

# NUCLEAR & GAS IN THE EU TAXONOMY

INTEGRITY SAFEGUARDED DESPITE POSTURES  
AND OUTRAGES



GREEN & SUSTAINABLE **HUB**



# EXECUTIVE SUMMARY

The European Commission recently shared the **long-awaited draft of the Taxonomy criteria for nuclear and gas** with Member States and the Platform on Sustainable Finance<sup>1</sup>. The text leaked. **Eligibility and alignment are misunderstood by many observers**, especially for fossil gas.

As a reminder, one thing is to be “eligible” or covered by the Taxonomy, another is to be “aligned” (i.e., in compliance with the technical screening criteria, do no significant harm and social safeguards). The alignment of fossil gaseous power generation facilities, in derogation with the technology agnostic threshold of 100g CO<sub>2</sub>e/kWh, is time-bound and possible only until 2030. Gas upstream activities are out of the scope.

Above all, such **alignment is seldomly achievable** because of a **straitjacket of seven cumulative criteria** that are altogether stringent (e.g., intensity threshold out of reach for current technologies<sup>2</sup>, replacement of backward capacity, no capacity rebound effect nor technology lock-in, emission reduction gains). The overwhelming majority of assets would fail to meet the Taxonomy criteria, therefore only **allowing a limited and timely role of gas in the transition**, in the specific context of coal phase-out.

However, the usability of some criteria is questionable (e.g., the lack of renewable viable substitute), their rationale and instructions for use should be explicitly clarified in methodological appendices, notably **the precise role and identity of verifiers**. In the end, such “all the boxes checked” gas facilities might be at risk of being **economically stranded if the future penetration of low-**

**carbon gases is hampered** (the very low load factor ranging between 10%-20% authorized by the Taxonomy criteria, if coupled with surging carbon prices, could wipe out the economic value of gas facilities).

**Regarding nuclear activities, R&D<sup>3</sup>, construction, operation, and life extension are eligible** (mining, milling and waste management are not eligible, unlike the Russian and Chinese Taxonomies<sup>4</sup>). There is unsurprisingly no debate on nuclear carbon intensity with regards to the technology agnostic threshold and **DNSH issues are tackled mostly through existing and enforced Regulations**. There are **few additional requirements** related to financial provisions for waste management and decommissioning, and disposal facility for high-level radioactive waste<sup>5</sup>.

Such eligibility is in line with climate and energy science consensus (IPCC, IEA). **It could improve the overall acceptance of new nuclear capacities and life extension financing** as well as **research in new technologies** (related to safety improvement). **Such funding effects could materialize through various channels, for both corporates and sovereigns, on one hand through Green Bonds** (either ICMA green bonds or EU-GBS, for both sovereigns and corporates<sup>6</sup>), **on the other hand through Green Assets Ratios** (factoring taxonomy alignment for equity and straight debt instruments, but so only for corporates<sup>7</sup>).

**To manage discrepant sensibilities on the two energy sources, in particular among investors, the Commission proposes to revise the EU Taxonomy Article 8 delegated act**

<sup>1</sup> See on the European Commission’s website “EU Taxonomy: Commission begins expert consultations on Complementary Delegated Act covering certain nuclear and gas activities”, available [here](#). Officially, the Commission shared the draft with the Member States Expert Group on Sustainable Finance and the Platform on Sustainable Finance.

<sup>2</sup> The carbon intensity of current CCS-free gas-fired power plants range from 350 to 500 kgCO<sub>2</sub>/MWh, well above the Taxonomy threshold of 270 gCO<sub>2</sub>e/kWh. See our analysis *infra* regarding the 550kgCO<sub>2</sub>e/kW threshold.

<sup>3</sup> Literally, the text refers to “pre-commercial stages of advanced technologies with minimal waste from the fuel cycle”.

<sup>4</sup> See our study, Natixis GSH, “The new geography of taxonomies », 4 October 2021, available [here](#).

<sup>5</sup> The Member State concerned must commit to report to the Commission every five years for each project the adequacy of the accumulated resources for radioactive waste

management and nuclear decommissioning; actual progress in the implementation of the plan to have a disposal facility for high-level radioactive waste;

<sup>6</sup> Sovereign Green Bond Issuers with operating nuclear power plants are for instance France, Spain, Sweden, Hungary, Slovenia, or Netherlands (Germany and Belgium are also Green Bond issuers with nuclear capacities but have committed to phase it out). Poland is a Green Bond issuer and has some nuclear power plants construction plans. For corporates, Green Bond issuers with exposure to nuclear activities are for instance Vattenfall, Iberdrola, Engie and of course EDF.

<sup>7</sup> Governments are excluded from the Green Asset Ratios (GAR) calculations, see the FAQ: What is the EU Taxonomy Article 8 delegated act and how will it work in practice?, available [here](#). It says “this delegated act excludes sovereign exposures of financial institutions from both the denominator and the numerator of their green ratios”.

(“disclosures delegated act”)<sup>8</sup>. It would require a % breakdown of Taxonomy alignment KPIs distinguishing gas, nuclear and the rest of taxonomy activities.

We foresee that such transparency will prove that the Taxonomy criteria are not lenient on gas with scarce assets aligned. A limited number of actors are exposed to nuclear, therefore the dedicated alignment sub-percentage should also remain low. **Several time limits are incorporated** (2030 for gas, 2040 for existing nuclear facilities and 2045 for new nuclear plants). The argument saying that nuclear power plants are long to build (>10years) is short-sighted. It ignores that all low-carbon energy sources are needed

altogether. We only have a few years window to limit global temperature below 1.5°C or 2°C, but what happens after 2030 does matter.

**Overall, we expect this Delegated Act to be adopted**, as a reverse majority to blockade it is unlikely. We do not believe that the influence of the EU Taxonomy will vanish because of such inclusion; **the current compromise is politically sound and scientifically tolerable in its foreseeable effects** (one must remember that Germany has nearly 40 GW of coal capacities<sup>9</sup> to decommission by 2030) and deserves attention to details as to the actual alignment criteria, rather than postures and outrages.

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<sup>8</sup> Under Article 8 of the Taxonomy Regulation, investors shall disclose information to the public on how and to what extent their activities are associated with environmentally sustainable economic activities defined by the Taxonomy.

<sup>9</sup> As of 2019. International Energy Agency, “Germany 2020. Energy Policy Review”, p.169, available [here](#).

## Contents

BLAMEWORTHY OR FEINTED IGNORANCE ON ELIGIBILITY VS. ALIGNMENT .....	4
WHAT REAL ECONOMY IMPACTS? .....	4
FOSSIL GAS CRITERIA UNDER THE MICROSCOPE .....	6
NUCLEAR CRITERIA UNDER THE MICROSCOPE .....	9
STAKEHOLDERS’ REACTIONS REFLECT LASTING DIVERGENCES .....	12
A SCIENTIFICALLY TOLERABLE AND POLITICALLY SOUND CONSENSUS.....	12
STILL A WAY TO GO BEFORE ADOPTION .....	13
EU TAXONOMY INFLUENCE TO VANISH? .....	14
APPENDIX.....	14

### Blameworthy or feinted ignorance on eligibility vs. alignment

On 31 December 2021, the draft of the complementary Delegated Act on gas and nuclear Taxonomy criteria was communicated by the European Commission to the Member States and the Sustainable Finance Platform (SFP)<sup>10</sup>. Its release was particularly awaited after several postponements and intense negotiations between countries.

Many observers and media headlines ignore, or feigned to overlook, the reality of the EU Taxonomy design, especially the difference between “eligibility” and “alignment”. An economic activity should not only be “in” the classification. **It must also fulfill the criteria set out in it** to be deemed “sustainable” and allowed to serve as underlying in sustainable products<sup>11</sup>. So far, **nuclear and gas were not part of the classification** (gas was drop from the TEG’s 2019 report<sup>12</sup>) and thus **orphan of technical screening criteria** (as opposed to the batch of criteria for **88 economic activities** encompassed in the first delegated act adopted on June 4, 2021<sup>13</sup>). This **complementary Delegated Act** aims at filling this void although there was already a technology agnostic threshold for power generation (see below).

### What real economy impacts?

To assess whether the “Taxonomy as scheme and ecosystem” may channel green-minded funds towards specific activities, in this specific case towards gas and nuclear, what really matters is **the stringency and usability of significant contribution and DNSH criteria**. On the one hand, technical screening criteria are more or less hard to reach although allegedly derived from science-based climate trajectories<sup>14</sup>. On the other hand, DNSH criteria are more or less **relying on legal requirements** depending on whether the activity in question is **heavily and appropriately regulated**. Pre-requisites that are beyond the law are added on DNSH when it appeared **the regulations are insufficient or unsuitable, and should/can be complemented with relevant, usable and accessible criteria** (which is difficult for nuclear because of technicality of waste related topics). **As a reminder, activities not aligned with the EU Taxonomy are not forbidden**, it is hard to estimate the extent to which their funding costs may increase, and their investor basis shrink. Such evicting or divesting effects would be **far more material in the case of inclusion in a brown taxonomy**.

<sup>10</sup> Source: European Commission, Draft Commission Delegated Regulation amending Delegated Regulation (EU) 2021/2139 as regards economic activities in certain energy sectors and Delegated Regulation (EU) 2021/2178 as regards specific public disclosures for those economic activities (Text with EEA relevance) – available [here](#).

<sup>11</sup> The EU Taxonomy is not a whitelist. If an activity is among the ones “covered” in the classification, it only entails it is provided with technical criteria defining significant contribution (SC) to environmental objective(s) and Do No Significant Harm (DNSH). This first step is called “eligibility”, which can be misleading with regards to its meaning in Green Bonds Framework, which involves that an asset, a project or a loan, meets the requirements set out in the Framework and that bond proceeds raised can be earmarked to it.

<sup>12</sup> Production of electricity from gas combustion was included in the TEG’s 2019 technical Report (June 2019). See our “vade mecum” study (page 55), available [here](#).

<sup>13</sup> Published to the Official Journal of the European Union on 9 December 2021.

<sup>14</sup> The criteria are allegedly anchored into sectorial decarbonization trajectories leading to net zero by mid-century.

When it comes to the **“Taxonomy as an ecosystem”** (of greening policies, incentives, standards, etc. built upon or linked to the classification), Germany, other countries or stakeholders who surrendered on the inclusion of nuclear in the Taxonomy could, as it has been heard over the last few weeks, **refuse it in the context of the EU Green Bond Standard**. Though, we do believe such discrepancy would jeopardize the EUGBS.

The table below presents the possible impacts of the alignment with the Taxonomy on **funding conditions** through different channels:

Figure 1: Possible funding spillovers effects of the inclusion of nuclear in the EU Taxonomy

Equity financing	Debt financing investments
<ul style="list-style-type: none"> <li>An increase weight of nuclear exposed companies in <b>low-carbon indices</b> is hard to quantify (as they are very few companies, for instance EDF, to a less extent Engie but in Belgium which has decided to exit nuclear), most actors are already present in such indices thanks to their carbon intensity or absolute performances): FTSE4Good, Euronext CAC40ESG, Vigeo World 120, MSCI ESG Index Framework (Climate change, World Climate Change, Climate Paris Aligned, EU Low Carbon Leaders)</li> <li><b>SFDR-related disclosure on equity portfolios</b> could incentivize investors to be more exposed to nuclear companies to display higher green asset ratios (GAR)</li> </ul>	<ul style="list-style-type: none"> <li><b>“Vanilla” Green Bonds (ICMA GBP, not EUGBS)</b>: in practice, a certain number of European governments that are issuer of Green Bonds (e.g. France, Spain, Sweden, Hungary, Slovenia, Netherlands) or companies (e.g. Vattenfall, Iberdrola, Engie and EDF) could revise their green bond issuance framework to allow nuclear as eligible expenditures (with potential effects on issuance volumes)<sup>15</sup></li> <li><b>EU Green Bond Standard issuances</b>: the incorporation of nuclear still needs to be negotiated (see <i>infra</i>);</li> <li><b>Vanilla Bonds in FI climate/low-carbon funds</b> (if investors are using Green Asset Ratios (GAR) as a filter) ;</li> <li><b>Sustainable Linked Bonds</b> (using Taxonomy alignment indicators, revenues or CAPEX, including nuclear share, in the KPI selection<sup>16</sup>) ;</li> <li><b>Credit institutions (banks) reporting taxonomy alignment KPI for on-balance sheet assets</b> related to the financing activities (e.g. lending activities, Green Asset Ratio<sup>17</sup>).</li> </ul>
Climate finance public flows tracking	
<ul style="list-style-type: none"> <li><a href="#">Green budgeting</a> and related processes (to track and account for green budgetary expenses)</li> <li>Public Exports financing (see <a href="#">our November 30, 2020 article</a>).</li> </ul>	

<sup>15</sup> In the European Union, 13 countries have operational nuclear power reactors (France, Spain, Belgium, Germany, Sweden, Czech Republic, Finland, Hungary, Slovakia, Bulgaria, Romania, Slovenia and the Netherlands), 3 countries have nuclear power reactors under construction in 2020 (Finland, France, Slovakia), whereas Czech Republic announced in 2019 the building of a new nuclear reactor. International Atomic Energy Agency (IAEA), [“Nuclear Power Reactors in the World”](#), n°2, 2021 Edition, July 2021, p. 7-8.

<sup>16</sup> In its 2020 universal registration document (URD, 20.4.1, p. 410), EDF communicated the proportion of its investments aligned with its low carbon objectives (94%), of which 51% in the nuclear sector and 43% aligned with taxonomy criteria (calculation on the Taxonomy criteria as of March 2020)

<sup>17</sup> For Banks, the Green Asset Ratio (GAR) is defined as the proportion of the credit institutions’ assets invested in taxonomy-aligned economic activities as a share of total covered assets. Banks should disclose the aggregate GAR for on-balance sheet covered assets and provide for a breakdown for the environmental objective pursued by environmentally sustainable assets, the type of counterparty, and the subset of transitional and enabling activities.

### Fossil gas criteria under the microscope

The European Commission explicitly defines gas as a **“transitional activity”**. Three gaseous activities are included in the Delegated Acts (see figure below).

Figure 2: Gaseous eligible activities in the draft of the complementary DA

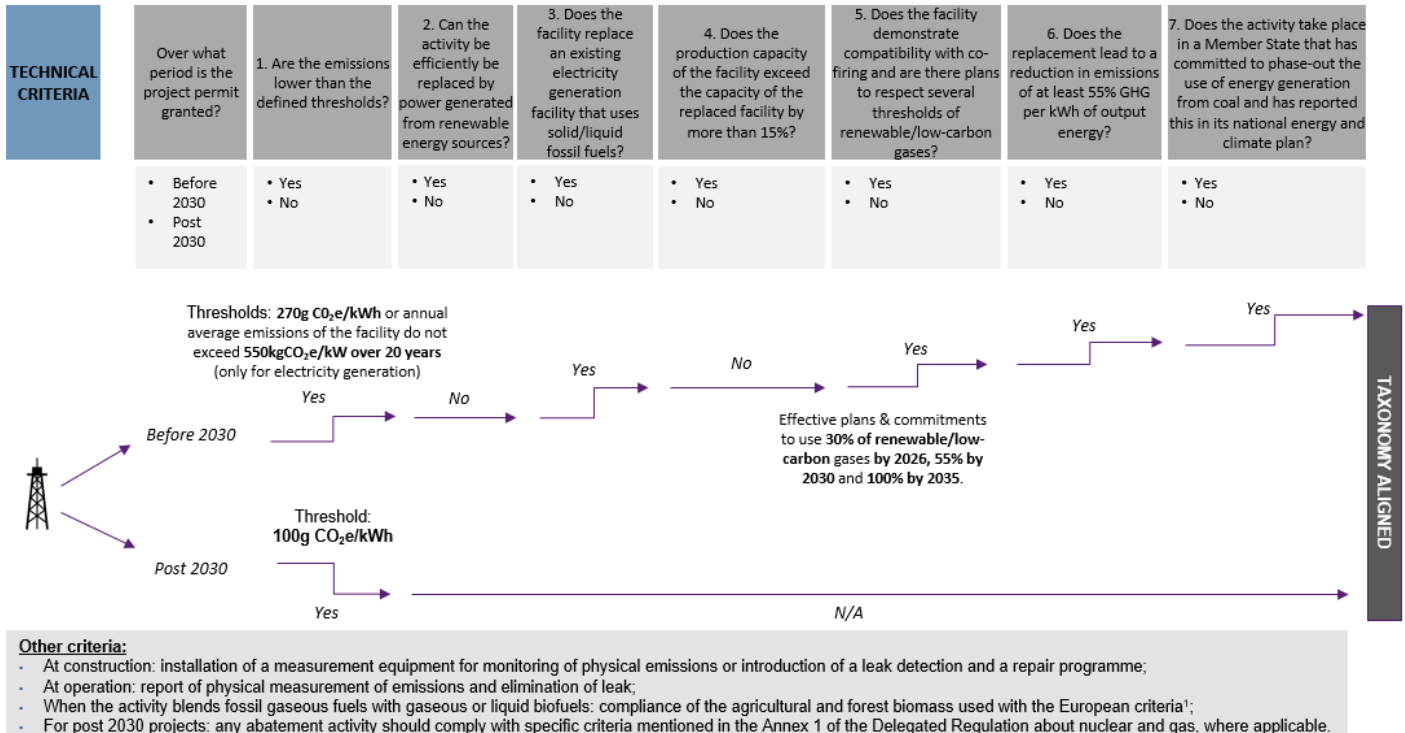
Electricity generation (NACE codes: D35.11 and F42.22) <sup>18</sup>	Co-generation of heat/cool and power (NACE codes: D35.11 and D35.30)	Production of heat/cool (NACE codes: D35.30)
“Electricity generation from fossil gaseous fuels”	“High-efficiency co- generation of heat/cool and power from fossil gaseous fuels”	“Production of heat/cool from fossil gaseous fuels in an efficient district heating and cooling system”

For construction permits granted by **December 31, 2030**, the Commission **waived on the technology agnostic threshold of 100g CO<sub>2</sub>e/kWh** for power generation. Indeed, it loosened it to **270gCO<sub>2</sub>/kWh for fossil gas** (an intensity which does not correspond to the most efficient power plants to our knowledge), or **absolute emissions over 20 years** (annual average emissions of the facility not exceeding 550kgCO<sub>2</sub>e/kW, which would allow a ~630g CO<sub>2</sub>e/kWh gas-power plant to operate with a load factor of 10%, only for capacity peaking).

However, the Commission **adds a long string of cumulative conditions for permits granted by 2030**. These cumulative criteria proposed touch upon the absence of viable low-carbon alternatives, backward fossil fuel facility **decommissioning, minimum emissions reduction performances, capacity rebound limitation, technology lock-in, and host country coal exit policies**.

The decision **tree below presents the different criteria** that projects using fossil gaseous fuels must meet in order to be Taxonomy-aligned:

Figure 3: Decision tree of the criteria for electricity generation from fossil gaseous fuels



Source: Authors (Natixis GSH)

<sup>18</sup> See the statistical classification of economic activities established by Regulation (EC) No. 1893/2006, available [here](#).

In the table below, we have **individually analyzed the criteria, their rationale and soundness, as well as uncertainties and potential consequences.**

Table 4: Natixis' questions, remarks or suggestions on the gas criteria

7 <u>cumulative</u> criteria		Challenges tackled & purpose of the criteria	Natixis' questions, remarks or suggestions
1	<p>Emissions &lt; 270 gCO<sub>2</sub>e/kWh</p> <p>OR (for electricity generation only)</p> <p>Annual average emissions do not exceed 550kgCO<sub>2</sub>e/kWh over 20 years;</p>	<p>Efficiency OR absolute emissions criteria</p> <p>Would allow for gas peaking and help dealing with renewable energy intermittency</p>	<p>i) The carbon intensity of current CCS-free gas-fired power plants range from 350 to 500gCO<sub>2</sub>/kWh<sup>19</sup>, well above that threshold, which is therefore stringent;</p> <p>ii) The 550kgCO<sub>2</sub>e/kWh (whose unit is uncommon and deserves clarification) seems to allow a very limited load factor for power plants with emission factor above 270 gCO<sub>2</sub>e/kWh (~15% of load factor for a power plant emitting 450 gCO<sub>2</sub>e/kWh, i.e., only 50 days of operation per year);</p> <p>In theory, it would allow to build many new gas power plants with very low utilization rates, at risk of being stranded;</p> <p>iii) The 20-year period is too long (with a period spanning possibly until 2050 for permits granted in 2030, it should be shortened (5 to 10-year), with clarification on the average calculations verification</p> <p>iv) Clarifications are necessary on the independent third party, in charge of verifying the compliance with the threshold.</p>
2	<p>The power generated by the activity may not yet efficiently be replaced by power generated from renewable energy sources;</p>	<p>About the lack of alternative (absence of viable low-carbon substitute/alternative)</p>	<p>i) The notion of "efficiency" is to be thoroughly defined (whether it is about cost, load factor, grid connection or stability, etc.), it likely touches upon the intermittency of renewable (or the lack of available space to install new capacities) but it deserves clarification as it is too vague for the moment;</p> <p>ii) In any case the territorial boundaries to be used for the counterfactual must be defined;</p> <p>iii) Renewable energy should be replaced by "low-carbon" energy (to possibly include nuclear in this counterfactual situation);</p> <p>iv) The entity in charge of assessing/verifying the criteria must be defined.</p>
3	<p>The facility replaces an existing high emitting facility that used solid or liquid fossil fuels;</p>	<p>Decommissioning of fossil-fuel backward capacity</p>	<p>i) This criteria is already very much an integrity safeguard, however, it could be proposed to only authorize the replacement of coal-fired power plant by gaseous facilities (stricter criteria) or set a minimum carbon emission criteria;</p> <p>ii) The concept of replacement must be clearly defined (which scale of assessment: entity/corporate-level, territorial level; in which chronology/temporality; which authority grants the building permit and therefore for which geographical area).</p>
4	<p>The production capacity of the facility does not exceed the capacity of the replaced facility (with +15% for electricity generation only);</p>	<p>Limitation of capacity rebound effect</p>	<p>This criterion is simple to understand and welcomed, the 15% tolerance could be discussed.</p>
5	<p>The facility demonstrates compatibility with co-firing of low carbon gaseous fuels and there are effective</p>	<p>Preventing carbon and technology lock-in</p>	<p>i) The "reversibility" of the technologies (ability to be powered by renewable/low-carbon gases, such as biogas, bio-methane, hydrogen) add additional costs (which are unknown or not disclosed as of today);</p>

<sup>19</sup> See Pavlovic Ivan & Jan Radek, "Is green in the pipeline? Sensing gas' potential contribution to climate change mitigation", Natixis GSH & CIB Research study, October 2020, p. 19, available [here](#).

	plans/commitments, approved by the management body, to use 30% of renewable/low-carbon gases by 2026 ,55% by 2030 and 100% by 2035;		<p>ii) The targets (30%, 55%, 100%) are aggressive, which is welcomed from a transition integrity standpoint (real safeguard against carbon lock-in), and out of reach for the moment;</p> <p>iii) The lack of low-carbon gases supply is likely to limit the utilization rate of the power plants in question (stranded asset risks);</p> <p>iv) The management body in charge of the approval of the plans/commitments must be precisely clarified, it is a blurred item (the binding strength of such plans or commitments must be guaranteed, with annual verification and reporting on the effective share of low-carbon gaseous fuels used).</p>
6	The replacement leads to a reduction in emissions of at least 55% GHG per kWh of output energy;	Emission reduction	<p>i) It is not 100% clear if the reduction is assessed against the replaced facility (criteria #3), or achieved through the integration of low-carbon gases (criteria #5);</p> <p>ii) On top of the baseline/yardstick, the reference period of such reduction must be clarified;</p> <p>iii) This 55% reduction seems ambitious considering the emission factors of the most efficient coal (740 gCO<sub>2</sub>/kWh) and gas (350 gCO<sub>2</sub>/kWh) power plants<sup>20</sup>.</p>
7	The activity takes place in a Member state, committed to phase-out from coal, and that has reported this in its climate plan.	Host country policies (and consistency)	<p>i) A database or unique portal access to the national energy and climate plan referred to would be helpful;</p> <p>ii) All the countries of the European Union have pledged to gradually phase coal out according to different timetables (by 2049 for Poland, although Polish authorities have sent contradictory messages on the matter)<sup>21</sup>;</p> <p>iii) Such criteria would prevent to finance gas assets in country backtracking from phasing coal out.</p>

Source: Authors (Natixis GSH), based on leaked draft of the complementary Delegated Act

In the case of **co-generation of heat/cool and power**, two other cumulative criteria are set for projects granted by 2030:

- The activity achieves primary energy savings of at least 10% compared with the references to separate production of heat and electricity;
- The refurbishment of the facility does not increase production capacity of the facility.

For **production of heat/cool**, two other cumulative criteria are set for projects granted by 2030:

- The thermal energy generated by the activity is used in an efficient district heating and cooling system;
- The refurbishment of the facility does not increase production capacity of the facility.

For **construction permits granted after 2030**, two additional criteria are required:

- Quantified life-cycle GHG emissions are **verified by an independent third party**;
- If the facility has any form of abatement, including carbon capture or the use of low-carbon fuels, these abatement activities must comply with the criteria in Annex 1, when applicable, and CO<sub>2</sub> is transported and stored underground.

Furthermore, **both for permits issued before and after 2030**, the project must have **measuring equipment to monitor physical emissions and leak detection at construction**. Then, at operation, this measure of physical emissions is reported and any leakage is eliminated.

In a nutshell, altogether, **such criteria should significantly limit the volumes of Taxonomy aligned assets**. On top of that, time limits are introduced: the looser carbon intensity threshold 270gCO<sub>2</sub>/kWh is applicable until 31 December 2030, and the facility must commit to use a non-anecdotal share of renewable and low-carbon gases by 2026 (30%) and a greater one thereafter (55% by 2030). This derogation to the technology-agnostic threshold creates a consistency breach, but with safeguards

<sup>20</sup> Pavlovic Ivan & Jan Radek, "Is green in the pipeline? Sensing gas' potential contribution to climate change mitigation", Natixis GSH & CIB Research study, October 2020, p. 19, available [here](#).

<sup>21</sup> Beyond Coal, "Europe's coal exit. Overview of national coal phase-out commitments", 13 January 2022, available [here](#).



through the set of cumulative criteria. Nonetheless, **the usability of some of them is dubious**. Their perimeter of assessment is blurred; with a mix of asset-level pre-requisites (in contradiction with the Taxonomy nomenclature, which is activity based) and broader territorial scopes (replacement of facility assessed at local, regional or company level?).

**Nuclear criteria under the microscope**

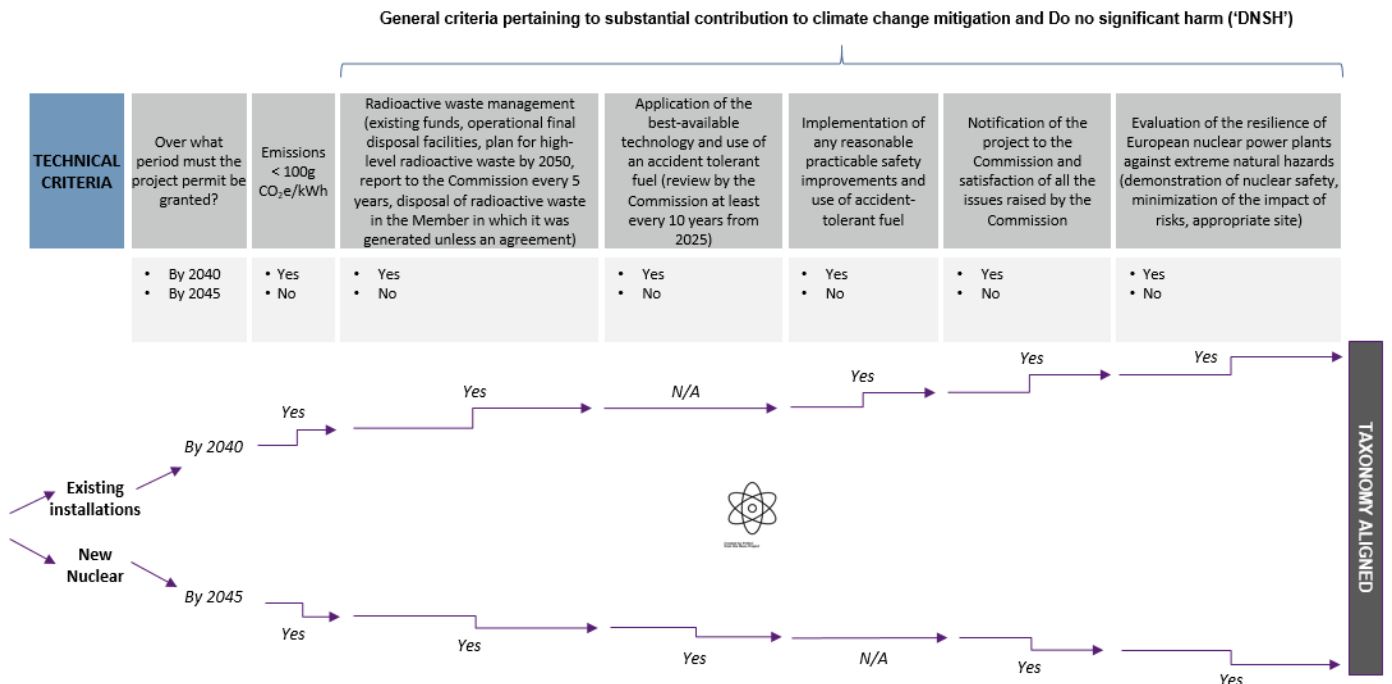
The European Commission declared that nuclear activities constitute **“low-carbon activities”**, in line with **several scientific analysis**. Three nuclear activities are included in European Taxonomy - Research, construction and life extension - are eligible, and two were excluded based on consultation feedback (namely mining and milling, because of their impacts and that they are activities mostly performed outside the EU). CO<sub>2</sub> emissions must meet the technology agnostic threshold of 100g CO<sub>2</sub>e/kWh (life cycle emissions must be calculated using Commission Recommendation<sup>22</sup> or ISO norms and must be verified by an independent third party).

Figure 5 : Nuclear eligible activities in the draft of the complementary delegated act

R&D activities & New nuclear technologies (NACE codes: M72 and M72.1) <sup>23</sup>	Construction & Operation of new units (NACE codes: D35.11 and F42.22)	Life extension of existing units & Electricity generation (NACE codes: D35.11 and F42.22)
“Pre-commercial stages of advanced technologies with minimal waste from the fuel cycle”	“Construction and safe operation of new nuclear power plants, for the generation of electricity and/or heat, including for hydrogen production, using best available technologies”	“Electricity generation from nuclear energy in existing installations”

The decision tree below presents the criteria that nuclear projects must meet in order to be Taxonomy-aligned:

Figure 6: Decision tree of the nuclear criteria



Source: Authors (Natixis GSH)

The table below lists the **six main criteria that are common to the three nuclear activities** as well as Natixis’ questions, remarks or suggestions on them.

<sup>22</sup> Commission Recommendation 2013/179/EU20on the use of common methods to measure and communicate the life cycle environmental performance of products and organizations or, alternatively, using ISO 14067:2018 or ISO 14064-1:2018.

<sup>23</sup> See the statistical classification of economic activities established by Regulation (EC) No. 1893/2006, available [here](#).

Table 7: Natixis' questions, remarks or suggestions on the nuclear criteria

	Technical & DNSH main criteria	Challenges tackled & purpose of the criteria	Natixis' questions, remarks or suggestions
1	Emissions < 100g CO <sub>2</sub> e/kWh;	Efficiency emission criteria	Power generation from nuclear, which have a median emission level of 12gCO <sub>2</sub> e/kWh <sup>24</sup> , will have a <i>a priori</i> no problem in reaching this threshold.
2	The radioactive waste management and nuclear decommissioning are subject to several rules: <ul style="list-style-type: none"> <li>i. radioactive waste management fund and nuclear decommissioning fund that can be combined;</li> <li>ii. available resources corresponding to the cost of radioactive waste management and decommissioning at the end of the useful life of the plants;</li> <li>iii. operational final disposal facilities; detailed plan to have a disposal facility in operation, by 2050, for high-level radioactive waste;</li> </ul>	Radioactive waste management	The Joint Research Center (JRC) <b>proposed deep geological repositories as safe means</b> of isolating radioactive waste and appropriate measures to prevent the potential environmental impacts; <p>The experts of the Scientific Committee on Health, Environmental and Emerging Risks (SCHEER) highlighted <b>uncertainties, especially about the final storage of nuclear waste</b><sup>25</sup>.</p> <p>However, the JRC assessed <b>the Euratom legislation and licensing processes and concluded that they will be sufficient to ensure the impact of nuclear energy remains below harmful levels</b><sup>26</sup>.</p>
3	The project must also be notified to the Commission and the issues raised by the Commission must be satisfactorily addressed;	Transparency and enforcement of the criteria set out in the Taxonomy	This notification enables the Commission to verify that the project complies with the Taxonomy criteria but could be redundant with the prerogatives of the national safety authorities.
4	The Member State concerned has committed to report to the Commission every five years for each project: <ul style="list-style-type: none"> <li>- <b>the adequacy of the accumulated resources for radioactive waste management and nuclear decommissioning;</b></li> <li>- actual progress in the implementation of the plan to have a disposal facility for high-level radioactive waste;</li> </ul>	Radioactive waste management	This five-year report seems to be a new requirement, reflecting the Commission's specific focus on the radioactive waste and nuclear decommissioning management.
5	<b>The resilience assessment</b> of European nuclear power plants (demonstration of nuclear safety facing natural hazards, minimizing the impact of risks, assessment and selection of an appropriate site), particularly through stress tests on extreme natural hazards, is required.	Risk of accidents	A dissenting opinion of the Group of Experts referred to under Article 31 of the Euratom Treaty, annexed to the report, stated that the focus of the JRC report left out the consideration of some key risks, such as <b>low probability, but high-impact accidents which are more acute for nuclear activities</b> than for other energy technologies covered by the Taxonomy.
6.	<b>Radioactive waste</b> is disposed of in the Member State in which it was generated, unless there is an agreement between the Member State concerned and the Member State of destination (on the condition that it has radioactive waste management, disposal programmes and a suitable disposal facility in operation) <sup>27</sup> .	Radioactive waste management	For information, until now, France has never stored nuclear waste abroad, except in Monaco <sup>28</sup> .

Source: Authors (Natixis GSH), based on leaked draft of the complementary Delegated Act

<sup>24</sup> IPCC, "Annex III: Technology-specific cost and performance parameters" in "Climate Change 2014: Mitigation of Climate Change. Contribution of Working Group III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change", 2014, p. 1335, available [here](#).

<sup>25</sup> Scientific Committee on Health, Environmental and Emerging Risks (SCHEER), "SCHEER review of the JRC report on Technical assessment of nuclear energy with respect to the 'do no significant harm' criteria of Regulation (EU) 2020/852 ('Taxonomy Regulation')", SCHEER review, 29 June 2021, available [here](#).

<sup>26</sup> Joint Research Center, "Technical assessment of nuclear energy with respect to the 'do no significant harm' criteria of Regulation (EU) 2020/852 ('Taxonomy Regulation')", JRC science for policy report, 2021, available [here](#).

<sup>27</sup> In compliance with the requirements of Directive 2011/70/Euratom, available [here](#).

<sup>28</sup> See the inventory of the National Agency for the Management of Radioactive Waste – ANDRA, available [here](#).

The table below lists three additional criteria in the case of **the construction of new nuclear power plants**:

Figure 8: Natixis' questions, remarks or suggestions on the nuclear criteria

Technical & DNSH main criteria		Challenges tackled & purpose of the criteria	Questions, remarks or suggestions
1	<b>The construction permit has been issued by 2045</b> by Member States' competent authorities in accordance with applicable national law;	Related to the notion of "timely" transition and expectations that renewable and green hydrogen will be viable at scale by then	This deadline may particularly encourage short-term investments. However, nuclear power is a time industry, technologies take several years to be developed and plants to be built (7-8 years minimum).  Nonetheless, a review clause is provided for; these deadlines will be reviewed at least every three years according to technological advances. Nevertheless, this due date may appear to be restrictive, and could call into question the stability of the technical framework.
2	The project fully applies the <b>best-available technology and accident-tolerant fuel</b> . The technology is certified and approved by the national safety regulator;	Improvement of technologies Risk of accidents	This criterion highlights the importance given to safety standards for nuclear facilities. The concept of "accident-tolerant fuel" could be more precisely defined (fuel, fuel rods, spent fuel pools, etc.).
3	The Commission shall review starting in 2025 and at least every 10 years, the technical parameters corresponding to the best-available technology on the basis of the assessment by the European Nuclear Safety Regulators' Group (ENSREG).	Improvement of technologies	Could this new control of the Commission be redundant with the existing control of national safety authorities? This may also increase uncertainty for investors, as several actors will be in charge to assess nuclear projects.

Source: Authors (Natixis GSH), based on leaked draft of the complementary Delegated Act

The table below lists two additional criteria in the case of **electricity generation from nuclear energy in existing installations**.

Figure 9: Natixis' questions, remarks or suggestions on the nuclear criteria

Technical & DNSH main criteria		Challenges tackled & purpose of the criteria	Questions, remarks or suggestions
1	The <b>modification of existing nuclear installations for the purposes of extension is authorised</b> by Member States' competent authorities <b>by 2040</b> in accordance with applicable national law;	Related to expected maturity of green hydrogen, renewable, etc. by then	For the existing nuclear power plants in France, this criterion does not pose any problem, since the plants currently in operation are likely to be decommissioned by 2040.
2	The upgraded project implements any reasonably practicable <b>safety improvement</b> and makes use of accident-tolerant fuel. The technology is certified and approved by the national safety regulator.	Risk of accidents	This criterion highlights the increased importance given to safety standards for nuclear facilities. The concept of "accident-tolerant fuel" could be more precisely defined (fuel, fuel rods, spent fuel pools, etc.).

Source: Authors (Natixis GSH), based on leaked draft of the complementary Delegated Act

**Many consultations were organized on the DNSH criteria.** The Joint Research Center (JRC) was consulted to provide an **in-depth technical assessment of the DNSH aspects of nuclear energy**. It stated that nuclear energy does not significantly harm other environmental objectives<sup>29</sup>. Then, the experts from the **SCHEER reviewed the JRC's report** by providing a positive assessment of this one.

<sup>29</sup> Joint Research Center, "Technical assessment of nuclear energy with respect to the 'do no significant harm' criteria of Regulation (EU) 2020/852 ('Taxonomy Regulation')", JRC science for policy report, 2021, available [here](#).

However, they highlighted uncertainties about the impact of mining outside the European Union, the final storage of nuclear waste and the impact of radioactivity on the environment<sup>30</sup>.

The DNSH criteria mostly relate to waste management, water protection and protection of ecosystems. They extensively rely on existing Regulations (present in Euratom and national legislations), which should not be an obstacle for actors like EDF. In the consultation, one participant pinpointed that some key risks, such as nuclear proliferation and high-impact or severe accidents were left out of the assessment. The criteria set in the Delegated Act give **increased attention to high-level radioactive waste management and water protection**. The criteria allow for the inclusion of R&D projects and deployment of technologies minimizing fuel cycle waste (SMR, molten salt-thorium reactors, fast neutron reactor, etc.).

### Stakeholders' reactions reflect lasting divergences

*Hostility about the eligibility of nuclear activities is concentrated*

Several stakeholders welcomed the integration of nuclear energy into the European taxonomy. A nuance is often made between life extension of existing units and construction of new units. For example, Sean Kidney, CEO of the Climate Bonds Initiative, stressed “the need for nuclear” even though he explained that “new nuclear is a red herring” to respond to climate change because of its late completion. Investors such as Blackrock have a general rule supporting life extension and assess construction of new units on a case-by-case basis. Clément Beaune, the French Secretary of State for European Affairs, stressed “the draft text corresponds to what we wanted”. George Borovas, head of nuclear practice at the global law firm Hunton Andrews Kurth, affirmed “**there will be a nuclear renaissance**” but he explained that “it will be for a number of countries.” With regard to this “renaissance”, Japan has recently decided to revive civil nuclear energy and to affirm it as a priority in its strategy to achieve carbon neutrality.

In the meantime, **concerns and critics have been expressed**. The German development minister Svenja Schulze (SPD) declared “nuclear power is **too risky, too expensive and too slow** to help the world with climate action” joining Steffi Lemke, the German Environment Minister denouncing “a mistake”. Dawn Slevin, a former member of a subgroup of experts on the Technical Expert Group (TEG), was thus feeling “in shock that the Commission is turning around and putting nuclear in the taxonomy”.

*Gas eligibility is steering far more opposition*

While the inclusion of gas has been particularly welcomed in Germany, notably by Christian Lindner, German federal Minister of Finance, and Uniper (among other German companies), who recalled their belief in future gas technologies, several criticisms have also emerged. The IIGCC published an open letter calling for gas to be excluded from the EU Taxonomy<sup>31</sup>. Ben Caldecott, director of the Oxford Sustainable Finance Group at the University of Oxford, clearly said “**New gas assets able to operate for 40+ years into the 2060s is not green**” and “complete and utter lunacy if you have signed up to net zero.” Furthermore, Sean Kidney denounced that “they seem to have confused the emissions profile over the whole system [with] plant-by-plant, in such a way it would allow a lot of gas plants to be built, if they can be claimed to be replacing coal fired power stations.”, comparing it to “**an incredible fuck-up not consistent with Europe's 2030 emission reduction targets**”.

### A scientifically tolerable and politically sound consensus

Overall, the criteria are time-framed as they encompass deadlines, echoing a central notion of climate finance, which is timeliness. Pinpointing the rapid technological development of the nuclear and gas sectors, the Commission stresses the **need to review regularly both the technical screening criteria covering these economic activities and the relevance of the time limits** set in the technical criteria.

<sup>30</sup> Scientific Committee on Health, Environmental and Emerging Risks (SCHEER), “SCHEER review of the JRC report on Technical assessment of nuclear energy with respect to the ‘do no significant harm’ criteria of Regulation (EU) 2020/852 (‘Taxonomy Regulation’)”, SCHEER review, 29 June 2021, available [here](#).

<sup>31</sup> Institutional Investors Group on Climate Change, “Open letter calling for gas to be excluded from the EU Taxonomy”, 12 January 2022, available [here](#).

The main concession made to anti-nuclear is the introduction of **time-bound criteria for the granting of licenses for new nuclear plants**, which is eligible until 2045, for **the extension of the lifetime of existing installation the time limit is 2040**. The assumption there is that by then, renewable energy, storage solutions and green hydrogen will be available at a scale and cost that would enable to fight climate change without nuclear.

Despite the opposition of some countries to different aspects of the text, it seems **unlikely that they will be able to block it** because of the **reverse qualified majority required in the Council** (20 Member States). Especially since the spokesperson for the German government recently acknowledged the legal validity of the text and the EPP, the majority party in Parliament, would according to the press support the delegated act.

**Energy prices have skyrocketed in Europe** and subsequent inflation made the calls to include nuclear in the Taxonomy louder and more compelling.

Concerning gas, the technical criteria allow relying on gas **as a transitional activity** to accelerate the energy transition, but they also affirm **a time-limited recognition** of the contribution of gaseous activities to decarbonization (2030).

**The Commission wisely announced its willingness to amend the Taxonomy Disclosures Delegated Act** to introduce specific disclosure requirements for non-financial and financial undertakings in order to ensure strong transparency towards investors. To this end, the Commission would require **to clearly indicate the presence and the proportion of the company's activities relating to gas and nuclear**. This will allow investors to make informed decisions by responding to a demand from several ones, as Philippe Zaouati, CEO of Mirova, explained<sup>32</sup>. Such additional disclosure is possible in the context of the EU Green Bond Standard.

### Still a way to go before adoption

Now, the Sustainable Finance Platform<sup>33</sup> and the Member States' Expert Group on Sustainable Finance<sup>34</sup> have until 21 January to examine the proposed complementary delegated act. The Commission may take these feedbacks into account when amending the text before **proposing a final version by the end of January**. The revised proposal will then be forwarded to the European Parliament and the Council for consideration. They will have four to six months to review it and potentially oppose it. Finally, the Regulation is **expected to enter into force from 1 January 2023**.

On significant contribution (SC) criteria to climate change mitigation, **nuclear passes every possible test**. The cost-efficiency and time-construction criteria are not taken into account (asset lifespans are taken into account but for carbon lock-in avoidance). Above all, **the Taxonomy Regulation is not to deal with possible investment eviction effects from a taxonomy aligned activity to another** (such effect could be partially handled with a shaded taxonomy).

If the scientific consensus is broad (IEA, IPCC) regarding nuclear contribution to fight climate change, the arguments against its integration are **safety and radioactive waste management issues**. Indeed, a dissenting opinion of the Group of Experts referred to under Article 31 of the Euratom Treaty, annexed to the report, stated that the focus of the JRC report left out the consideration of some key risks, such as **low probability, but high-impact accidents** which are more acute for nuclear activities than for other energy technologies covered by the Taxonomy. Risk acceptance might here be considered in the hand of national authorities to judge if benefits are worth the risks regarding security and radioactive waste management. Nuclear opponents might use these risks to push back against its integration. To be trustworthy/constructive in their opposition or reluctance, its detractors should highlight the shortcomings of the envisioned DNSH criteria, and ask for *extra legem* requirements and/or reforms in nuclear supervision in the EU. One expects the Sustainable Finance Platform to propose precise and science-based alternatives.

<sup>32</sup> Elza Holmstedt Pell, "Proposed disclosure rule change 'essential' for EU Taxonomy to remain useful for investors: market reacts to plans to classify nuclear and gas as green", Responsible investor, 5 January 2022, available [here](#).

<sup>33</sup> See the website of the Platform on Sustainable Finance [here](#).

<sup>34</sup> See more details [here](#).

### EU Taxonomy influence to vanish?

Concerns around the EU taxonomy influence being at risk have been expressed<sup>35</sup>, alongside improvement proposals. We do not believe that the current criteria would jeopardize the EU classification. Several market participants **welcomed the additional transparency envisioned** through the **separate disclosure of the share of gas and nuclear energy**, such as Philippe Zaouati, CEO of Mirova, who recalled that this is essential for investors. For him, this creates a two-speed taxonomy [...] with a 'political' taxonomy and a 'practical' taxonomy." Some also propose different evolutions such as classifying nuclear and gas in an **"amber category"** (Sandrine Dixon-Declève). On nuclear, **one must remind it is included in Chinese** (construction, operation, equipment, uranium enrichment cycle, decommissioning and waste management) and **Russian taxonomies**<sup>36</sup> (construction, modernization, equipment, generation units, uranium enrichment cycle and waste management).

**The set of cumulative criteria and additional disclosure should preserve a minimum robustness**, in particular by allowing emission reduction in the short term. The risk for this gas related assets is to be stranded relatively soon, with very low load factors (see in appendices), especially if the supply of low-carbon gas does not take-off in the near future. **Additional disclosure would allow to respect investors' preferences as well as to allow them to make informed-decisions**, although it fragments the Taxonomy (with a sub-pocket). For asset managers, it will cause headaches, as they have to live with different clients' views on the matter, probably leading some Green Funds to exclude by principle the two activities.

### Appendix

*Appendix 1: Impact assessment of the 550 kgCO<sub>2</sub>/kW annual average over a 20-year period threshold on load factors*

Thermal power plant carbon intensity (gCO <sub>2</sub> eq/kWh)	Number of days of operation allowed per year to respect the annual budget of 550 kgCO <sub>2</sub> /kW (annual average over a 20-year period)	Annual load factor
650	35	10%
550	42	11%
450	51	14%
350	65	18%

*Source: Authors (Natixis GSH)*

<sup>35</sup> Several actors declared this inclusion of nuclear and gas could "fundamentally alter the future use and impact of the EU taxonomy framework", such as Sandrine Dixon-Declève, co-president of the Club of Rome and member of the European Commission's Platform on Sustainable Finance.

<sup>36</sup> See our study, Natixis GSH, "The new geography of taxonomies", 4 October 2021, available [here](#).

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