

EU TAXONOMY AND NUCLEAR ENERGY

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An Overview

The European Union (EU) taxonomy has established a framework for classifying environmentally sustainable economic activities to assist businesses and investors with easy identification of 'eligible' activities for transition to a low-carbon economy. The EU taxonomy is like a guide written in a common language used by the investors, issuers, project promoters and policymakers to assess whether an economic activity is meeting robust internationally established environmental standards.

The European Council and the European Parliament reached a political agreement on the Taxonomy Regulation as a tool to facilitate sustainable investment in December 2019. The European Parliament adopted the 'EU Taxonomy Regulation' on June 18, 2020, published it in the official EU Journal on June 22, 2020, and subsequently updated it on many occasions. The most relevant development with regard to nuclear energy was the European Commission's adoption of an EU Taxonomy Climate Complementary Delegated Act¹ in March 2022. It included nuclear and gas energy activities in the list of economic activities covered by EU taxonomy. This Act has come into force from January 1, 2023. The three nuclear energy activities recognised under EU taxonomy are demonstration units for advanced nuclear technologies, constructing new nuclear power plants using the best available technologies, and generating electricity from existing nuclear installations.² The trigger behind the shift to include nuclear and gas activities has been to accelerate the transition from solid or liquid fossil fuels toward a climate-neutral future. The taxonomy regulation rests on the fulcrum, balancing incentivising investment in sustainable activities and emboldening less popular but proven technologies.

The EU has a divided view on the inclusion of nuclear in taxonomy. 278 of 639 (43 per cent) Members of European Parliament (MEP) opposed inclusion of nuclear in

Taxonomy. The reservations against the inclusion of nuclear in Taxonomy have been centred on the long and short-term impacts of radioactive waste disposal, the distraction of investment from renewables to nuclear, and the insecurity around the supply of uranium due to changing geopolitical scenarios in Europe and Russia.³

This brief aims to give a comprehensive overview of the concept of taxonomy with specific reference to the EU, the rationale behind the emergence of the Taxonomy Regulation, and, importantly, the inclusion of nuclear energy in its ambit. It gains relevance in the current landscape of global climate change dialogues and focuses on sustainable investments.

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What is Taxonomy?

The word ‘taxonomy’ finds its significance in biology, signifying a scheme of naming, describing, and classifying organisms. However, in the field of energy, the EU has created an EU-wide classification system for sustainable activities with the objective of meeting EU climate and energy targets for 2030 and fulfilling the criteria laid down in the European Green Deal published on December 11, 2019.⁴ The European Green Deal focuses on transforming the EU’s economy to counter climate change and environmental degradation by ensuring zero greenhouse gas emissions by 2050, decoupling economic growth from resource use, and ensuring inclusivity through “no person and no place left behind.”⁵ The EU Taxonomy Regulation⁶ entered into force on July 12, 2020, to incentivise direct investment towards sustainable projects and activities that would maintain a balance between economic growth and high-level protection and improvement of the environment. In the aftermath of COP 27, which took place in November 2022, there is a reprioritisation of policies, and geopolitics on making economies, businesses, societies, and healthcare as immune as possible to climate and environmental upheavals while maintaining the centrality of ‘sustainability.’

So, the EU taxonomy creates a classification for environmentally sustainable economic practices in the EU.⁷

Purpose of EU Taxonomy

It plays a critical role in helping the EU scale up sustainable investments for the fulfilment of the European Green Deal. This classification of activities and businesses aids corporates, policymakers, and investors in categorising and identifying environmentally sustainable practices. It also prevents greenwashing,⁸ protecting, and incentivising investor interests in climate-friendly activities by creating a secure business environment.

Taxonomy Regulation

Objectives and Classification

The Taxonomy Regulation classifies three types of activities: low-carbon (Article 10(1)), transitional (Article 10(2)), and enabling (Article 16). In addition, the regulation establishes six environmental objectives:

climate change mitigation, climate change adaptation, sustainable use and protection of water and marine resources, transition to a circular economy, pollution prevention and control, and the protection and restoration of biodiversity and ecosystems.

These objectives are expected to be achieved through a wide array of environmentally sustainable economic activities. The classification of these activities is based on the Nomenclature of Economic Activities (NACE), the statistical classification of economic activities in the EU. Even though the NACE code is adopted to provide a broader understanding of the activity, if an economic activity does not have a NACE code but meets the activity description, it can be qualified as taxonomy-eligible. The Climate Delegated Act⁹ describes and assigns criteria for certain economic activities by categorising them into generic sorts; it includes nuclear and natural gas in the transitional category of activities (Article 10(2)) of the Taxonomy Regulation. The Commission had defined the technical screening criteria for each of the six objectives through the Delegated Act that enable the classification and eligibility of economic activity for the purpose of sustainability taxonomy. The Delegated Act is an evolving piece of legislation to keep up with the demands of changing scenarios. The screening criteria for climate change mitigation¹⁰ and adaptation¹¹ are technical and science-based, while also being dynamic and subject to review.

Inclusion of Nuclear Energy in Taxonomy

Since 2020, the Commission has been engaged in an assessment of whether nuclear energy should be included in the EU taxonomy of environmentally sustainable activities. A series of policy assessments and reports have been undertaken on this issue. The Joint Research Centre (JRC), the in-house science and knowledge service of the Commission, drafted a technical report on the 'do no significant harm' aspect of nuclear energy in March 2021.¹² This report was reviewed by the Group of Experts on Radiation Protection and Waste Management under Article 31 of the Euratom Treaty and the Scientific Committee on Health, Environment, and Emerging Risks on environmental impacts.

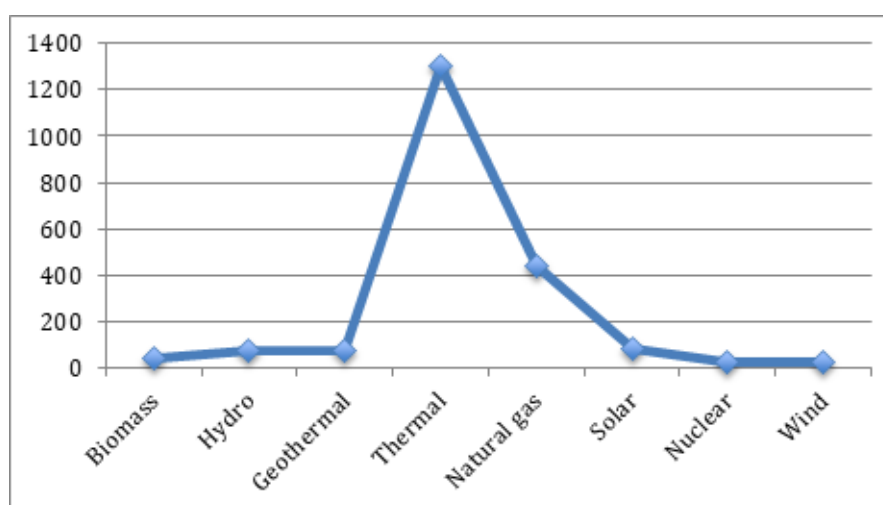
The requirement of the Taxonomy Regulation of 'do no significant harm' is to be complied with, in addition to the applicable national laws and internationally ratified laws in the particular sector, ensuring the right balance and protection of the ecosystem and sustainable development. After much deliberation and analysis, nuclear energy and natural gas will be included in an EU taxonomy from January 1, 2023, as sustainable

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investments in the list of green activities. The screening criteria for nuclear activities have set requirements beyond the existing legal and regulatory framework established by the International Atomic Energy Agency (IAEA), EU Policies, the National Nuclear Regulatory Authority, and Regulator's Associations.

The rationale behind the inclusion of nuclear energy is its ability to provide baseload energy and capacity while being a low-carbon source.¹³ According to a study published by *Société Générale*, reference was made to the data issued by the French Institute for Ecological Transition,¹⁴ which states that nuclear energy produces six grams of carbon dioxide per kilowatt-hour of electricity as compared to 10 for wind and hydro and 32 for biomass.¹⁵

Figure 1: Life Cycle Emission Factors (g CO₂e/kWh e)



Source: "Emission Factors 2022 – Database Documentation," International Energy Agency (IEA), https://iea.blob.core.windows.net/assets/631bfd9a-fea7-4ef3-8cc0-a11ab416805d/CO2KWH_Methodology.pdf. Accessed on November 15, 2022.

According to a study published by the International Energy Agency,¹⁶ a comparison has been made between the various renewable and non-renewable sources of energy (as shown in Figure 1). That reflects the fact that the complete lifecycle of nuclear produces significantly lower carbon dioxide per kilowatt hour of electricity as compared to renewable sources like solar, biomass, geothermal, hydro, and non-renewable energy sources, i.e., thermal and natural gas. The acknowledgement of nuclear energy as a low-carbon energy source by the Technical Expert Group on Sustainable Finance that was advising the Commission on taxonomy has been in line with the conclusions established by the Intergovernmental Panel on Climate Change (IPCC), the Organization for Economic Co-operation and Development (OECD), and the UN Economic Commission for Europe that the carbon dioxide emissions from nuclear power plants through their lifecycle are comparable to those from renewable energy sources.¹⁷ Nuclear energy's waste generation is proportionally small compared to the power it generates. It produces low-level radioactive waste, and only one per cent of the total waste accounts for high-level radioactive waste.

Nuclear has shown a promising track record and an optimistic future with low-carbon credentials. Yet, Europe has progressively slowed its nuclear power production and growth projections drastically as compared to China and India. The Delegated Act holds the power and potential to accelerate the growth of nuclear in Europe to meet the International Energy Agency's 'Net Zero by 2050' projection that argues nuclear capacity needs to double by 2050 to meet climate targets.¹⁸

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‘Do No Significant Harm’ Criteria

A group of experts undertook a technical assessment of nuclear energy with respect to the ‘do no significant harm’ criteria of the Taxonomy Regulation under Article 31 of the Euratom Treaty. As mentioned earlier, the JRC and the European Commission’s Science and Technology Service undertook this technical assessment.

The expert opinion emphasised that the European legal framework provides a high level of protection for workers, the public, and the environment from any risks, the harmful effects of ionising radiation, and the precautionary principle. The precautionary principle is an international environmental law that implies a social responsibility to protect the environment and public from exposure that a product, an action, or a policy can cause; “this principle enables decision-makers to adopt precautionary measures when scientific evidence about an environmental or human health hazard is uncertain, and the stakes are high.”¹⁹

The technical assessment report has taken cognisance of these reservations in the Delegated Act through provisions requiring the operationalisation of low-level radioactive waste disposal facilities and a plan for establishing high-level radioactive waste disposal by 2050. In addition, the Act imposes a ban on the export of radioactive waste to developing nations. The report also states that, while evaluating the maximum consequence of a single event, the probability of such an event in a modern nuclear power plant is extremely low.

The expert opinion has been less conclusive on the other environmental impacts related to aspects like the consequences of land acquisition, uranium mining, and the processing of fuel for nuclear power and its compatibility with the principle of doing no significant harm.

The Delegated Act mandates that large listed non-financial and financial companies disclose the portion of their activities linked to nuclear or natural gas. As an aftermath of this Act, there is an increasing focus on requiring disclosure compliance in other Environmental, Social, and Governance (ESG) frameworks,²⁰ certainly increasing

the procedural and reporting formalities for the companies. The reasoning behind a robust disclosure and compliance system is to ensure the appropriate application of taxonomy criteria by businesses since favourable ESG reporting enhances the valuation of the business. In addition, the technical screening criteria of the delegated legislation are subject to review every three years, thereby analysing the impact of nuclear and natural gas in mitigating the climate change impact. This is being perceived as a challenge by investors, who fear a reversal in the nuclear taxonomy.

EU Taxonomy has tried to channelise investments into sustainable energy sources. The inclusion of nuclear energy on its list is meant to incentivise the growth of this industry.

Predictable but Unresolved

The inclusion of nuclear in EU taxonomy has opened up opportunities for the nuclear industry, but whether it can enhance public confidence and improve public perception of nuclear power will be subject to analysis after the implementation of the Delegated Act in January 2023.

A public consultation was not conducted before the inclusion of nuclear energy into the EU Taxonomy, though, and there was extensive scrutiny and analysis of the JRC report by the expert groups and scientists in member states. Therefore, public acceptance of nuclear energy may still turn out to be a challenge that may hamper investments in nuclear power plants. Nevertheless, EU Taxonomy has tried to channelise investments into sustainable energy sources. The inclusion of nuclear energy on its list is meant to incentivise the growth of this industry. But, irrespective of legal provisions, an equal amount of work will be needed on public outreach in EU countries that have a fractured view of nuclear energy.

Notes:

¹ “EU Taxonomy: Complementary Climate Delegated Act to Accelerate Decarbonization”, European Commission, February 2, 2022, https://finance.ec.europa.eu/publications/eu-taxonomy-complementary-climate-delegated-act-accelerate-decarbonisation_en. Accessed on November 22, 2022.

² “Nuclear and Gas Criteria Set for Inclusion in EU Taxonomy, World Nuclear News”, *World Nuclear News*, January 6, 2022, <https://www.world-nuclear-news.org/Articles/Nuclear-and-gas-criteria-set-for-inclusion-in-EU-t>. Accessed on November 22, 2022.

³ According to Eurostat, in 2020, 20.2% of the EU’s uranium supply came from Russia and 19.2% from Kazakhstan. Kerstine Appunn, “Europe Highly Dependent on Russian Uranium for Nuclear Power Plants – Report”, *Clean Energy Wire*, April 22, 2022, <https://www.cleanenergywire.org/news/europe-highly-dependent-russian-uranium-nuclear-power-plants-report#:~:text=In%202020%2C%20EU%20countries%20received,Kazakhstan%2C%20according%20to%20the%20report>. Accessed on November 22, 2022.

⁴ “The European Green Deal”, European Commission, https://ec.europa.eu/info/strategy/priorities-2019-2024/european-green-deal_en. Accessed on November 18, 2022.

⁵ Ibid.

⁶ “The Sustainable Finance Taxonomy - Regulation (EU) 2020/852”, European Union, June 18, 2020, https://ec.europa.eu/info/law/sustainable-finance-taxonomy-regulation-eu-2020-852_en. Accessed on November 18, 2022.

⁷ “Renewed Sustainable Finance Strategy and Implementation of the Action Plan on Financing Sustainable Growth”, European Commission, March 8, 2018, https://finance.ec.europa.eu/publications/renewed-sustainable-finance-strategy-and-implementation-action-plan-financing-sustainable-growth_en. Accessed on November 19, 2022.

⁸ Greenwashing, also referred to as “green sheen” is a form of advertising and marketing spin in which green labeling and green marketing are deceptively used to persuade the public that an organization’s products, aims and policies are environmentally friendly. Leah Das, “Greenwash: What It Is and How Not To Fall For It”, Greenpeace, April 12, 2022, <https://www.greenpeace.org.uk/news/what-is-greenwashing/>. Accessed on November 17, 2022.

⁹ *Commission Delegated Regulation (Eu) 2021/2139 Of 4 June 2021 Supplementing Regulation (Eu) 2020/852 of the European Parliament and of the Council by Establishing the Technical Screening Criteria for Determining the Conditions under which an Economic Activity Qualifies as Contributing Substantially to Climate Change Mitigation or Climate Change Adaptation and for Determining whether that Economic Activity Causes no Significant Harm to Any of the other Environmental Objectives*, C/2021/2800, Document No. 32021R2139, Official Journal of the European Union (Brussels: European Commission, December 9, 2021), <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A32021R2139>. Accessed on November 16, 2022.

¹⁰ Mitigation means making the impacts of climate change less severe by preventing and reducing the emission of greenhouse gases into the atmosphere.

¹¹ Adaptation is a process of adjusting to the current and future effects of climate change, by adapting to the climate change already in the pipeline.

¹² *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 (Brussels: European Commission, 2021), 2021, https://finance.ec.europa.eu/system/files/2021-03/210329-jrc-report-nuclear-energy-assessment_en.pdf. Accessed on November 18, 2022.

¹³ Viktor Andersson, “A Swedish Nuclear Future: Using Explorative Scenarios to Assess Energy Security in Low-Carbon Electricity Systems”, dissertation, Examensarbete vid Institutionen for Geovetenskaper, Uppsala University, March 27, 2020 <https://www.diva-portal.org/smash/record.jsf?pid=diva2%3A1417388&dswid=6117>. Accessed on November 18, 2022.

¹⁴ Nicolas Mat, Juliette Cerceau, Lei Shi, Hung-Suck Park, Guillaume Junqua, and Miguel Lopez-Ferber, “Socio-ecological Transitions Toward Low-Carbon Port Cities: Trends, Changes and Adaptation Processes in Asia and Europe”, *Journal of Cleaner Production* 114 (2016): 362-375.

¹⁵ Jamie Gordon, “EU Taxonomy Faces Legal Dispute as Member States Oppose Inclusion of Gas and Nuclear”, *ETF Stream*, February 10, 2022, <https://www.etfstream.com/news/eu-taxonomy-faces-legal-dispute-as-member-states-oppose-inclusion-of-gas-and-nuclear/>. Accessed on November 18, 2022.

¹⁶ *Global Energy & CO₂ Status Report 2019* (Paris: IEA, 2019), <https://www.iea.org/reports/global-energy-co2-status-report-2019>. Accessed on November 18, 2022.

¹⁷ Bertrand Cassoret, François Balavoine, and Daniel Roger, “Life Cycle Assessments of Different Electricity Production Scenarios in France with a Variable Proportion of Nuclear Energy”, *International Journal of Green Energy* (2022): 1-11.

¹⁸ Ángel Galán-Martín, Javier Pérez-Ramírez, and Gonzalo Guillén-Gosálbez, “Trade-offs Between Sustainable Development Goals in Carbon Capture and Utilisation”, *Energy & Environmental Science* (2022).

¹⁹ “The Precautionary Principle: Definitions, Applications and Governance”, *Think Tank European Parliament*, December 9, 2015, [https://www.europarl.europa.eu/thinktank/en/document/EPRS_IDA\(2015\)573876](https://www.europarl.europa.eu/thinktank/en/document/EPRS_IDA(2015)573876). Accessed on November 18, 2022.

²⁰ ESG refers to a set of environmental, social and governance standards that socially conscious investors use to screen investments for material risks and growth opportunities. These are non-financial factors, for e.g. carbon emissions, air and water pollution, deforestation, green energy initiatives, waste management and water usage. "ESG Taxonomies: Will One Stand Emerge?", KPMG Insights, 2022, [https://home.kpmg/xx/en/home/insights/2021/10/esg-taxonomies.html#:~:text=A%20definition%20of%20what%20and,and%20governance%20\(ESG\)%20factors](https://home.kpmg/xx/en/home/insights/2021/10/esg-taxonomies.html#:~:text=A%20definition%20of%20what%20and,and%20governance%20(ESG)%20factors). Accessed on November 19, 2022.



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