Finnish Energy's Response to the Commission's Consultation on Nuclear Illustrative Programme

Finnish Energy, representing the energy sector in Finland, appreciates the opportunity to contribute to the consultation on the Nuclear Illustrative Programme.

Benefits of nuclear energy

In the coming years, Finland and Europe will have to tackle several critical challenges – combat climate change and the loss of nature, while at the same time improving competitiveness and energy security. Nuclear energy is a key part of the solution.

Nuclear energy has one of the lowest life cycle emissions of energy production. Also, the land use of nuclear energy is highly efficient in relation to the energy produced, which also serves biodiversity protection targets.

Investing in nuclear energy can also improve competitiveness of Europe, as well as the stability of the electricity system. Nuclear power provides stability to the grid through inertia and frequency regulation.

Nuclear energy in Finland

Nuclear energy has a crucial role in achieving Finland's ambitious goal of climate neutrality by 2035. Almost 40 % of electricity in Finland is produced by nuclear power.[1] It offers predictable, low-carbon electricity, heat and hydrogen to meet the emission reduction needs of industry, transport and heating. Finnish companies are in a process of lifetime extensions of existing nuclear power plants, and are interested in new investments in electricity, combined heat and power and heat only reactors.

The demand for electricity in Finland is expected to grow significantly in the coming years. This growth is driven by increasing electrification of various sectors. Based on Finnish Energy's Energy vision 2040, demand for electricity could be over two times higher in 2040 compared to 2023. The amount of electricity produced by nuclear power could grow from current 32 TWh per year to close to 45 TWh per year by 2040. In addition to this, also several small nuclear boilers could provide heat for cities via district heating systems in 2040.[2]

[1] Statistics on electricity, https://energia.fi/en/statistics/statistics-on-electricity/
[2] Energy vision 2040 (Finnish), https://energia.fi/meista/visio/visio-menestyvan-suomen-energiatulevaisuudesta/

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Popularity of nuclear energy is strong in Finland. In 2025, 68 % of respondents are in favour of nuclear power (32 % completely in favour and 36 % mainly in favour), and only 9 % against (2 % totally negative and 7 % mainly negative), according to a survey by Verian, commissioned by Finnish Energy.[3]

Effective nuclear waste management is a cornerstone of sustainable nuclear energy. Finland is the first country in the world, where the challenge of spent nuclear fuel disposal has been solved. Spent fuel will be disposed of in the bedrock at a depth of approximately 430 metres and isolated from the organic environment by multiple safety solutions called release barriers. The release barriers include the fuel's physical state, the disposal canister, the bentonite buffer, the backfilling of the tunnels and the stable, almost two billion years old bedrock. The barriers prevent the spent nuclear fuel from coming into contact with the organic environment or people under any circumstances. The failure of one barrier must not jeopardise the performance of the isolation. It must withstand any potential geological changes, such as future ice ages.[4]

How can the EU enable investments in nuclear energy?

All net-zero energy generation sources should be promoted in the EU climate and energy policy and regulation, financial instruments and state aid rules.

- Enable same incentives for low-carbon hydrogen produced by nuclear energy as for renewable hydrogen.
- Ensure a non-discriminatory approach and technology neutrality in financing by including nuclear energy in EU funds such as Innovation Fund, InvestEU and providing equal opportunities in European financial institutions such as EIB.
- Ensure efficient EU state-aid procedures and provide equal treatment for renewable energy and nuclear energy in state aid guidelines.

The EU should facilitate cooperation of nuclear safety authorities in the harmonization of licensing and standardization procedures. The goal should be a common European market for large reactors and SMRs. EU SMR Industrial Alliance provides a good platform for cooperation.

- Support and facilitate the cooperation of EU national nuclear safety authorities in joint licensing projects.
- Support joint projects which aim to enable use of high-quality industrial-standard equipment, such as KELPO project.

Permitting of nuclear energy projects should be accelerated, as is the case with all energy investments.

- Prioritize the processing of environmental permits of nuclear energy projects in authorities and courts.

[3] Popularity of nuclear power continues rising in Finland, https://energia.fi/en/press-releases/popularity-of-nuclear-power-continues-rising-in-finland/

[4] Safely in the ancient bedrock – Final disposal of nuclear fuel in Finland, https://energia.fi/en/publications/safely-in-the-ancient-bedrock-final-disposal-of-nuclear-fuel-in-finland/