



## The Sfen's position on the European Commission's draft Complementary Delegated Act (CDA), which is including nuclear activities in the EU Taxonomy of green activities

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*The French Nuclear Energy Society (Sfen, Société Française d'Énergie Nucléaire) is a non-profit scientific and technical association, bringing together 4,000 professionals, engineers, technicians, chemists, doctors, professors, and students from French industrial sites and nuclear research bodies. The Sfen provides a forum for exchange between those interested in nuclear energy and its applications, and it exists 'to allow these minds to share and form new ideas about nuclear energy.' The Sfen is a founding member of the European Nuclear Society (ENS).*

On 31 December 2021 the European Commission submitted its 'draft text of a Taxonomy Complementary Delegated Act covering certain gas and nuclear activities' for consultation to both the Member States Expert Group on Sustainable Finance and the Platform on Sustainable Finance. The EU Taxonomy aims to classify activities that are conducive to protecting the environment and the climate, so as to guide and mobilise financial flows accordingly.

Although the 60-page document has not been officially released, it is available to view on the internet and across various social networks. Given how significant the impact of being included in the EU Taxonomy is for the future of nuclear energy in Europe, the Sfen has closely studied the draft CDA and decided to publish its observations, with the aim of enhancing a number of important provisions.

The Sfen welcomes the text's recognition of the role of nuclear power in mitigating climate change, as well as its inclusion in the European Taxonomy, with in particular:

- The inclusion of both existing Generation II reactors, Generation III reactors (EPR & EPR2), and future Generation IV reactors. The draft notes that the nuclear energy sector is currently benefiting from '*rapid technological development.*'
- The use of nuclear energy for generating electricity as well as processing '*heat, including for the purposes of district heating or industrial processes such as hydrogen production.*'
- The need to close the fuel cycle as part of the European circular economy strategy.

The European Commission's position is important because the European Taxonomy should not only encourage and mobilise private investors to move towards the economic activities included, but can also go further and influence other major European policies, such as EU fund eligibility and State aid authorisation.

Improvements to certain provisions of the draft CDA still need to be made so that:

- Investors can benefit from stability and certainty on a long-term basis;
- The nuclear industry can meet the expectation of supplying 15% of Europe's electricity needs by 2050 in order to achieve the EU's carbon neutral targets;
- The text can fit consistently and seamlessly into the European regulation on nuclear power.

As such the Sfen is putting forward seven recommendations:

### **1. Include nuclear power as a sustainable energy activity instead of solely as a transitional energy**

In contrast with its clear listing of gas activities, the CDA does not explicitly refer to nuclear energy as a 'transitional energy.' However, the CDA also falls within the transitional energy framework as referred to in Article 10.2 of the 18 June 2020 Regulation 201.<sup>1</sup>

**This ambiguous referencing does not correspond with the scientific conclusions** of a report by the Joint Research Centre (JRC), the European Commission's science and knowledge service, which in 2021 was mandated to conduct an in-depth study of the environmental footprint of nuclear energy.<sup>2</sup> As a reminder, in order to be considered sustainable, a solution must pursue at least one of the six environmental objectives of the EU Taxonomy (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 protection and restoration of biodiversity and ecosystems), without harming any of the Taxonomy's other objectives (the 'Do No Significant Harm', or DNSH principle). In its report, the JRC concluded that while clearly furthering the combat against climate change, nuclear energy also has comparable and even lesser environmental impacts than other technologies already included in the Taxonomy.

Classifying nuclear energy as a transitional energy source subjects it de facto **to a changing regulatory framework that is unsuited to the sector's industrial profile**. According to Article 19.5 of the June 2020 regulation, transitional energies are subject to a review of their technical screening criteria (review clause) '*at least every three years [...] in line with scientific and technological developments.*' Sfen analysis studies undertaken by the consulting firm BCG, show that new nuclear reactors require about 15 years from the date of expression of intent until final commissioning.

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<sup>1</sup> Regulation 2020/852 of the European Parliament and of the Council of 18 June 2020 on the establishment of a framework to stimulate sustainable investment : <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32020R0852&from=EN>

<sup>2</sup> JRC report: [https://ec.europa.eu/info/sites/default/files/business\\_economy\\_euro/banking\\_and\\_finance/documents/210329-jrc-report-nuclear-energy-assessment\\_en.pdf](https://ec.europa.eu/info/sites/default/files/business_economy_euro/banking_and_finance/documents/210329-jrc-report-nuclear-energy-assessment_en.pdf)

The Sfen has also shown that in order to benefit from serial production effects, a construction programme requires at least three pairs of reactors, which requires a stable technical reference framework spanning at least 15 years. Lastly, any such a serial production programme with identical reactors could be structured to include several different project companies and several investor funding request phases. Against this backdrop it is impossible to imagine how each project piece could feasibly be subject to different technical criteria.

## 2. Include fuel cycle activities needed for nuclear energy in the EU Taxonomy

While the reactors situation is clearly addressed, the same cannot be said for uranium enrichment, fuel fabrication, or spent fuel treatment. This would seem to imply that, as things stand, these activities are not included in the Taxonomy. **Yet they are essential for the production of nuclear electricity as well as for implementing the circular economy principles in nuclear energy as called for by the text**, such as fuel recycling and the development of Generation IV reactors. They should thus be explicitly included in the Taxonomy in order to ensure that fuel cycle companies secure access to financing.

Similarly, the CDA fails to refer to uranium mining activities. Mining is not solely a nuclear energy issue, it is relevant for all energy transition activities, especially all low-carbon energies, which have significant needs for metals and minerals. An activity such as this would certainly justify an overarching delegated act establishing common criteria for all low-carbon energies.

## 3. Include nuclear facility maintenance operations in the EU Taxonomy

The draft CDA takes into account the construction and operation of new nuclear reactors. In terms of existing reactors, the text only addresses operations aimed at extending their operating life. It is also **imperative that their maintenance operations be included in the EU Taxonomy, just like gas power plants and hydroelectric plants**. Maintaining such a difference would be a breach of the Taxonomy's principle of technological neutrality.

## 4. Review the deadlines set for nuclear reactor construction and extension activities

The CDA sets deadlines for certain projects. In order to comply with the EU Taxonomy, decisions over nuclear reactor extensions must be made before 2040 and those for the construction of new nuclear reactors before 2045.

Firstly, the 2040 extension decision deadline sits uncomfortably with French legal provisions, according to which reactors are only allowed to continue operating for successive ten-year spans, in line with the nuclear safety authority's opinion. Thus, for instance a nuclear reactor that starts up in 2031, for a duration of 60 years, would no longer be able to benefit from green financing beyond its first ten-year review in 2041.

Secondly, the setting of 2045 as the deadline for decisions to construct new reactors in order to come within the EU Taxonomy is inconsistent with the industrial timetable for renewing Europe's nuclear plants. Furthermore, there is no explicit reference that Generation IV reactors, which are scheduled to be widely commissioned in Europe after 2050, are not subject to this time limit. However, in an interview with the JDD publication on 09 January 2022, European Commissioner Thierry Breton stated that "The proposed

taxonomy does not foresee any time limit for advanced new generation plants generating a lower level of waste."

Finally, due to commissioning schedules, series effects, and major material flow balances related reasons, Generation III and IV reactors will have to coexist on a long-term basis within Europe's heterogeneous set of nuclear reactors. Were nuclear power to be considered as a sustainable energy (Sfen recommendation 1), then these deadlines would no longer apply.

## 5. Review the dates for deep geological storage

The European Commission reiterates its previous conclusions that geological disposal of long-lived radioactive waste is the best solution, along the lines of the Cigéo project in France. The text notes that *'For high-level radioactive waste and spent fuel, deep geological disposal is a state of the art solution that is broadly accepted in the expert community world-wide as the safest and most sustainable option for the final stages of the management of high-level waste, and spent fuel considered as waste.'*

However the CDA also suggests that EU Member States with nuclear power capabilities can be expected to be developing and operating such deep disposal facilities by 2050. While this deadline won't present a problem for France, Sweden or Finland, **other EU Member States that are just embarking on their nuclear journeys, such as for instance in Eastern Europe and in particular Poland, will find the 2050 deadline impossible to meet.** Furthermore, the European Commission also requires that nuclear waste storage sites be already operational whenever new nuclear installations become fully commissioned. Greater clarity over the 2050 time limit requirement is needed by specifying that nuclear storage solutions should be either operational, or in the planning stages whenever new nuclear installations become fully commissioned.

## 6. Do not interfere with or hinder the safety authorities' responsibilities and activities

The CDA provides that each project seeking inclusion in the EU Taxonomy will have to undergo an initial examination and approval by the European Commission. The European Commission will check compliance with the technical screening criteria, the scope of which can be very broad, and largely covers safety concerns. The wording of the text also means the European Commission can choose from among a broad range of subjects and technologies which ones it will address. Moreover, this appraisal process, which will be a pre-requisite for nuclear projects to be included in the EU Taxonomy, is not found anywhere else in the Taxonomy. In terms of consistency with the principle of technological neutrality, there is no logical reason to implement any such specific mechanism. With regard to safety, this would also mean nuclear projects would undergo two technical appraisals, one by the national safety authority and one by the European Commission, irrespective of whether the project is a new installation or an extension to an existing installation. Beyond any complexities and legal uncertainties that could arise from such situations, **this type of mechanism would by its very nature be likely to call the independence of the relevant safety authorities into question**, since a third party authority by way of the EU Taxonomy, would be involved with the analysis and approval of safety related technical options. The EU Nuclear Safety Directive 2014 did however reaffirm the principle of the independence of safety authorities and uniqueness of technical appraisals.

## 7. Do not require recourse to Accident Tolerant Fuel

The CDA stipulates that any reactor included in the Taxonomy must use Accident Tolerant Fuel (ATF). The term ATF or EATF (Enhanced Accident Tolerant Fuel) refers to a set of nuclear fuel concepts, and fuel assembly innovations and developments that improve performance during normal operations, transient conditions, and accident situations. ATFs and EATFs are part of the natural fuel product development process.

Depending on the line of research and the product, the focus may be for example to secure greater resistance to wear and tear on the moving parts, better pellet-cladding interaction (PCI) margins, greater reactor operational flexibility, higher burnup rates, greater fuel clad ballooning resistance due to loss-of-coolant accidents (LOCA), less fission gas release from nuclear fuel pellets, or higher cladding melting temperatures.

ATFs belong to the R&D and reactor test stages. Assessing their benefits, examining different options, certifying, and then industrialising certain options for operational use may take many years.

The Sfen regularly reports on these very interesting lines of work. However **the use of ATFs cannot become a Taxonomy-related requirement insofar as the term does not designate precisely defined technologies**. It is likely that these fuel assemblies will eventually be used in nuclear reactors across Europe, although the timetable for such a widespread deployment remains unknown. Decisions on this issue will in due course have to be based on both proposals from the various nuclear operators and requirements from the national safety authorities.