feedback and main changes across different sectors is set out in Annex 2.10 of the impact assessment accompanying this Delegated Regulation.

<sup>7</sup> Commission Delegated Regulation (EU) .../... of 4.6.2021, Available at: [https://ec.europa.eu/finance/docs/level-2-measures/taxonomy-regulation-delegated-act-2021-2800\\_en.pdf](https://ec.europa.eu/finance/docs/level-2-measures/taxonomy-regulation-delegated-act-2021-2800_en.pdf), p 4.

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## **b) To whom does the Taxonomy Regulation apply?**

The EU taxonomy classification system is aimed at investors, companies and financial institutions so that they can define their environmental performance and their economic activities. It also sets requirements for different corporate activities to be considered sustainable.<sup>8</sup> The EU Taxonomy Regulation also mandates certain companies to report on and disclose the extent to which their business activities are aligned with the EU Taxonomy Regulation's definition of sustainability. It also applies to EU Member States as they are setting up labels or standards regarding financial products or different types of bonds presented as "environmentally sustainable".<sup>9</sup>

The EU taxonomy can be used by any market participant if they choose to do so to classify their economic activities, however the reporting under it is only mandatory for two main groups: financial market participants, who offer different financial products in the EU, and large public interest companies. These two groups are required to publish a non-financial statement under the Accounting Directive, which was amended by the Non-Financial Reporting Directive (NFRD).<sup>10</sup> Public interest companies are entities with more than 500 employees. This definition covers approximately 6,000 large companies and groups across the EU, including listed companies, banks, insurance companies and other companies designated by national authorities as public interest entities,<sup>11</sup> including the European Bank for Reconstruction and Development (EBRD), the European Investment Bank (EIB) and others.<sup>12</sup>

## **c) Effects of the EU Taxonomy on the Energy Community**

By virtue of globally integrated capital markets and economic supply chains, the disclosure obligations on financial product issuers and corporations in the EU will create implications for international actors. In this respect, the EU taxonomy is not different from other corporate or financial product reporting obligations already in place in the EU. This

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<sup>8</sup> White & Case LLP: *The EU Taxonomy: the answer to the question "what is green?"*, 20 August, 2020, available: <https://www.whitecase.com/publications/alert/eu-taxonomy-answer-question-what-green>.

<sup>9</sup> World Bank Guide on Developing a national green taxonomy, p.48, available: <http://documents1.worldbank.org/curated/en/953011593410423487/pdf/Developing-a-National-Green-Taxonomy-A-World-Bank-Guide.pdf>.

<sup>10</sup> Directive 2014/95/EU of the European Parliament and of the Council of 22 October 2014, Available at: <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32014L0095&from=EN>

<sup>11</sup> Non-financial reporting. EU rules require large companies to publish regular reports on the social and environmental impacts of their activities. Available: [https://ec.europa.eu/info/business-economy-euro/company-reporting-and-auditing/company-reporting/non-financial-reporting\\_en](https://ec.europa.eu/info/business-economy-euro/company-reporting-and-auditing/company-reporting/non-financial-reporting_en).

<sup>12</sup> For example, see list of public interest entities by PWC, available: <https://www.pwc.co.uk/assets/pdf/public-interest-entities-fy14.pdf>.

gives the Taxonomy Regulation an impact across EU border, despite there being no intention to bind third countries on their own sustainability or sustainable finance activities. The Taxonomy Regulation therefore will have consequences also in and for the Energy Community Contracting Parties.

Certain disclosure obligations applicable to financial market participants and some other larger enterprises will be obligatory regardless of their location. For example, financial market players active on the EU market, EU institutions and financial institutions, Member State entities, etc. will have to comply with disclosure obligations, regardless of the location from which the financial products originate from. The same goes for undertakings that fall under the scope of the NFRD<sup>13</sup>: they will have to disclose information in their non-financial statements, regardless of the location of their activities.

A key part of a taxonomy assessment includes defining what part of a corporation's activity can be assessed as sustainable. This is relevant for investors in non-EU assets, or for those European companies that do not fall under the scope of the NFRD.<sup>14</sup> If the company's activities meet the substantial contribution criteria, demonstrate no significant harm to the other environmental objectives and respect minimum safeguards, then the turnover in each complying sector would qualify as taxonomy-aligned. If they do not demonstrate substantial contribution or there is insufficient data to verify whether or not they meet the required standards, then they need to be excluded.

Furthermore, besides the mandatory use of EU taxonomy for disclosure obligations, investors, project promoters and companies may choose to follow it on a voluntary basis as a guide for their investments, environmental and sustainability transition strategies and/or plans.

In brief, the EU Taxonomy inevitably will have effects also for the CPs of the Energy Community, mostly notably through international investments flowing to the CPs from EU institutions or Member States.

#### **d) Implementation deadlines**

The first Delegated Acts were formally adopted on 4 June 2021 for scrutiny by the Council and the Parliament for a 4+2-month period. They cannot alter the contents of the Delegated Acts, however, but only adopt or reject them in their entirety.

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<sup>13</sup> In relation to Article 8 of the Taxonomy Regulation.

<sup>14</sup> Taxonomy: Final report of the Technical Expert Group on Sustainable Finance, March 2020, p.49, available: [https://knowledge4policy.ec.europa.eu/publication/sustainable-finance-teg-final-report-eu-taxonomy\\_en](https://knowledge4policy.ec.europa.eu/publication/sustainable-finance-teg-final-report-eu-taxonomy_en).



Financial entities and companies may already report according to the Delegated Acts voluntarily. For those falling under the scope of the NFRD, it becomes mandatory as of January 2022 for the first two Delegated Acts and January 2023 for the other four upcoming ones. Furthermore, the Commission will prepare a report by the end of 2021 to decide if the Taxonomy Regulation should be extended to cover further economic activities.

## B. Introduction to the energy aspects of the Taxonomy Delegated Acts

The energy and buildings sectors play key roles in **climate change mitigation**, since they account for the majority of greenhouse gas emissions both in the EU and the CPs. Technical screening criteria have been established in the Delegated Regulation for a wide range of activities related to the energy supply chain. They include electricity or heat generation from different sources such as photovoltaic, hydropower or renewable non-fossil gaseous and liquid fuels; the manufacture of biogas and biofuels; heat pumps; transmission and distribution networks or storage.<sup>15</sup> Climate neutral energy is recognized as important by the Taxonomy Regulation, however the assessment of the potential contribution and feasibility of nuclear energy to its goals is still ongoing.<sup>16</sup>

Transitional activities also qualify as contributing substantially to climate change mitigation.<sup>17</sup> Transitional activities are economic activities for which there is no feasible low-carbon alternative but support the transition to a climate-neutral economy, and provided the activity: “(a) has greenhouse gas emission levels that correspond to the best performance in the sector or industry; (b) does not hamper the development and deployment of low-carbon alternatives; and (c) does not lead to a lock-in of carbon-intensive assets, considering the economic lifetime of those assets. In addition, the technical screening criteria should be based on scientific evidence.<sup>18</sup> Natural gas activities are still under consideration. To the extent they meet the criteria, they will be included in one of the future delegated acts.<sup>19</sup>

Electricity or heat generation activities are covered by technical screening criteria that take into account the Communication from the Commission of 14 October 2020 on an EU

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<sup>15</sup> Delegated Regulation, recital 25.

<sup>16</sup> Nuclear energy is not included in the Delegated Regulation. Delegated Regulation, recital 27.

<sup>17</sup> Taxonomy Regulation, art 10 (2).

<sup>18</sup> Taxonomy Regulation, art 19.

<sup>19</sup> The Commission specifically acknowledges “the role of natural gas as an important technology in reducing greenhouse gas emissions, and will consider a specific legislation to ensure that activities contributing to emissions reductions would not be deprived of appropriate financing.” Delegated Regulation, recital 27.

strategy to reduce methane emissions.<sup>20</sup> Production of heating, cooling and power from bioenergy and the production of biofuels and biogas for transport are covered by technical screening criteria that are consistent with those under Directive (EU) 2018/2001<sup>21</sup>, setting requirements for sustainable harvesting, carbon accounting and greenhouse gas emission savings. These activities also need to be aligned with the EU Green Deal, the European Climate Law, the EU Biodiversity Strategy 2030 and overall objectives regarding biodiversity and climate neutrality of the EU.<sup>22</sup>

Whether an economic activity qualifies as contributing substantially to **climate change adaptation**, its technical screening criteria needs to include adaptation solutions that either substantially reduce the risk of the adverse impact of the climate or that the activity substantially reduces the adverse impact, without increasing the risk of an adverse impact on people, nature or assets. An economic activity will also qualify as contributing substantially to climate change adaptation in case it provides adaptation solutions that contribute substantially to preventing or reducing the risk of the adverse impact of the climate on people, nature or assets, without increasing the risk of an adverse impact on other people, nature or assets.<sup>23</sup> Technical screening criteria should ensure that the activity is climate resilient or provides such solutions that would enable other activities to become climate resilient. Only capital expenditures incurred for all steps necessary for making the activity climate resilient should be considered.<sup>24</sup> At the same time, the economic activity should not do significant harm to any of the other five objectives from the Taxonomy Regulation. The 'do no significant harm' criteria (DNSH criteria) for a given environmental objective should be specified for those activities that present a risk of causing significant harm to that objective.<sup>25</sup> Adaptation activities which may present a risk of producing significant GHG emissions while in the same time they potentially contribute substantially to adaptation should have sufficient technical screening criteria so they do not cause significant harm to climate change mitigation.<sup>26</sup>

In the next chapter, the paper describes in more detail particular economic activities within the energy sector covered by the EU taxonomy. The paper does not discuss all energy related aspects of the delegated acts, it focuses on activities that are most significant for the Energy Community CPs.

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<sup>20</sup> Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions: EU strategy to reduce methane emissions (COM/2020/663 final).

<sup>21</sup> Directive (EU) 2018/2001 of the European Parliament and of the Council of 11 December 2018 on the promotion of the use of energy from renewable sources (OJ L 328, 21.12.2018, p.82).

<sup>22</sup> Delegated Regulation, recitals 30, 31.

<sup>23</sup> Delegated Regulation, recital 46 and Taxonomy Regulation art 11.

<sup>24</sup> Delegated Regulation, recital 48.

<sup>25</sup> Delegated Regulation, recital 49.

<sup>26</sup> Delegated Regulation, recital 50.

## C. Climate change mitigation

Annex 1<sup>27</sup> to the Delegated Regulation provides detailed technical screening criteria for determining the conditions under which an economic activity qualifies as contributing substantially to climate change mitigation and for determining whether that economic activity causes no significant harm to any of the other environmental objectives. Economic activities that are elaborated upon are categorized into nine groups: (a) forestry; (b) environmental protection and restoration activities; (c) manufacturing; (d) energy; (e) water supply, sewerage, waste management and remediation; (f) transport; (g) construction and real estate activities; (h) information and communication; and (i) professional, scientific and technical activities. This paper focuses on energy related topics only.

### 1. Energy

#### 1.1. *Electricity generation using solar photovoltaic technology, concentrated solar power (CSP) technology, wind power, ocean energy technologies, hydropower, geothermal energy, renewable non-fossil gaseous and liquid fuels and bioenergy.*<sup>28</sup>

Technical screening criteria for substantial contribution to climate change mitigation includes economic activities that generate electricity using solar PV technology, CSP technology, wind power, ocean energy, biomass, biogas or bioliquids (excluding electricity generation from blending of renewable fuels with biogas or bioliquids) and three others that are elaborated as examples below.

Technical screening criteria for economic activities regarding the construction and operation of electricity generation facilities that produce **electricity from hydropower**, to be considered as substantially contributing to climate change mitigation, are the following: (a) the electricity generation facility is a run-of-river plant and does not have an artificial reservoir; (b) the power density of the electricity generation facility is above 5 W/m<sup>2</sup>; and (c) the life-cycle GHG emissions from the generation of electricity from hydropower, are lower than 100gCO<sub>2</sub>e/kWh. The life-cycle GHG emissions are calculated using

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<sup>27</sup>[https://eur-lex.europa.eu/resource.html?uri=cellar:d84ec73c-c773-11eb-a925-01aa75ed71a1.0021.02/DOC\\_2&format=PDF](https://eur-lex.europa.eu/resource.html?uri=cellar:d84ec73c-c773-11eb-a925-01aa75ed71a1.0021.02/DOC_2&format=PDF).

<sup>28</sup> Delegated Regulation, p.72-86.



Recommendation 2013/179/EU or, alternatively, using ISO 14067:2018<sup>162</sup>, ISO 14064-1:2018<sup>163</sup> or the G-res tool<sup>164</sup>. Quantified life-cycle GHG emissions shall be verified by an independent third party.<sup>29</sup> At the same time, the economic activity has to comply with the DNSH criteria that is in more detail defined in Annex 1<sup>30</sup>, its Appendixes (A, D) and Directive 2000/60/EC.

The construction or operation of electricity generation facilities that produce **electricity from geothermal energy** are considered to substantially contribute to climate change mitigation when life-cycle GHG emissions from the generation of electricity from geothermal energy are lower than 100gCO<sub>2</sub>e/kWh. Life-cycle GHG emission savings are calculated using Commission Recommendation 2013/179/EU or, alternatively, using ISO 14067:2018 or ISO 14064-1:2018. Quantified life-cycle GHG emissions are verified by an independent third party.<sup>31</sup> DNSH criteria is further on defined in Annex 1 and its Appendixes (A, B, D).<sup>32</sup>

Economic activities concerning the construction or operation of electricity generation facilities that produce electricity using **gaseous and liquid fuels of renewable origin** do not include electricity generation from the exclusive use of biogas and bio-liquid fuels. Substantial contribution to climate change mitigation and DNSH criteria of these activities are defined in detail in Annex 1 p. 82-83.

## **1.2. Transmission and distribution of electricity**

This economic activity involves construction and operation of **transmission and distribution systems for electricity** on extra high-voltage and high-voltage

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<sup>29</sup> Annex 1, p.77.

<sup>30</sup> Annex 1, p.77-80.

<sup>31</sup> Annex 1, p.80-81.

<sup>32</sup> Ibidem.

interconnected systems as well as on medium-voltage and low-voltage distribution systems.

An activity in this category sustainably contributes to climate change mitigation when it complies with at least one of the following criteria: (a) the system is the interconnected European system, i.e. the interconnected control areas of Member States, Norway, Switzerland and the United Kingdom, and its subordinated systems; (b) more than 67% of newly enabled generation capacity in the system is below the generation threshold value of 100 gCO<sub>2</sub>e/kWh measured on a life cycle basis in accordance with electricity generation criteria, over a rolling five-year period; and (c) the average system grid emissions factor, calculated as the total annual emissions from power generation connected to the system, divided by the total annual net electricity production in that system, is below the threshold value of 100 gCO<sub>2</sub>e/kWh measured on a life cycle basis in accordance with electricity generation criteria, over a rolling five-year period. Infrastructure dedicated to creating a direct connection or expanding an existing direct connection between a substation or network and a power production plant that is more greenhouse gas intensive than 100 gCO<sub>2</sub>e/kWh measured on a life cycle basis is not compliant. Installation of metering infrastructure that does not meet the requirements of smart metering systems in Article 20 of Directive (EU) 2019/944 is also not compliant. Substantial contribution to climate change mitigation has been identified for the following activities: direct connection of a generator producing below 100 gCO<sub>2</sub>e/kWh; EV charging stations; installation of transmission and distribution transformers that comply with the Tier 2 (1 July 2021) requirements set out in Annex I to Commission Regulation (EU) No 548/2014; construction and operation of infrastructure with the main objective to increase generation or usage of renewables; equipment that increases the controllability and observability of the electricity system, smart-metering equipment; and power interconnectors. The DNSH criteria are further elaborated in Annex 1 and its appendixes (A, D).<sup>33</sup>

### **1.3. Storage of electricity, thermal energy and hydrogen**

The construction and operation of facilities that **store electricity and return it at a later time in the form of electricity** constitute economic activities that contribute substantially to climate change mitigation, where the activity is the construction and operation of electricity storage including pumped hydropower storage. Where the activity includes chemical energy storage, the medium of storage (such as hydrogen or ammonia) must comply with the criteria for manufacturing of the corresponding product specified in

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<sup>33</sup> Annex 1, p.86-89.

Sections 3.7 to 3.17 of Annex 1. In case of using hydrogen as electricity storage, where hydrogen meets the technical screening criteria specified in Section 3.10 of Annex 1, re-electrification of hydrogen is also considered part of the activity. The DNSH criteria is further elaborated in Annex 1 and its appendixes (A, B, D).<sup>34</sup>

Regarding storage of **thermal energy and hydrogen**, the technical screening criteria are defined in Annex 1 (p. 92-94).

#### ***1.4. Manufacture of biogas and biofuels for use in transport and of bioliquids***

The manufacturing of **biogas or biofuels** for use in transport and of bioliquids is considered as an economic activity that substantially contributes to climate change mitigation when: 1.) Agricultural biomass used for the manufacture of biogas or biofuels for use in transport and for the manufacture of bioliquids complies with the criteria laid down in Article 29, paragraphs 2 to 5, of Directive (EU) 2018/2001. Forest biomass used for the manufacture of biogas or biofuels for use in transport and for the manufacture of bioliquids complies with the criteria laid down in Article 29, paragraphs 6 and 7, of that Directive. Food and feed crops are not used for the manufacture of biofuels for use in transport and for the manufacture of bioliquids. 2.) The greenhouse gas emission savings from the manufacture of biofuels and biogas for use in transport and from the manufacture of bioliquids are at least 65 % in relation to the GHG saving methodology and the relative fossil fuel comparator set out in Annex V to (EU) 2018/2001. 3.) Where the manufacture of biogas relies on anaerobic digestion of organic material, the production of the digestate meets the criteria in Sections 5.6 and criteria 1 and 2 of Section 5.7 of Annex 1, as applicable. 4.) Where the CO<sub>2</sub> that otherwise would be emitted from the manufacturing process is captured for the purpose of underground storage, the CO<sub>2</sub> is transported and stored underground in accordance with the technical screening criteria set out in Sections 5.11 and 5.12 of Annex 1. The DNSH criteria is further elaborated in Annex 1 and its appendixes (A, B, D).<sup>35</sup>

#### ***1.5. Transmission and distribution networks for renewable and low-carbon gases***

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<sup>34</sup> Annex 1, p.90-91.

<sup>35</sup> Annex 1, p.94-96.

The conversion, repurposing or retrofit of gas networks for the **transmission and distribution of renewable and low-carbon gases** and construction or operation of transmission and distribution pipelines dedicated to the transport of hydrogen or other low-carbon gases contribute substantially to climate change mitigation when the activity consists of one of the following: (a) construction or operation of new transmission and distribution networks dedicated to hydrogen or other low-carbon gases; (b) conversion/repurposing of existing natural gas networks to 100% hydrogen; and (c) retrofit of gas transmission and distribution networks that enables the integration of hydrogen and other low-carbon gases in the network, including any gas transmission or distribution network activity that enables the increase of the blend of hydrogen or other low carbon gasses in the gas system. The DNSH criteria are further elaborated in Annex 1 and its appendixes (A, B, D).<sup>36</sup>

### **1.6. District heating/cooling distribution**

The conversion, construction, refurbishment and operation of pipelines and associated infrastructure for **distribution of heating and cooling** ending at the sub-station or heat exchanger are substantially contributing to climate change mitigation when they comply with one of the following criteria: (a) for construction and operation of pipelines and associated infrastructure for distributing heating and cooling, the system meets the definition of efficient district heating and cooling systems laid down in Article 2, point 41, of Directive 2012/27/EU; (b) for refurbishment of pipelines and associated infrastructure for distributing heating and cooling, the investment that makes the system meet the definition of efficient district heating or cooling laid down in Article 2, point 41, of Directive 2012/27/EU starts within a three year period as underpinned by a contractual obligation or an equivalent in case of operators in charge of both generation and the network; and (c) the activity is the following: (i) modification to lower temperature regimes; (ii) advanced pilot systems (control and energy management systems, Internet of Things). The DNSH criteria are further elaborated in Annex 1 and its appendixes (A, B, D).<sup>37</sup>

### **1.7. Installation and operation of electric heat pumps**

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<sup>36</sup> Annex 1, p.96-97.

<sup>37</sup> Annex 1, p.97-98.

The **installation and operation of electric heat pumps** are considered to substantially contribute to climate change mitigation when they comply with both of the following criteria: (a) the refrigerant threshold: Global Warming Potential (GWP)<sup>38</sup> does not exceed 675; and (b) energy efficiency requirements laid down in the implementing regulations<sup>39</sup> under Directive 2009/125/EC are met. The DNSH criteria is further elaborated in Annex 1 and its appendixes (A, B) and Commission Regulation (EU) No 206/2012.<sup>40</sup>

### **1.8. Cogeneration of heat/cool and power from solar energy, geothermal energy, renewable non-fossil gaseous and liquid fuels and bioenergy**

The construction and operation of facilities that **co-generate electricity and heat/cool from solar energy** are regarded as economic activities that substantially contribute to climate change mitigation. The DNSH criteria are further elaborated in Annex 1 and its appendixes (A, D).<sup>41</sup>

The construction and operation of facilities **co-generating heat/cool and power from geothermal energy** substantially contribute to climate change mitigation when the life-cycle GHG emissions from the combined generation of heat/cool and power from geothermal energy are lower than 100gCO<sub>2</sub>e/ kWh of energy output from the combined generation. Life-cycle GHG emissions are calculated based on project-specific data, where available, using Commission Recommendation 2013/179/EU or, alternatively, using ISO 14067:2018 or ISO 14064-1:2018. Quantified life-cycle GHG emissions should be verified by an independent third party. The DNSH criteria is further elaborated in Annex 1 and its appendixes (A, B, D).<sup>42</sup>

The construction and operation of **combined heat/cool and power generation facilities using gaseous and liquid fuels of renewable origin** substantially contribute to climate change mitigation when the life-cycle GHG emissions from the co-generation of heat/cool

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<sup>38</sup> Global warming potential is an appraisal of greenhouse gas (for example, CO<sub>2</sub>, methane, nitrous oxide...) contribution to global warming.

<sup>39</sup> Commission Regulation (EU) No 206/2012 of 6 March 2012 implementing Directive 2009/125/EC of the European Parliament and of the Council with regard to ecodesign requirements for air conditioners and comfort fans (OJ L 72, 10.3.2012, p.7), Commission Regulation (EU) No 813/2013 of 2 August 2013 implementing Directive 2009/125/EC of the European Parliament and of the Council with regard to ecodesign requirements for space heaters and combination heaters (OJ L 239, 6.9.2013, p.136) and Commission Regulation (EU) 2016/2281 of 30 November 2016 implementing Directive 2009/125/EC of the European Parliament and of the Council establishing a framework for the setting of ecodesign requirements for energy-related products, with regard to ecodesign requirements for air heating products, cooling products, high temperature process chillers and fan coil units (OJ L 346, 20.12.2016, p.1).

<sup>40</sup> Annex 1, p.98-100.

<sup>41</sup> Annex 1, p.100-101.

<sup>42</sup> Annex 1, p.101-102.



and power from renewable gaseous and liquid fuels are lower than 100gCO<sub>2</sub>e per 1 kWh of energy output from the co-generation. Life-cycle GHG emissions are calculated based on project-specific data, where available, using Recommendation 2013/179/EU or, alternatively, using ISO 14067:2018193 or ISO 14064-1:2018194. Quantified life-cycle GHG emissions should be verified by an independent third party. The activity has to meet either of the following criteria: (a) at construction, measurement equipment for monitoring of physical emissions, such as methane leakage, is installed or a leak detection and repair program is introduced; and (b) at operation, methane emissions are physically measured and reported, and leaks are eliminated. The DNSH criteria is further elaborated in Annex 1 and its appendixes (A, B, D).<sup>43</sup>

Economic activities regarding the construction and operation of installations used for cogeneration of heat/cool and power exclusively from **biomass, biogas or bioliquids** are considered to substantially contribute to climate change mitigation when agricultural biomass used in the activity complies with the criteria laid down in Article 29, paragraphs 2 to 5, of Directive (EU) 2018/2001. Moreover, forest biomass used in the activity complies with the criteria laid down in Article 29, paragraphs 6 and 7 of that Directive. In addition, the greenhouse gas emission savings from the use of biomass in cogeneration installations are at least 80% in relation to the GHG emission saving methodology and fossil fuel comparator set out in Annex VI to Directive (EU) 2018/2001. The DNSH criteria is further elaborated in Annex 1 and its appendixes (A, B, D).<sup>44</sup>

### ***1.9. Production of heat/cool from solar thermal heating, geothermal energy, renewable non-fossil gaseous and liquid fuels, bioenergy and using waste heat***

The construction and operation of facilities that produce **heat/cool from solar thermal heating technology** are regarded as economic activities that substantially contribute to climate change mitigation. The DNSH criteria is further elaborated in Annex 1 and its appendixes (A, D).<sup>45</sup>

The construction and/or operation of facilities that produce **heat/cool from geothermal energy** substantially contribute to climate change mitigation when the life-cycle GHG emissions from the generation of heat/cool from geothermal energy are lower than

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<sup>43</sup> Annex 1, p.102-104.

<sup>44</sup> Annex 1, p.104-106.

<sup>45</sup> Annex 1, p.106-107.

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100gCO<sub>2</sub>e/kWh. The DNSH criteria are further elaborated in Annex 1 and its appendixes (A, B, D).<sup>46</sup>

The construction and operation of heat generation facilities that produce **heat/cool using gaseous and liquid fuels of renewable origin** contribute to climate change mitigation when the life-cycle GHG emissions from the generation of heat/cool using renewable gaseous and liquid fuels are lower than 100gCO<sub>2</sub>e/kWh. Life-cycle GHG emissions are calculated based on project-specific data, where available, using Recommendation 2013/179/EU or, alternatively, using ISO 14067:2018199 or ISO 14064-1:2018200. Quantified life-cycle GHG emissions are verified by an independent third party. The activity must also meet either of the following criteria: (a) at construction, measurement equipment for monitoring physical emissions, such as methane leakage, is installed or a leak detection and repair program is introduced; and (b) at operation, methane emissions are physically measured and reported and leaks are eliminated. The DNSH criteria are further elaborated in the Annex 1 and its appendixes (A, B, D).<sup>47</sup>

The construction and operation of facilities that produce **heat/cool exclusively from biomass, biogas or bioliquids** substantially contribute to climate change mitigation when: (a) agricultural biomass used in the activity for the production of heat and cooling complies with the criteria laid down in Article 29, paragraphs 2 to 5, of Directive (EU) 2018/2001 and forest biomass used in the activity complies with the criteria laid down in Article 29, paragraphs 6 and 7, of that Directive; and (b) the greenhouse gas emission savings from the use of biomass are at least 80 % in relation to the GHG emission saving methodology and relative fossil fuel comparator set out in Annex VI to Directive (EU) 2018/2001. These two conditions do not apply to heat generation installations using gaseous biomass fuels with a total rated thermal input below 2 MW. The DNSH criteria are further elaborated in Annex 1 and its appendixes (A, B, D).<sup>48</sup>

Economic activities of construction and operation of facilities that produce heat/cool using **waste heat** are regarded as substantially contributing to climate change mitigation. The DNSH criteria is further elaborated in Annex 1 and its appendixes (A, D).<sup>49</sup>

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<sup>46</sup> Annex 1, p.107-108.

<sup>47</sup> Annex 1, p.109-110.

<sup>48</sup> Annex 1, p.111-113.

<sup>49</sup> Annex 1, p.113-114.



## **2. Construction and real estate activities**

Construction and real estate activities covered by Annex 1 are the following: construction; renovation; installation, maintenance and repair (of equipment, and technologies); and acquisition and ownership of buildings.

This paper further on focuses on two topics that are most relevant for the CPs, namely construction of new buildings and renovation of existing buildings.

### **2.1. Construction of new buildings<sup>50</sup>**

Whether the development of building projects for residential and non-residential buildings substantially contributes to climate change mitigation depends on the Primary Energy Demand (PED)<sup>51</sup>. The PED has to be at least 10% lower than the threshold set for the nearly zero-energy building (NZEB) requirements in national measures implementing Directive 2010/31/EU. The energy performance is certified using an Energy Performance Certificate<sup>52</sup> (EPC).

For buildings larger than 5000 m<sup>2/53</sup>, the building undergoes testing for air-tightness and thermal integrity upon its completion. Any deviation in the levels of performance set at

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<sup>50</sup> Annex 1, p.166-169.

<sup>51</sup> The calculated amount of energy needed to meet the energy demand associated with the typical uses of a building expressed by a numeric indicator of total primary energy use in kWh/m<sup>2</sup> per year and based on the relevant national calculation methodology and as displayed on the Energy Performance Certificate (EPC).

<sup>52</sup> [https://ec.europa.eu/energy/eu-buildings-factsheets-topics-tree/energy-performance-certificates\\_en](https://ec.europa.eu/energy/eu-buildings-factsheets-topics-tree/energy-performance-certificates_en).

<sup>53</sup> For residential buildings, the testing is made for a representative set of dwelling/apartment types.

the design stage or defects in the building envelope are disclosed to investors and clients. Robust and traceable quality control processes during the construction process are an acceptable alternative to thermal integrity testing.

For buildings larger than 5000 m<sup>2/54</sup>, the life-cycle GWP of the building<sup>55</sup> resulting from the construction has to be calculated for each stage in the life cycle and is disclosed to investors and clients on demand.

The DNSH criteria are further elaborated in Annex 1 and its appendixes (A, C, D).

## **2.2. Renovation of existing buildings**

The construction and civil engineering works or preparation thereof substantially contribute to climate change mitigation. They are considered transitional activities under the Taxonomy Regulation if the building renovation complies with the applicable requirements for major renovations.<sup>56</sup> Alternatively, it should lead to a reduction of PED of at least 30 %.<sup>57</sup> The DNSH criteria are further elaborated in Annex 1 and its appendixes (A, C, E).<sup>58</sup>

## **2.3. Installation, maintenance and repair of energy efficiency equipment**

Installation, maintenance and repair of energy efficiency equipment can be considered as individual renovation measures. Economic activities in this category are enabling activities as referred to in Article 10(1), point (i), of Regulation (EU) 2020/852 if they comply with the technical screening criteria described in the following section. These

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<sup>54</sup> For residential buildings, the calculation and disclosure are made for a representative set of dwelling/apartment types.

<sup>55</sup> The GWP is communicated as a numeric indicator for each life cycle stage expressed as kgCO<sub>2</sub>e/m<sup>2</sup> (of useful internal floor area) averaged for one year of a reference study period of 50 years. The data selection, scenario definition and calculations are carried out in accordance with EN 15978 (BS EN 15978:2011. Sustainability of construction works. Assessment of environmental performance of buildings. Calculation method).

<sup>56</sup> As set in the applicable national and regional building regulations for ‘major renovation’ implementing Directive 2010/31/EU. The energy performance of the building or the renovated part that is upgraded meets cost-optimal minimum energy performance requirements in accordance with the respective directive.

<sup>57</sup> The initial primary energy demand and the estimated improvement is based on a detailed building survey, an energy audit conducted by an accredited independent expert or any other transparent and proportionate method, and validated through an Energy Performance Certificate. The 30 % improvement results from an actual reduction in primary energy demand (where the reductions in net primary energy demand through renewable energy sources are not taken into account), and can be achieved through a succession of measures within a maximum of three years.

<sup>58</sup> Annex 1, p.169-172.

economic activities substantially contribute to climate change mitigation, if they comply with minimum requirements set for individual components and systems in the applicable national measures implementing Directive 2010/31/EU and, where applicable, are rated in the highest two populated classes of energy efficiency in accordance with Regulation (EU) 2017/1369 and delegated acts adopted under that Regulation. Such activities can be (a) addition of insulation to existing envelope components; (b) replacement of existing windows with new energy efficient windows; (c) replacement of existing external doors with new energy efficient doors; (d) installation and replacement of energy efficient light sources; (e) installation, replacement, maintenance and repair of heating, ventilation and air-conditioning (HVAC) and water heating systems, including equipment related to district heating services, with highly efficient technologies; and (f) installation of low water and energy kitchen and sanitary water fittings which comply with technical specifications set out in Appendix E to Annex I and, in case of shower solutions, mixer showers, shower outlets and taps that have a max water flow EN 173 EN of 6 L/min or less attested by an existing label in the EU market.

The DNSH criteria are further elaborated in Annex 1 and its appendixes (A, C).

### ***3. Professional, scientific and technical activities***

Professional, scientific and technical activities include market research, development and innovation; research, development and innovation for direct air capture of CO<sub>2</sub> and professional services related to energy performance of buildings. Only the latter will be considered in this paper.

**Professional services related to energy performance of buildings** constitute economic activities that substantially contribute to climate change mitigation when the activities consist of one of the following: (a) technical consultations (energy consultations, energy simulations, project management, production of energy performance contracts, dedicated trainings) linked to the improvement of energy performance of buildings; (b) accredited energy audits and building performance assessments; (c) energy management services; (d) energy performance contracts; and (e) energy services provided by energy service companies. The DNSH criteria is further elaborated in Annex 1 and its Appendix A.<sup>59</sup>

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<sup>59</sup> Annex 1, p.187-188.

## D. Climate change adaptation

Annex 2<sup>60</sup> provides the technical screening criteria for determining the conditions under which an economic activity qualifies as contributing substantially to **climate change adaptation** and for determining whether that economic activity causes no significant harm to any of the other environmental objectives. Economic activities that are elaborated upon are categorized into nine groups, similar to Annex 1: (a) forestry; (b) environmental protection and restoration activities; (c) manufacturing; (d) energy; (e) water supply, sewerage, waste management and remediation; (f) transport; (g) construction and real estate activities; (h) information and communication; and (i) professional, scientific and technical activities.

This paper further on focuses only on energy related topics.

### 1. Energy

#### 1.1. *Electricity generation using solar photovoltaic technology, concentrated solar power (CSP) technology, wind power, ocean energy technologies, hydropower, geothermal energy, renewable non-fossil gaseous and liquid fuels and bioenergy*

The construction or operation of electricity generation facilities that produce **electricity using solar photovoltaic (PV) technology** substantially contribute to climate change adaptation if the activity has implemented physical and non-physical solutions ('adaptation solutions') that substantially reduce the most important physical climate risks that are material to that activity. The physical climate risks that are material to the activity are assessed according to the following steps: (a) screening of the activity to identify which physical climate risks from the list in Appendix A to Annex 2 may affect the performance of the economic activity during its expected lifetime; (b) where the activity is assessed to be at risk from one or more of the physical climate risks listed in Appendix A to Annex 2, a climate risk and vulnerability assessment to assess the materiality of the physical climate risks on the economic activity is performed; and (c) an assessment of adaptation solutions that can reduce the identified physical climate risk is conducted. The climate risk and vulnerability assessment is proportionate to the scale of the activity and its expected lifespan. The assessment differs for activities with an expected lifespan of

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<sup>60</sup>[https://eur-lex.europa.eu/resource.html?uri=cellar:d84ec73c-c773-11eb-a925-01aa75ed71a1.0021.02/DOC\\_3&format=PDF](https://eur-lex.europa.eu/resource.html?uri=cellar:d84ec73c-c773-11eb-a925-01aa75ed71a1.0021.02/DOC_3&format=PDF).

less than 10 years, see Annex 2, p. 91-92. The adaptation solutions implemented: (a) must not adversely affect the adaptation efforts or the level of resilience to physical climate risks of other people, nature, cultural heritage, assets and other economic activities; (b) must favour nature-based solutions or rely on blue or green infrastructure to the extent possible; (c) are consistent with local, sectoral, regional or national adaptation plans and strategies; (d) are monitored and measured against pre-defined indicators and remedial action is considered where those indicators are not met; and (e) where the solution implemented is physical and consists in an activity for which technical screening criteria have been specified in Annex 2, the solution must comply with the do no significant harm technical screening criteria for that activity. The DNSH criteria is further elaborated in Annex 2 and its Appendix D.<sup>61</sup>

The construction and operation of electricity generation facilities that produce **electricity using concentrated solar power (CSP) technology** substantially contribute to climate change adaptation if the economic activity has implemented physical and non-physical solutions ('adaptation solutions') that substantially reduce the most important physical climate risks that are material to that activity. The climate risk and vulnerability assessment is to be proportionate to the scale of the activity and its expected lifespan, such that: (a) for activities with an expected lifespan of less than 10 years, the assessment is performed, at least by using climate projections at the smallest appropriate scale; and (b) for all other activities, the assessment is performed using the highest available resolution, state-of-the-art climate projections across the existing range of future scenarios consistent with the expected lifetime of the activity, including, at least, 10 to 30 year climate projections scenarios for major investments. The adaptation solutions implemented: (a) do not adversely affect the adaptation efforts or the level of resilience to physical climate risks of other people, nature, cultural heritage, assets and other economic activities; (b) favour nature-based solutions or rely on blue or green infrastructure to the extent possible; (c) are consistent with local, sectoral, regional or national adaptation plans and strategies; (d) are monitored and measured against pre-defined indicators and remedial action is considered where those indicators are not met; (e) and where the solution implemented is physical and consists in an activity for which technical screening criteria have been specified in Annex 2, the solution complies with the do no significant harm technical screening criteria for that activity. The DNSH criteria are further elaborated in Annex 2 and its Appendixes B, D.<sup>62</sup>

The construction or operation of electricity generation facilities that produce **electricity from wind power** substantially contributes to climate change adaptation when the economic activity has implemented physical and non-physical solutions ('adaptation solutions') that substantially reduce the most important physical climate risks that are

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<sup>61</sup> Annex 2, p.91-93.

<sup>62</sup> Annex 2, p.93-95.

material to that activity. The physical climate risks that are material to the activity have been identified from those listed in Appendix A to Annex 2 by performing a robust climate risk and vulnerability assessment with the following steps: (a) screening of the activity to identify which physical climate risks from the list in Appendix A to Annex 2 may affect the performance of the economic activity during its expected lifetime; (b) where the activity is assessed to be at risk from one or more of the physical climate risks listed in Appendix A to Annex 2, a climate risk and vulnerability assessment to assess the materiality of the physical climate risks on the economic activity; and (c) an assessment of adaptation solutions that can reduce the identified physical climate risk.

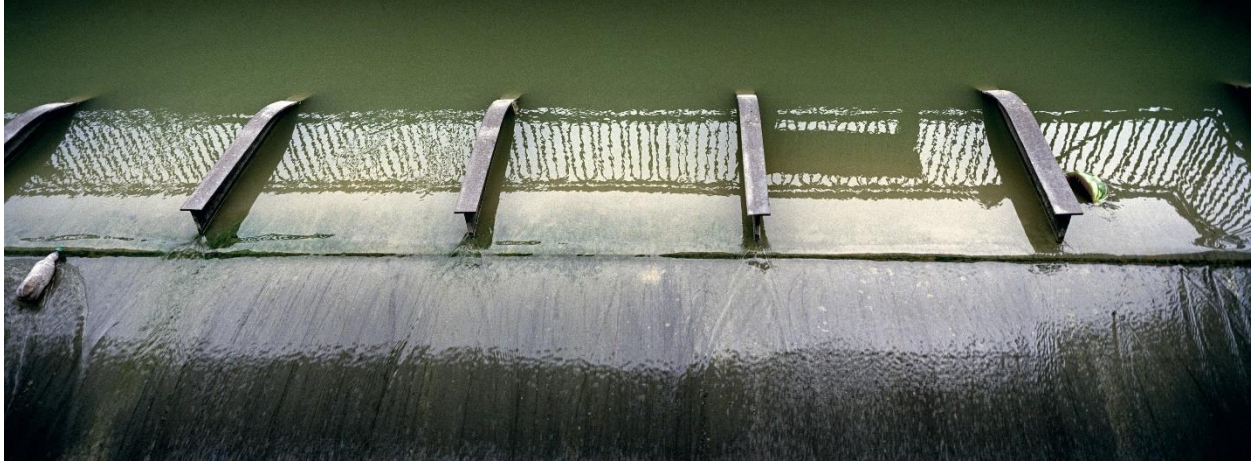
The physical climate risks have to be identified and assessed (assessment defers for activities with an expected lifespan of less than 10 years and to all the others, see Annex 2, p. 96). The adaptation solutions implemented: (a) do not adversely affect the adaptation efforts or the level of resilience to physical climate risks of other people, of nature, of cultural heritage, of assets and of other economic activities; (b) favour nature-based solutions or rely on blue or green infrastructure to the extent possible; (c) are consistent with local, sectoral, regional or national adaptation plans and strategies; (d) are monitored and measured against pre-defined indicators and remedial action is considered where those indicators are not met; and (e) where the solution implemented is physical and consists in an activity for which technical screening criteria have been specified in Annex 2, the solution complies with the do no significant harm technical screening criteria for that activity. The DNSH criteria is further elaborated in Annex 2 and its Appendix D.<sup>63</sup>

The construction and/or operation of electricity generation facilities that produce **electricity from hydropower** contribute substantially to climate change adaptation when the economic activity has implemented physical and non-physical solutions ('adaptation solutions') that substantially reduce the most important physical climate risks that are material to that activity. The physical climate risks that are material to the activity have been identified from those listed in Appendix A to this Annex by performing a robust climate risk and vulnerability assessment according to the following steps: (a) screening of the activity to identify which physical climate risks from the list in Appendix A to Annex 2 may affect the performance of the economic activity during its expected lifetime; (b) where the activity is assessed to be at risk from one or more of the physical climate risks listed in Appendix A to Annex 2, conducting a climate risk and vulnerability assessment to assess the materiality of the physical climate risks on the economic activity; and (c) performing an assessment of adaptation solutions that can reduce the identified physical climate risk. The climate risks and vulnerability assessment of the activity defers for activities with an expected lifespan of less than 10 years, see Annex 2, p. 101. The

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<sup>63</sup> Annex 2, p.93-95.





adaptation solutions implemented: (a) do not adversely affect the adaptation efforts or the level of resilience to physical climate risks of other people, nature, cultural heritage, assets and other economic activities; (b) favour nature-based solutions or rely on blue or green infrastructure to the extent possible; (c) are consistent with local, sectoral, regional or national adaptation plans and strategies; (d) are monitored and measured against pre-defined indicators and remedial action is considered where those indicators are not met; and (e) where the solution implemented is physical and consists in an activity for which technical screening criteria have been specified in Annex 2, the solution complies with the do no significant harm technical screening criteria for that activity. The DNSH criteria are further elaborated in Annex 2 and its Appendix D.<sup>64</sup>

The construction and/or operation of electricity generation facilities that produce **electricity from geothermal energy** substantially contribute to climate change adaptation when the economic activity has implemented physical and non-physical solutions ('adaptation solutions') that substantially reduce the most important physical climate risks that are material to that activity. The physical climate risks that are material to the activity have been identified from those listed in Appendix A to Annex 2 by performing a robust climate risk and vulnerability assessment according to the following steps: (a) screening of the activity to identify which physical climate risks from the list in Appendix A to Annex 2 may affect the performance of the economic activity during its expected lifetime; (b) where the activity is assessed to be at risk from one or more of the physical climate risks listed in Appendix A to Annex 2, conducting a climate risk and vulnerability assessment to assess the materiality of the physical climate risks on the economic activity; and (c) performing an assessment of adaptation solutions that can reduce the identified physical climate risk. The climate risks and vulnerability assessment of the activity differs for activities with an expected lifespan of less than 10 years, see Annex 2, p. 105-106. The adaptation solutions implemented: (a) do not adversely affect the adaptation efforts or the level of resilience to physical climate risks of other people, nature, cultural heritage, assets and other economic activities; (b) favour nature-based

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<sup>64</sup> Annex 2, p.101-105.

solutions or rely on blue or green infrastructure to the extent possible; (c) are consistent with local, sectoral, regional or national adaptation plans and strategies; (d) are monitored and measured against pre-defined indicators and remedial action is considered where those indicators are not met; and (e) where the solution implemented is physical and consists in an activity for which technical screening criteria have been specified in Annex 2, the solution complies with the do no significant harm technical screening criteria for that activity. The DNSH criteria are further elaborated in the Annex 2 and its Appendix D.<sup>65</sup>

The construction or operation of electricity generation facilities that produce **electricity using gaseous and liquid fuels of renewable origin** substantially contribute to climate change adaptation when the economic activity has implemented physical and non-physical solutions ('adaptation solutions') that substantially reduce the most important physical climate risks that are material to that activity. The physical climate risks that are material to the activity have been identified from those listed in Appendix A to Annex 2 by performing a robust climate risk and vulnerability assessment with the following steps: (a) screening of the activity to identify which physical climate risks from the list in Appendix A to Annex 2 may affect the performance of the economic activity during its expected lifetime; (b) where the activity is assessed to be at risk from one or more of the physical climate risks listed in Appendix A to Annex 2, a climate risk and vulnerability assessment to assess the materiality of the physical climate risks on the economic activity; and (c) an assessment of adaptation solutions that can reduce the identified physical climate risk. The climate risks and vulnerability assessment of the activity defers for activities with an expected lifespan of less than 10 years and to all the others, see Annex 2, p. 108. The adaptation solutions implemented: (a) do not adversely affect the adaptation efforts or the level of resilience to physical climate risks of other people, of nature, of cultural heritage, of assets and of other economic activities; (b) favour nature-based solutions or rely on blue or green infrastructure to the extent possible; (c) are consistent with local, sectoral, regional or national adaptation plans and strategies; (d) are monitored and measured against pre-defined indicators and remedial action is considered where those indicators are not met; and (e) where the solution implemented is physical and consists in an activity for which technical screening criteria have been specified in Annex 2, the solution complies with the do no significant harm technical screening criteria for that activity. The DNSH criteria are further elaborated in the Annex 2 and its Appendixes B, D.<sup>66</sup>

The construction and operation of electricity generation installations that produce electricity exclusively from **biomass, biogas or bioliquids** substantially contribute to climate change adaptation when the economic activity has implemented physical and

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<sup>65</sup> Annex 2, p.105-107.

<sup>66</sup> Annex 2, p.107-110.

non-physical solutions ('adaptation solutions') that substantially reduce the most important physical climate risks that are material to that activity. The physical climate risks that are material to the activity have been identified from those listed in Appendix A to Annex 2 by performing a robust climate risk and vulnerability assessment with the following steps: (a) screening of the activity to identify which physical climate risks from the list in Appendix A to Annex 2 may affect the performance of the economic activity during its expected lifetime; (b) where the activity is assessed to be at risk from one or more of the physical climate risks listed in Appendix A to Annex 2, a climate risk and vulnerability assessment to assess the materiality of the physical climate risks on the economic activity; and (c) an assessment of adaptation solutions that can reduce the identified physical climate risk. The climate risks and vulnerability assessment of the activity defers for activities with an expected lifespan of less than 10 years and to all the others, see Annex 2, p. 111. The adaptation solutions implemented: (a) do not adversely affect the adaptation efforts or the level of resilience to physical climate risks of other people, of nature, of cultural heritage, of assets and of other economic activities; (b) favour nature-based solutions or rely on blue or green infrastructure to the extent possible; (c) are consistent with local, sectoral, regional or national adaptation plans and strategies; (d) are monitored and measured against pre-defined indicators and remedial action is considered where those indicators are not met; and (e) where the solution implemented is physical and consists in an activity for which technical screening criteria have been specified in this Annex, the solution complies with the do no significant harm technical screening criteria for that activity. The DNSH criteria are further elaborated in the Annex 2 and its Appendixes B, D.<sup>67</sup>

## **1.2. *Transmission and distribution of electricity***

Annex 2 addresses the construction and operation of **transmission systems for electricity on the extra high-voltage and high-voltage interconnected system, and of distribution systems for electricity on high-voltage, medium-voltage and low-voltage**. These activities substantially contribute to climate change adaptation when the economic activity has implemented physical and non-physical solutions ('adaptation solutions') that substantially reduce the most important physical climate risks that are material to that activity. The physical climate risks that are material to the activity have been identified from those listed in Appendix A to Annex 2 by performing a robust climate risk and vulnerability assessment with the following steps: (a) screening of the activity to identify which physical climate risks from the list in Appendix A to Annex 2 may affect the performance of the economic activity during its expected lifetime; (b) where the activity is

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<sup>67</sup> Annex 2, p.110-113.

assessed to be at risk from one or more of the physical climate risks listed in Appendix A to Annex 2, a climate risk and vulnerability assessment to assess the materiality of the physical climate risks on the economic activity; and (c) an assessment of adaptation solutions that can reduce the identified physical climate risk. The climate risks and vulnerability assessment of the activity defers for activities with an expected lifespan of less than 10 years and to all the others, see Annex 2, p. 114. The adaptation solutions implemented: (a) do not adversely affect the adaptation efforts or the level of resilience to physical climate risks of other people, of nature, of cultural heritage, of assets and of other economic activities; (b) favour nature-based solutions or rely on blue or green infrastructure to the extent possible; (c) are consistent with local, sectoral, regional or national adaptation plans and strategies; (d) are monitored and measured against pre-defined indicators and remedial action is considered where those indicators are not met; and (e) where the solution implemented is physical and consists in an activity for which technical screening criteria have been specified in Annex 2, the solution complies with the do no significant harm technical screening criteria for that activity. The DNSH criteria are further elaborated in the Annex 2 and its Appendix D.<sup>68</sup>

### **1.3. Storage of electricity, thermal energy and hydrogen**

The construction and operation of facilities that **store electricity** and return it at a later time, including pumped hydropower storage can substantially contribute to climate change adaptation when the economic activity has implemented physical and non-physical solutions ('adaptation solutions') that substantially reduce the most important physical climate risks that are material to that activity. The physical climate risks that are material to the activity have been identified from those listed in Appendix A to Annex 2 by performing a robust climate risk and vulnerability assessment with the following steps: (a) screening of the activity to identify which physical climate risks from the list in Appendix A to Annex 2 may affect the performance of the economic activity during its expected lifetime; (b) where the activity is assessed to be at risk from one or more of the physical climate risks listed in Appendix A to Annex 2, a climate risk and vulnerability assessment to assess the materiality of the physical climate risks on the economic activity; and (c) an assessment of adaptation solutions that can reduce the identified physical climate risk. The climate risks and vulnerability assessment of the activity defers for activities with an expected lifespan of less than 10 years and to all the others, see Annex 2, p. 117. The adaptation solutions implemented: (a) do not adversely affect the adaptation efforts or

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<sup>68</sup> Annex 2, p.113-116.



the level of resilience to physical climate risks of other people, of nature, of cultural heritage, of assets and of other economic activities; (b) favour nature-based solutions or rely on blue or green infrastructure to the extent possible; (c) are consistent with local, sectoral, regional or national adaptation plans and strategies; (d) are monitored and measured against pre-defined indicators and remedial action is considered where those indicators are not met; and (e) where the solution implemented is physical and consists in an activity for which technical screening criteria have been specified in this Annex, the solution complies with the do no significant harm technical screening criteria for that activity. The DNSH criteria are further elaborated in the Annex 2 and its Appendixes B, D.<sup>69</sup>

Regarding technical screening criteria for **storage of thermal energy and hydrogen** the technical screening criteria are defined in Annex 1 (p. 119-123).

#### ***1.4. Manufacture of biogas and biofuels for use in transport and of bioliquids***

The manufacture of **biogas or biofuels** for use in transport and of bioliquids substantially contribute to climate change adaptation when the economic activity has implemented physical and non-physical solutions ('adaptation solutions') that substantially reduce the most important physical climate risks that are material to that activity. The physical climate risks that are material to the activity have been identified from those listed in Appendix A to Annex 2 by performing a robust climate risk and vulnerability assessment with the following steps: (a) screening of the activity to identify which physical climate risks from the list in Appendix A to Annex 2 may affect the performance of the economic activity during its expected lifetime; (b) where the activity is assessed to be at risk from one or

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<sup>69</sup> Annex 2, p.113-116.

more of the physical climate risks listed in Appendix A to Annex 2, a climate risk and vulnerability assessment to assess the materiality of the physical climate risks on the economic activity; and (c) an assessment of adaptation solutions that can reduce the identified physical climate risk. The climate risks and vulnerability assessment of the activity defers for activities with an expected lifespan of less than 10 years and to all the others, see Annex 2, p. 124. The adaptation solutions implemented: (a) do not adversely affect the adaptation efforts or the level of resilience to physical climate risks of other people, of nature, of cultural heritage, of assets and of other economic activities; (b) favour nature-based solutions or rely on blue or green infrastructure to the extent possible; (c) are consistent with local, sectoral, regional or national adaptation plans and strategies; and (d) are monitored and measured against pre-defined indicators and remedial action is considered where those indicators are not met; (e) where the solution implemented is physical and consists in an activity for which technical screening criteria have been specified in Annex 2, the solution complies with the do no significant harm technical screening criteria for that activity. The DNSH criteria are further elaborated in the Annex 2 and its Appendixes B, D.<sup>70</sup>

### ***1.5. Transmission and distribution networks for renewable and low-carbon gases***

The conversion, repurposing and retrofit of gas networks for the **transmission and distribution of renewable and low-carbon gases** and also construction and operation of **transmission and distribution pipelines dedicated to the transport of hydrogen and other low-carbon gases contribute substantially to climate change adaptation** if the following technical screening criteria have been met. The economic activity has implemented physical and non-physical solutions ('adaptation solutions') that substantially reduce the most important physical climate risks that are material to that activity. The physical climate risks that are material to the activity have been identified from those listed in Appendix A to Annex 2 by performing a robust climate risk and vulnerability assessment with the following steps: (a) screening of the activity to identify which physical climate risks from the list in Appendix A to Annex 2 may affect the performance of the economic activity during its expected lifetime; (b) where the activity is assessed to be at risk from one or more of the physical climate risks listed in Appendix A to Annex 2, a climate risk and vulnerability assessment to assess the materiality of the physical climate risks on the economic activity; and (c) an assessment of adaptation solutions that can reduce the identified physical climate risk. The climate risks and vulnerability assessment of the activity defers for activities with an expected lifespan of

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<sup>70</sup> Annex 2, p.123-126.

less than 10 years and to all the others, see Annex 2, p. 127. The adaptation solutions implemented: (a) do not adversely affect the adaptation efforts or the level of resilience to physical climate risks of other people, of nature, of cultural heritage, of assets and of other economic activities; (b) favour nature-based solutions or rely on blue or green infrastructure to the extent possible; (c) are consistent with local, sectoral, regional or national adaptation plans and strategies; (d) are monitored and measured against pre-defined indicators and remedial action is considered where those indicators are not met; and (e) where the solution implemented is physical and consists in an activity for which technical screening criteria have been specified in Annex 2, the solution complies with the do no significant harm technical screening criteria for that activity. The DNSH criteria are further elaborated in the Annex 2 and its Appendixes B, D.<sup>71</sup>

### **1.6. District heating/cooling distribution**

The construction, refurbishment and operation of **pipelines and associated infrastructure for distribution of heating and cooling** ending at the sub-station or heat exchanger substantially contribute to climate change adaptation when the economic activity has implemented physical and non-physical solutions ('adaptation solutions') that substantially reduce the most important physical climate risks that are material to that activity. The physical climate risks that are material to the activity have been identified from those listed in Appendix A to Annex 2 by performing a robust climate risk and vulnerability assessment with the following steps: (a) screening of the activity to identify which physical climate risks from the list in Appendix A to Annex 2 may affect the performance of the economic activity during its expected lifetime; (b) where the activity is assessed to be at risk from one or more of the physical climate risks listed in Appendix A to Annex 2, a climate risk and vulnerability assessment to assess the materiality of the physical climate risks on the economic activity; and (c) an assessment of adaptation solutions that can reduce the identified physical climate risk. The climate risks and vulnerability assessment of the activity defers for activities with an expected lifespan of less than 10 years and to all the others, see Annex 2, p. 129. The adaptation solutions implemented: (a) do not adversely affect the adaptation efforts or the level of resilience to physical climate risks of other people, of nature, of cultural heritage, of assets and of other economic activities; (b) favour nature-based solutions or rely on blue or green infrastructure to the extent possible; (c) are consistent with local, sectoral, regional or national adaptation plans and strategies; (d) are monitored and measured against pre-defined indicators and remedial action is considered where those indicators are not met; and (e) where the solution implemented is physical and consists in an activity for which

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<sup>71</sup> Annex 2, p.126-128.

technical screening criteria have been specified in Annex 2, the solution complies with the do no significant harm technical screening criteria for that activity. The DNSH criteria are further elaborated in the Annex 2 and its Appendixes B, D.<sup>72</sup>

### **1.7. Installation and operation of electric heat pumps**

The **installation and operation of electric heat pumps** substantially contribute to climate change adaptation if the activity has implemented physical and non-physical solutions ('adaptation solutions') that substantially reduce the most important physical climate risks that are material to that activity. The physical climate risks that are material to the activity have been identified from those listed in Appendix A to Annex 2 by performing a robust climate risk and vulnerability assessment with the following steps: (a) screening of the activity to identify which physical climate risks from the list in Appendix A to Annex 2 may affect the performance of the economic activity during its expected lifetime; (b) where the activity is assessed to be at risk from one or more of the physical climate risks listed in Appendix A to Annex 2, a climate risk and vulnerability assessment to assess the materiality of the physical climate risks on the economic activity; and (c) an assessment of adaptation solutions that can reduce the identified physical climate risk. The climate risks and vulnerability assessment of the activity defers for activities with an expected lifespan of less than 10 years and to all the others, see Annex 2, p. 131-132. The adaptation solutions implemented: (a) do not adversely affect the adaptation efforts or the level of resilience to physical climate risks of other people, of nature, of cultural heritage, of assets and of other economic activities; (b) favour nature-based solutions or rely on blue or green infrastructure to the extent possible; (c) are consistent with local, sectoral, regional or national adaptation plans and strategies; (d) are monitored and measured against pre-defined indicators and remedial action is considered where those indicators are not met; and (e) where the solution implemented is physical and consists in an activity for which technical screening criteria have been specified in this Annex, the solution complies with the do no significant harm technical screening criteria for that activity. The DNSH criteria are further elaborated in the Annex 2 and its Appendix B.<sup>73</sup>

### **1.8. Cogeneration of heat/cool and power from solar energy, geothermal energy, renewable non-fossil gaseous and liquid fuels and bioenergy**

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<sup>72</sup> Annex 2, p.128-131.

<sup>73</sup> Annex 2, p.131-133.



The construction and operation of a facility **co-generating electricity and heat/cool from solar energy** substantially contribute to climate change adaptation if the economic activity has implemented physical and non-physical solutions ('adaptation solutions') that substantially reduce the most important physical climate risks that are material to that activity. The physical climate risks that are material to the activity have been identified from those listed in Appendix A to Annex 2 by performing a robust climate risk and vulnerability assessment with the following steps: (a) screening of the activity to identify which physical climate risks from the list in Appendix A to Annex 2 may affect the performance of the economic activity during its expected lifetime; (b) where the activity is assessed to be at risk from one or more of the physical climate risks listed in Appendix A to Annex 2, a climate risk and vulnerability assessment to assess the materiality of the physical climate risks on the economic activity; and (c) an assessment of adaptation solutions that can reduce the identified physical climate risk. The climate risks and vulnerability assessment of the activity defers for activities with an expected lifespan of less than 10 years and to all the others, see Annex 2, p. 134. The adaptation solutions implemented: (a) do not adversely affect the adaptation efforts or the level of resilience to physical climate risks of other people, of nature, of cultural heritage, of assets and of other economic activities; (b) favour nature-based solutions or rely on blue or green infrastructure to the extent possible; (c) are consistent with local, sectoral, regional or national adaptation plans and strategies; (d) are monitored and measured against pre-defined indicators and remedial action is considered where those indicators are not met; and (e) where the solution implemented is physical and consists in an activity for which technical screening criteria have been specified in Annex 2, the solution complies with the do no significant harm technical screening criteria for that activity. The DNSH criteria are further elaborated in the Annex 2 and its Appendix D.<sup>74</sup>

The construction and operation of facilities **co-generating heat/cool and power from geothermal energy** substantially contribute to climate change adaptation if the economic activity has implemented physical and non-physical solutions ('adaptation solutions') that substantially reduce the most important physical climate risks that are material to that activity. The physical climate risks that are material to the activity have been identified from those listed in Appendix A to Annex 2 by performing a robust climate risk and vulnerability assessment with the following steps: (a) screening of the activity to identify which physical climate risks from the list in Appendix A to Annex 2 may affect the performance of the economic activity during its expected lifetime; (b) where the activity is assessed to be at risk from one or more of the physical climate risks listed in Appendix A to Annex 2, a climate risk and vulnerability assessment to assess the materiality of the physical climate risks on the economic activity; and (c) an assessment of adaptation

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<sup>74</sup> Annex 2, p.133-135.

solutions that can reduce the identified physical climate risk. The climate risks and vulnerability assessment of the activity defers for activities with an expected lifespan of less than 10 years and to all the others, see Annex 2, p. 136. The adaptation solutions implemented: (a) do not adversely affect the adaptation efforts or the level of resilience to physical climate risks of other people, of nature, of cultural heritage, of assets and of other economic activities; (b) favour nature-based solutions or rely on blue or green infrastructure to the extent possible; (c) are consistent with local, sectoral, regional or national adaptation plans and strategies; (d) are monitored and measured against pre-defined indicators and remedial action is considered where those indicators are not met; and (e) where the solution implemented is physical and consists in an activity for which technical screening criteria have been specified in Annex 2, the solution complies with the do no significant harm technical screening criteria for that activity. The DNSH criteria are further elaborated in the Annex 2 and its Appendix D.<sup>75</sup>

The construction and operation of **combined heat/cool and power generation facilities using gaseous and liquid fuels of renewable origin** contribute substantially to climate change adaptation if the economic activity has implemented physical and non-physical solutions ('adaptation solutions') that substantially reduce the most important physical climate risks that are material to that activity. The physical climate risks that are material to the activity have been identified from those listed in Appendix A to Annex 2 by performing a robust climate risk and vulnerability assessment with the following steps: (a) screening of the activity to identify which physical climate risks from the list in Appendix A to Annex 2 may affect the performance of the economic activity during its expected lifetime; (b) where the activity is assessed to be at risk from one or more of the physical climate risks listed in Appendix A to Annex 2, a climate risk and vulnerability assessment to assess the materiality of the physical climate risks on the economic activity; and (c) an assessment of adaptation solutions that can reduce the identified physical climate risk. The climate risks and vulnerability assessment of the activity defers for activities with an expected lifespan of less than 10 years and to all the others, see Annex 2, p. 138-139. The adaptation solutions implemented: (a) do not adversely affect the adaptation efforts or the level of resilience to physical climate risks of other people, of nature, of cultural heritage, of assets and of other economic activities; (b) favour nature-based solutions or rely on blue or green infrastructure to the extent possible; (c) are consistent with local, sectoral, regional or national adaptation plans and strategies; and (d) are monitored and measured against pre-defined indicators and remedial action is considered where those indicators are not met; (e) where the solution implemented is physical and consists in an activity for which technical screening criteria have been specified in Annex 2, the solution complies with the do no significant harm technical screening criteria for that activity. The

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<sup>75</sup> Annex 2, p.135-138.

DNSH criteria are further elaborated in the Annex 2 and its Appendixes B, D.<sup>76</sup>

The construction and operation of installations used for **cogeneration of heat/cool and power exclusively from biomass, biogas, or bioliquids** contribute substantially to climate change adaptation if the economic activity has implemented physical and non-physical solutions ('adaptation solutions') that substantially reduce the most important physical climate risks that are material to that activity. The physical climate risks that are material to the activity have been identified from those listed in Appendix A to Annex 2 by performing a robust climate risk and vulnerability assessment with the following steps: (a) screening of the activity to identify which physical climate risks from the list in Appendix A to Annex 2 may affect the performance of the economic activity during its expected lifetime; (b) where the activity is assessed to be at risk from one or more of the physical climate risks listed in Appendix A to Annex 2, a climate risk and vulnerability assessment to assess the materiality of the physical climate risks on the economic activity; and (c) an assessment of adaptation solutions that can reduce the identified physical climate risk. The climate risks and vulnerability assessment of the activity defers for activities with an expected lifespan of less than 10 years and to all the others, see Annex 2, p. 141. The adaptation solutions implemented: (a) do not adversely affect the adaptation efforts or the level of resilience to physical climate risks of other people, of nature, of cultural heritage, of assets and of other economic activities; (b) favour nature-based solutions or rely on blue or green infrastructure to the extent possible; (c) are consistent with local, sectoral, regional or national adaptation plans and strategies; (d) are monitored and measured against pre-defined indicators and remedial action is considered where those indicators are not met; and (e) where the solution implemented is physical and consists in an activity for which technical screening criteria have been specified in Annex 2, the solution complies with the do no significant harm technical screening criteria for that activity. The DNSH criteria are further elaborated in the Annex 2 and its Appendixes B, D.<sup>77</sup>

### ***1.9. Production of heat/cool from solar thermal heating, geothermal energy, renewable non-fossil gaseous and liquid fuels, bioenergy and using waste heat***

The construction and operation of facilities producing **heat/cool from solar thermal heating technology** substantially contributes to climate change adaptation when the economic activity has implemented physical and non-physical solutions ('adaptation

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<sup>76</sup> Annex 2, p.138-140.

<sup>77</sup> Annex 2, p.140-143.



solutions’) that substantially reduce the most important physical climate risks that are material to that activity. The physical climate risks that are material to the activity have been identified from those listed in Appendix A to Annex 2 by performing a robust climate risk and vulnerability assessment with the following steps: (a) screening of the activity to identify which physical climate risks from the list in Appendix A to Annex 2 may affect the performance of the economic activity during its expected lifetime; (b) where the activity is assessed to be at risk from one or more of the physical climate risks listed in Appendix A to Annex 2, a climate risk and vulnerability assessment to assess the materiality of the physical climate risks on the economic activity; and (c) an assessment of adaptation solutions that can reduce the identified physical climate risk. The climate risks and vulnerability assessment of the activity defers for activities with an expected lifespan of less than 10 years and to all the others, see Annex 2, p. 144. The adaptation solutions implemented: (a) do not adversely affect the adaptation efforts or the level of resilience to physical climate risks of other people, of nature, of cultural heritage, of assets and of other economic activities; (b) favour nature-based solutions or rely on blue or green infrastructure to the extent possible; (c) are consistent with local, sectoral, regional or national adaptation plans and strategies; (d) are monitored and measured against pre-defined indicators and remedial action is considered where those indicators are not met; and (e) where the solution implemented is physical and consists in an activity for which technical screening criteria have been specified in Annex 2, the solution complies with the do no significant harm technical screening criteria for that activity. The DNSH criteria are further elaborated in the Annex 2 and its Appendix D.<sup>78</sup>

Economic activities regarding the construction and operation of facilities that produce **heat/cool from geothermal energy** contribute substantially to climate change adaptation when the economic activity has implemented physical and non-physical solutions (‘adaptation solutions’) that substantially reduce the most important physical climate risks that are material to that activity. The physical climate risks that are material to the activity have been identified from those listed in Appendix A to Annex 2 by performing a robust climate risk and vulnerability assessment with the following steps: (a)

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<sup>78</sup> Annex 2, p.143-146.

screening of the activity to identify which physical climate risks from the list in Appendix A to Annex 2 may affect the performance of the economic activity during its expected lifetime; (b) where the activity is assessed to be at risk from one or more of the physical climate risks listed in Appendix A to Annex 2, a climate risk and vulnerability assessment to assess the materiality of the physical climate risks on the economic activity; and (c) an assessment of adaptation solutions that can reduce the identified physical climate risk. The climate risks and vulnerability assessment of the activity defers for activities with an expected lifespan of less than 10 years and to all the others, see Annex 2, p. 146. The adaptation solutions implemented: (a) do not adversely affect the adaptation efforts or the level of resilience to physical climate risks of other people, of nature, of cultural heritage, of assets and of other economic activities; (b) favour nature-based solutions or rely on blue or green infrastructure to the extent possible; (c) are consistent with local, sectoral, regional or national adaptation plans and strategies; (d) are monitored and measured against pre-defined indicators and remedial action is considered where those indicators are not met; and (e) where the solution implemented is physical and consists in an activity for which technical screening criteria have been specified in Annex 2, the solution complies with the do no significant harm technical screening criteria for that activity. The DNSH criteria are further elaborated in the Annex 2 and its Appendixes B, D.<sup>79</sup>

The construction and operation of heat generation facilities that produce **heating/cool using gaseous and liquid fuels of renewable origin** contribute sustainably to climate change adaptation when the economic activity has implemented physical and non-physical solutions ('adaptation solutions') that substantially reduce the most important physical climate risks that are material to that activity. The physical climate risks that are material to the activity have been identified from those listed in Appendix A to Annex 2 by performing a robust climate risk and vulnerability assessment with the following steps: (a) screening of the activity to identify which physical climate risks from the list in Appendix A to Annex 2 may affect the performance of the economic activity during its expected lifetime; (b) where the activity is assessed to be at risk from one or more of the physical climate risks listed in Appendix A to Annex 2, a climate risk and vulnerability assessment to assess the materiality of the physical climate risks on the economic activity; and (c) an assessment of adaptation solutions that can reduce the identified physical climate risk. The climate risks and vulnerability assessment of the activity defers for activities with an expected lifespan of less than 10 years and to all the others, see Annex 2, p. 149. The adaptation solutions implemented: (a) do not adversely affect the adaptation efforts or the level of resilience to physical climate risks of other people, of nature, of cultural heritage, of assets and of other economic activities; (b) favour nature-based solutions or rely on blue or green infrastructure to the extent possible; (c) are consistent with local, sectoral, regional or national adaptation plans and strategies; (d) are monitored and

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<sup>79</sup> Annex 2, p.146-148.

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measured against pre-defined indicators and remedial action is considered where those indicators are not met; and (e) where the solution implemented is physical and consists in an activity for which technical screening criteria have been specified in Annex 2, the solution complies with the do no significant harm technical screening criteria for that activity. The DNSH criteria are further elaborated in the Annex 2 and its Appendixes B, D.<sup>80</sup>

The construction and operation of facilities that produce **heat/cool exclusively from biomass, biogas or bioliquids** contribute substantially to climate change adaptation when the economic activity has implemented physical and non-physical solutions ('adaptation solutions') that substantially reduce the most important physical climate risks that are material to that activity. The physical climate risks that are material to the activity have been identified from those listed in Appendix A to Annex 2 by performing a robust climate risk and vulnerability assessment with the following steps: (a) screening of the activity to identify which physical climate risks from the list in Appendix A to Annex 2 may affect the performance of the economic activity during its expected lifetime; (b) where the activity is assessed to be at risk from one or more of the physical climate risks listed in Appendix A to Annex 2, a climate risk and vulnerability assessment to assess the materiality of the physical climate risks on the economic activity; and (c) an assessment of adaptation solutions that can reduce the identified physical climate risk. The climate risks and vulnerability assessment of the activity defers for activities with an expected lifespan of less than 10 years and to all the others, see Annex 2, p. 151. The adaptation solutions implemented: (a) do not adversely affect the adaptation efforts or the level of resilience to physical climate risks of other people, of nature, of cultural heritage, of assets and of other economic activities; (b) favour nature-based solutions or rely on blue or green infrastructure to the extent possible; (c) are consistent with local, sectoral, regional or national adaptation plans and strategies; (d) are monitored and measured against pre-defined indicators and remedial action is considered where those indicators are not met; and (e) where the solution implemented is physical and consists in an activity for which technical screening criteria have been specified in Annex 2, the solution complies with the do no significant harm technical screening criteria for that activity. The DNSH criteria are further elaborated in the Annex 2 and its Appendixes B, D.<sup>81</sup>

The construction and operation of facilities that produce **heat/cool using waste heat** contribute substantially to climate change adaptation when the economic activity has implemented physical and non-physical solutions ('adaptation solutions') that substantially reduce the most important physical climate risks that are material to that activity. The physical climate risks that are material to the activity have been identified from those listed in Appendix A to Annex 2 by performing a robust climate

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<sup>80</sup> Annex 2, p.148-150.

<sup>81</sup> Annex 2, p.150-153.

risk and vulnerability assessment with the following steps: (a) screening of the activity to identify which physical climate risks from the list in Appendix A to Annex 2 may affect the performance of the economic activity during its expected lifetime; (b) where the activity is assessed to be at risk from one or more of the physical climate risks listed in Appendix A to Annex 2, a climate risk and vulnerability assessment to assess the materiality of the physical climate risks on the economic activity; and (c) an assessment of adaptation solutions that can reduce the identified physical climate risk. The climate risks and vulnerability assessment of the activity defers for activities with an expected lifespan of less than 10 years and to all the others, see Annex 2, p. 154. The adaptation solutions implemented: (a) do not adversely affect the adaptation efforts or the level of resilience to physical climate risks of other people, of nature, of cultural heritage, of assets and of other economic activities; (b) favour nature-based solutions or rely on blue or green infrastructure to the extent possible; (c) are consistent with local, sectoral, regional or national adaptation plans and strategies; (d) are monitored and measured against pre-defined indicators and remedial action is considered where those indicators are not met; and (e) where the solution implemented is physical and consists in an activity for which technical screening criteria have been specified in Annex 2, the solution complies with the do no significant harm technical screening criteria for that activity. The DNSH criteria are further elaborated in the Annex 2 and its Appendix D.<sup>82</sup>

## **2. Construction and real estate activities**

The part on construction and real estate activities in Annex 2 describes the following activities: construction; renovation; installation, maintenance and repair (of equipment, and technologies); and acquisition and ownership of buildings.

This paper focuses on the construction of new buildings and renovation of existing buildings.

### **2.1. Construction of new buildings**

The development of building projects for residential and non-residential buildings are substantially contributing to climate change adaptation if the economic activity has implemented physical and non-physical solutions ('adaptation solutions') that

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<sup>82</sup> Annex 2, p.153-156.

substantially reduce the most important physical climate risks that are material to that activity. The physical climate risks that are material to the activity have been identified from those listed in Appendix A to Annex 2 by performing a robust climate risk and vulnerability assessment with the following steps: (a) screening of the activity to identify which physical climate risks from the list in Appendix A to Annex 2 may affect the performance of the economic activity during its expected lifetime; (b) where the activity is assessed to be at risk from one or more of the physical climate risks listed in Appendix A to Annex 2, a climate risk and vulnerability assessment to assess the materiality of the physical climate risks on the economic activity; and (c) an assessment of adaptation solutions that can reduce the identified physical climate risk. The climate risks and vulnerability assessment of the activity defers for activities with an expected lifespan of less than 10 years and to all the others, see Annex 2, p. 236. The adaptation solutions implemented: (a) do not adversely affect the adaptation efforts or the level of resilience to physical climate risks of other people, of nature, of cultural heritage, of assets and of other economic activities; (b) favour nature-based solutions or rely on blue or green infrastructure to the extent possible; (c) are consistent with local, sectoral, regional or national adaptation plans and strategies; (d) are monitored and measured against pre-defined indicators and remedial action is considered where those indicators are not met; and (e) where the solution implemented is physical and consists in an activity for which technical screening criteria have been specified in Annex 2, the solution complies with the do no significant harm technical screening criteria for that activity. The DNSH criteria are further elaborated on in Annex 2 and its Appendixes C, D.<sup>83</sup>

## **2.2. Renovation of existing buildings**

The construction and civil engineering works or preparation thereof contribute substantially to climate change adaptation if the economic activity has implemented physical and non-physical solutions ('adaptation solutions') that substantially reduce the most important physical climate risks that are material to that activity. The physical climate risks that are material to the activity have been identified from those listed in Appendix A to Annex 2 by performing a robust climate risk and vulnerability assessment with the following steps: (a) screening of the activity to identify which physical climate risks from the list in Appendix A to Annex 2 may affect the performance of the economic activity during its expected lifetime; (b) where the activity is assessed to be at risk from one or more of the physical climate risks listed in Appendix A to Annex 2, a climate risk and vulnerability assessment to assess the materiality of the physical climate risks on the economic activity; and (c) an assessment of adaptation solutions that can reduce the

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<sup>83</sup> Annex 2, p.236-240.



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identified physical climate risk. The climate risks and vulnerability assessment of the activity defers for activities with an expected lifespan of less than 10 years and to all the others, see Annex 2, p. 240-241. The adaptation solutions implemented: (a) do not adversely affect the adaptation efforts or the level of resilience to physical climate risks of other people, of nature, of cultural heritage, of assets and of other economic activities; (b) favour nature-based solutions or rely on blue or green infrastructure to the extent possible; (c) are consistent with local, sectoral, regional or national adaptation plans and strategies; (d) are monitored and measured against pre-defined indicators and remedial action is considered where those indicators are not met; and (e) where the solution implemented is physical and consists in an activity for which technical screening criteria have been specified in Annex 2, the solution complies with the do no significant harm technical screening criteria for that activity. The DNSH criteria are further elaborated on in Annex 2 and its Appendix E.<sup>84</sup>

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<sup>84</sup> Annex 2, p.240-243.