

Swedish Nuclear Renaissance



Photo 1 – Forsmark nuclear power plant, Source: Vattenfall AB

Few countries have reversed course on energy policy as decisively as Sweden. In the space of just a few years, the country has moved from planning the gradual phase-out of nuclear power to placing it at the centre of its long-term energy strategy. This policy paper explores how that transformation was achieved, analysing the political choices, institutional reforms and governance mechanisms that have driven Sweden's nuclear revival. Although Poland and Sweden start from very different positions, the Swedish experience offers valuable lessons on strategic planning, policy coordination and the state's role in delivering major energy transitions.

Introduction

Few countries have recalibrated their energy policy as dramatically as Sweden. In just a few years, the country has shifted from phasing out nuclear power to actively embracing its expansion – a reversal that many would describe as nothing short of a policy U-turn. The current Swedish government coalition, often referred to as the Tidöparties (*Tidöpartierna*) after the palace in Tidö where the coalition agreement was signed, consisting of the Moderates (*Moderaterna* – M), the Christian Democrats (*Kristdemokraterna* – KD) and the Liberals (*Liberalerna* – L), and supported by the Sweden Democrats (*Sverigedemokraterna* – SD), had promised in the 2022 election and in their coalition agreement to revive nuclear energy in Sweden.¹ Since then, the government and relevant state institutions have worked consistently to deliver on this campaign promise and pave the way for a revival of nuclear power in Sweden. This policy paper aims to examine the government's efforts by applying the tenets of integrated policy analysis. It is a continuation of last year's commentary on Swedish nuclear energy policy *Sweden's Nuclear Energy Landscape: A Comprehensive Analysis*,² albeit an extended and more in depth version.

The Swedish experience may be relevant to Poland in certain aspects, including coordination, planning and the role of the state. There are obvious differences, including the fact that Sweden has a wealth of experience spanning over 50 years, while Poland is a newcomer to this energy sector. As the partnership between Poland and Sweden continues to deepen across multiple sectors, Sweden's nuclear energy policy merits closer examination, particularly in light of its swift yet carefully orchestrated revival and the domestic political dynamics that have shaped it.

Historical and political context

The origins of the Swedish nuclear energy programme date back to the late 1940s. A desire to remain neutral and energy self-sufficient by exploiting local uranium deposits

¹ Energi. (2023). *Regeringen vill tillåta kärnkraft på fler platser*.

<https://www.energi.se/artiklar/2023/januari-2023/regeringen-vill-tillata-karnkraft-pa-fler-platser/>

² Pawlik, K., & Gibała, M. (2025, June 30). *Sweden's nuclear energy landscape: A comprehensive analysis*. Casimir Pulaski Foundation. <https://pulaski.pl/en/swedens-nuclear-energy-landscape-a-comprehensive-analysis/>

laid the foundation for Sweden's post-WWII nuclear policy, famously known as "the Swedish Line" (*Den svenska linjen*).³ The 1973 oil crisis found Sweden already in the midst of preparations for a large-scale energy transformation, strengthening the country's resolve to follow through with the plans to build nuclear power plants. Over a span of just 13 years (1972–1985), Sweden built and integrated into the grid 12 large-scale commercial reactors at four sites, spanning Oskarshamn, Ringhals, Forsmark and Barsebäck.⁴ It is worth noting that Sweden's first nuclear reactors were built using mostly domestic technology and their success enabled ASEA (today part of the ABB Group) to develop its own, entirely Swedish commercial reactors without having to purchase American licences.⁵

In 1980, following the 1979 accident at the Three Mile Island, a nationwide referendum was held. Although the supporters of nuclear energy technically prevailed, every option on the ballot included a long-term plan to eventually phase out nuclear energy.⁶ The Swedish Parliament (*Riksdag*) decided to commission the reactors already under construction, but capped their operational lifespan at the turn of the century. The phase-out strategy gradually materialised with the two units at Barsebäck shut down in 1999 and 2005. In 2010, the centre-right Reinfeldt government (consisting of the Moderates, the Centreparty (*Centerpartiet* – C), the Christian Democrats and the People's Party (*Folkpartiet* – FP)) partially lifted the new-build ban, permitting replacement of already existing reactors.⁷ However, the tax on installed reactor capacity (*effektskatt*), increased in 2015 by the leftwing Löfven I government (consisting of the Social Democrats (*Socialdemokraterna* – S) and the Greens (*Miljöpartiet de gröna* – MP)), combined with record-low market prices

³ Vattenfall. (n.d.). *Den svenska linjen*. Vattenfall Historia.

<https://historia.vattenfall.se/stories/fran-vattenkraft-till-solceller/den-svenska-linjen/>

⁴ World Nuclear Association. (n.d.). *Nuclear Power in Sweden*.

<https://world-nuclear.org/information-library/country-profiles/countries-o-s/sweden>

⁵ Svensk Kärnteknisk Förening. (n.d.). Sveriges kärnkraftshistoria.

<https://swedishnuclear.se/kaerntechnik/sveriges-kaernkraftshistoria/>

⁶ Holmberg, S., & Asp, K. (1984). *Kampen om kärnkraften: En bok om väljare, massmedier och folkomröstningen 1980*.

<https://www.gu.se/sites/default/files/2020-03/Holmberg%20%26%20Asp%20-%20Kampen%20om%20ka%C8%88rnkraften-%20En%20bok%20om%20va%C8%88ljare%2C%20massmedier%20och%20folkomro%C8%88stningen%201980%20%281984%292.pdf>

⁷ Regeringskansliet. (2010). *Kärnkraften – ökat skadeståndsansvar* (Prop. 2009/10:173).

<https://www.regeringen.se/contentassets/bc06097ce85e45c1a3c6e3603bfa01b0/karnkraften---okat-ska-destandsansvar-prop.-200910173-kapitel-1-12>

for electricity and the need for safety upgrades following the Fukushima disaster, made the continued operation of the older units financially unsustainable. Although a broad energy agreement (*Energiöverenskommelsen*) between the government and the opposition parties was reached in 2016, providing for the gradual complete abolition of the tax, between 2015 and 2020 the four oldest units (Oskarshamn 1 and 2, Ringhals 1 and 2) were permanently decommissioned following business decisions.⁸

Of the 12 large-scale reactors built in Sweden, six remain operational today. With a combined net capacity of 7,011 MWe,⁹ Sweden's nuclear power reactors in Oskarshamn, Ringhals and Forsmark provide roughly 29% of the country's electricity, complementing a low-carbon mix dominated by hydro power (40%) and wind (21%), alongside biofuels and waste (8%), solar (1.5%), fossil fuels (0.5%), and heat (0.1%).¹⁰

However, the goal of achieving climate neutrality by 2045, combined with increased electrification, is expected to lead to a significant rise in electricity demand in Sweden, from today's 135–140 TWh per year (with production of around 160–170 TWh) to as much as 330 TWh in 2045.¹¹ This projected increase in demand for electricity is the main reason for the intensified debate on the future of Sweden's energy system, including the so-called nuclear renaissance, which is the subject of this paper.

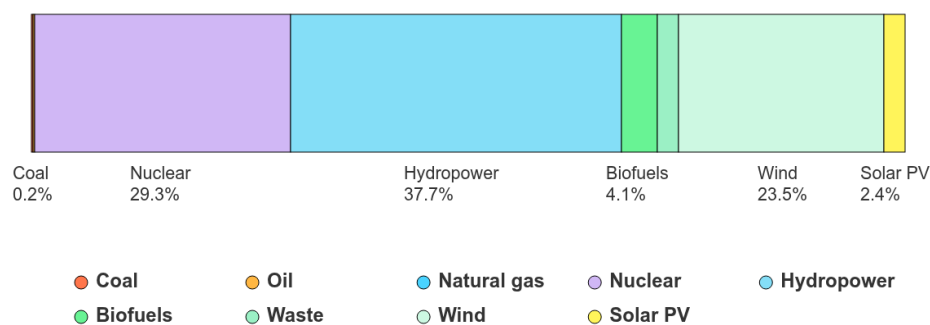


Figure 1 - Electricity generation sources, Sweden, 2024, Source: International Energy Agency

⁸ Socialdemokraterna, Moderaterna, Miljöpartiet de gröna, Centerpartiet, & Kristdemokraterna. (2016). *Energiöverenskommelse 2016*.

<https://www.mfk.nu/wp-content/uploads/energioverenskommelse-20160610.pdf>

⁹ World Nuclear Association. (n.d.). *Nuclear Power in Sweden*.

<https://world-nuclear.org/information-library/country-profiles/countries-o-s/sweden>

¹⁰ International Energy Agency. (n.d.). *Sweden: Electricity*. <https://www.iea.org/countries/sweden/electricity>

¹¹ Energiföretagen Sverige. (2023). *Sveriges elbehov 2045*.

https://www.energiforetagen.se/493642/globalassets/dokument/gap-rapport-handlingsplan/sveriges-elbehov-2045_vers230307.pdf

A plethora of nuclear projects in the waiting

The Swedish nuclear renaissance predominately has been focused on procuring new reactors in Ringhals, one of the three current locations of nuclear power plants. In reality, there are more actors interested in the nuclear revival and there are a number of projects that have applied for government support. This section will outline these projects in greater details.



Figure 2 - Operating and planned nuclear power plants

Videberg Kraft AB

Videberg Kraft AB is the company behind the new nuclear build in Ringhals. The company is a special purpose company (i.e. for the construction and operation of the nuclear power plant) and is owned by Vattenfall AB and Industrikraft i Sverige AB (an initiative of the largest industrial players who need new electricity generation).

In June 2026, the government announced that it will become a majority shareholder in Videberg Kraft AB.¹² The state will own 60% of the shares (each of the other owners will hold 20%). The state acquired shares in the company for 1.8 billion SEK together with a framework for future capital contributions. The main reason for the acquisition was to share risks and secure financing for the project. This agreement complements other support measures: government loans, contracts for difference (CfDs), a risk- and profit-sharing model and the state's participation in managing and funding nuclear waste management and disposal.

With the agreements on state ownership now in place, the government will submit a state aid notification to the European Commission. The Commission's decision on the state aid is anticipated in the third quarter of 2027.¹³

2026 has been a pivotal year for Videberg Kraft AB for one more reason. After surveying more than 70 technology providers, the company has concluded its four year long selection process and has chosen Rolls Royce and their pressurised water reactor (PWR) technology – the same type of technology used at Ringhals today, albeit at a smaller scale.¹⁴ Rolls Royce will provide three reactors, 470 MW each. One of the reasons why the SMR technology was chosen relates to shorter construction periods and more compartmentalised assemblage based on modular manufacturing. Critics of this approach argue that the technology remains insufficiently tested at commercial scale, noting that only a small number of such reactors are currently in operation, primarily in China and

¹² Regeringen. (2026). Nästa stora steg för ny kärnkraft i Sverige.

<https://www.regeringen.se/pressmeddelanden/2026/06/nasta-stora-steg-for-ny-karnkraft-i-sverige/>

¹³ ibid. Regeringen. (2026).

¹⁴ Vattenfall. (2026). Videberg Kraft väljer Rolls-Royce SMR som leverantör av ny kärnkraft i Sverige.

<https://group.vattenfall.com/se/nyheter-och-press/pressmeddelanden/2026/videberg-kraft-valjer-rolls-royce-smr-som-leverantor-av-ny-karnkraft-i-sverige>

Russia. The lack of widespread deployment reduces the availability of comparative data and long-term operational evidence, creating uncertainties regarding the technology's reliability, scalability, and associated project risks.¹⁵



Photo 2 – Ministerial press briefing on Videberg Kraft AB, Author: Adam Larsson Auna

Blykalla

Apart from the aforementioned development at Ringhals, the nuclear renaissance in Sweden has also attracted the interest of other stakeholders. One such actor is Blykalla, a Swedish private SMR developer. It has developed the Swedish Advanced Lead Reactor (SEALER), a small modular reactor (SMR) that is cooled by liquid lead.¹⁶ This reactor is the result of many years of research by Swedish scientists and inventors. Blykalla has applied for a licence to build six SMRs (55 MW per reactor) with a total capacity of 330 MW. The SMR nuclear power plant is supposed to be located in Norrsundet, outside Gävle

¹⁵ Svenska Epoch Times (2026). *Jan Blomgren: Statens satsning kan bana väg för mer kärnkraft* [Video]. YouTube. https://www.youtube.com/watch?v=_2ifmfioY-Y

¹⁶ <https://cordis.europa.eu/project/id/101218548/pl>

(north-central Sweden).¹⁷ The location has been chosen because the current power generation capacity in the areas limits business and industrial expansion.¹⁸ The application to the Government marks only the beginning of the approval process. Gävle Municipality retains a statutory right of veto (*vetorätt*) and must grant its consent. Provided that all necessary authorisations are obtained, the current timeline envisages the facility becoming operational during the first half of the 2030s.

Kärnfull Next AB / Studsvik

Apart from the Blykalla SMR project (application), another company Refirm Målma AB owned by Kärnfull Next AB has applied for a permit to build four to six SMRs of the light-water reactor (LWR) type.¹⁹ This would provide between 1200-1600 MW, located in the municipality of Valdemarsvik (southern Sweden). The company applied in March 2026 for state aid and government permits. The business model is similar to those of onshore wind (project development model).²⁰ However, unlike Blykalla, which is a technology company, Kärnfull Next AB is predominately a retailer that supplies electricity generated from nuclear power. The daughter company - Refirm Målma AB has partnered with South-Korean Samsung C&T to develop the SMR technology. More recently (after the application was submitted), Kärnfull Next AB was acquired by another Swedish company - Studsvik, a supplier of nuclear analysis software and specialised services to the international nuclear industry.²¹

There is already a growing local opposition to this project, mainly stemming from the fact that the company has not specified (in its application) the exact location of the reactors, the location of the deep-water port (which is a prerequisite), where the water used for

¹⁷ Finansdepartementet. (2026). *Ansökan om statligt stöd till kärnkraftsprojekt utanför Gävle*. Regeringskansliet.

<https://www.regeringen.se/pressmeddelanden/2026/06/ansokan-om-statligt-stod-till-karnkraftsprojekt-utanfor-gavle/>

¹⁸ Rejlers Play. (2025). *Då är den nya kärnkraften på plats i Sverige (Building New Nuclear Power in Sweden)* [Video]. YouTube. <https://www.youtube.com/watch?v=BP-pw00E-Bk>

¹⁹ Regeringen. (2026). *Regeringen har tagit emot ansökan om etablering av ny kärnkraft*. <https://www.regeringen.se/artiklar/2026/03/regeringen-har-tagit-emot-ansokan-om-etablering-av-ny-karnkraft/>

²⁰ Ibid. Rejlers Play. (2026).

²¹ Studsvik AB. (2026). *Studsvik expands into nuclear project development with Kärnfull Next acquisition*. <https://www.studsvik.com/news/studsvik-expands-into-nuclear-project-development-with-karnfull-next-acquisition/>

cooling will come from and how will water cooling be managed, and the route of the 400 kV transmission line.²² Opponents have pointed out that the company is working on identifying potential locations suitable for a nuclear power plant within the Valdemarsvik Municipality but also in other municipalities, namely Västervik Municipality (which is around 65 km south of Valdemarsvik Municipality). They argue that the company is not in the position to provide concrete details of the investment, luring in /deceiving local politicians with the prospects of thousands of jobs in areas with slower economic growth/prospects.²³

However, this is not the last new nuclear project as Nordic Baseload Power has also submitted an application for state aid for the construction of two large-scale nuclear reactors with a combined output of 2,500 MW at the decommissioned Barsebäck site in southern Sweden. This is thus the fourth application for state support received in the span of just three months.

It seems highly plausible that the sudden interest in new nuclear projects is largely driven by the relatively generous support scheme introduced by the government, which will be examined in greater detail in the following subsection on the governance framework. Alongside incentives for future investments, the government has also introduced compensation mechanisms for companies whose projects were affected by potential changes in energy policy. This may be burdensome for the state budget if there is a policy shift as it locks the room of manoeuvre for future governments.

Governance framework and legislative amendments

This section of the policy paper will provide a critical assessment of the government's endeavours to prepare for the new nuclear project. Implementing this policy shift has necessitated a comprehensive overhaul of governance and legislative framework, requiring the government and relevant public authorities to revise existing laws and regulations and adapt them to the energy standards and the geopolitical context of the 21st century.

²² Nej till kärnkraft i Valdemarsvik. (n.d.). *Vad är Kärnfull Next?*

<https://nejtillkarnkraftivaldemarsvik.se/karnkraftsprojektet/vad-ar-karnfull-next/>

²³ Ibid. Nej till kärnkraft i Valdemarsvik

This preparatory phase is pivotal in ensuring that all procedures, especially those related to outdated licensing and permitting regulations, are accurately modified. The Swedish approach demonstrates the importance of the preparatory phase, although it can negatively affect the initial political timeline.

Some of the first decisions back in 2023 included the government presenting its nuclear roadmap, followed by the decision of the Swedish Parliament (*Riksdag*) to allow new nuclear plants in areas other than those which already have nuclear reactors (*Ny kärnkraft i Sverige – ett första steg*).²⁴ These legislative changes, together with the government's new energy policy direction bill (*den energipolitiska inriktningspropositionen*), outlining the framework for Sweden's future energy policy, have laid the foundations for the nuclear renaissance.

However, the road to building new nuclear power plants after a 40 year hiatus (the last two power plants - Forsmark 3 och Oskarshamn 3 - were built and became operational in 1985)²⁵ requires governance, regulatory and financial frameworks, and supporting mechanisms. Beyond the established Swedish practice of appointing special investigators (*särskild utredare*) or inquiry committees (*utredningskommitté*) to analyse complex policy questions and deliver formal reports containing assessments, the government introduced an additional institutional arrangement specifically focused on accelerating the revival of nuclear power. In this context, the National Coordinator for New Nuclear Build (*den nationella kärnkraftssamordningen*) was appointed to provide strategic coordination, identify potential obstacles, serve as a contact point for stakeholders, and contribute to the effective implementation of Sweden's ambitions for new nuclear capacity.²⁶ This position is currently held by Carl Berglöf, an expert in nuclear energy with a PhD in reactor physics and extensive experience from the industry.²⁷

²⁴ Näringsutskottet. (2024). *Ny kärnkraft i Sverige* (Betänkande 2023/24:NU5). Sveriges riksdag. https://www.riksdagen.se/sv/dokument-och-lagar/dokument/betankande/ny-karnkraft-i-sverige_hb01nu5/

²⁵ Pershagen, B. (no date). *Sveriges kärnkraftshistoria*. Swedish Nuclear Society. <https://swedishnuclear.se/kaerntechnik/sveriges-kaernkraftshistoria/>

²⁶ Kärnkraftssamordningen. (n.d.). *Om oss*. <https://karnkraftssamordningen.se/om-oss/>

²⁷ Energiföretagen Sverige. (2024). *Carl Berglöf blir regeringens kärnkraftssamordnare*. <https://www.energiforetagen.se/pressrum/nyheter/2024/januari/carl-berglof-blir-regeringens-karnkraftssamordnare/>



Photo 3 – Ministerial press briefing on nuclear energy development, Author: Daniel Karlsson Lönnö

Nuclear Power Inquiries - what do they bring into the legislative picture?

As aforementioned, the Swedish governance system requires that in complex and/or contentious matters, a special investigator or committee assesses the issue and provides a comprehensive report about the possible solutions and course of action. As pertains to nuclear new build, the government has established three special investigators, one spearheading the Nuclear Power Permitting Inquiry²⁸, the other assessing the Nuclear Power Review Inquiry,²⁹ which focused on the issue of how to handle nuclear waste and the most recent one on the Nuclear Power Compensation Inquiry.³⁰

²⁸ Kärnkraftsprövningsutredningen. (2025). *Ny kärnkraft i Sverige – effektivare tillståndsprövning och ändamålsenliga avgifter* (SOU 2025:7). Regeringskansliet.

<https://www.regeringen.se/rattsliga-dokument/statens-offentliga-utredningar/2025/01/sou-20257/>

²⁹ Kärnkraftsprövningsutredningen. (2025). *Ny kärnkraft i Sverige – ett samlat system för omhändertagande av radioaktivt avfall* (SOU 2025:104).

<https://www.regeringen.se/rattsliga-dokument/statens-offentliga-utredningar/2025/10/sou-2025104/>

³⁰ Kärnkraftsersättningsutredningen. (2026). *Rätt till ersättning vid avveckling av kärnkraft på grund av politiska beslut: Reaktorer som inte tagits i drift* (SOU 2026:47).

<https://www.regeringen.se/rattsliga-dokument/statens-offentliga-utredningar/2026/06/sou-202647/>

It is worth examining the content of these documents in greater detail, as they show the meticulous and planning-oriented manner of conducting public policy in Sweden. Although the government's rhetoric may at times suggest a sense of urgency, and its actions regarding nuclear energy development may appear expedited (not least with references to the proverbial "shovel in the ground before the election"),³¹ the underlying policy process is more carefully structured than it might initially seem. The findings of the special investigators and the interim reports produced by the National Coordinator for New Nuclear Build represent well-considered, evidence-based assessments that take into account practical realities on the ground, as well as the limitations of the existing governance and legislative frameworks. Moreover, they offer specific proposals to overcome the identified shortcomings. Each of the aforementioned inquires in a 500 pages document, which meticulously examines all the legal provisions that require amendments.

Permitting is a crucial process in the Swedish nuclear power plant timeline, but the framework has been regarded as complicated. In her first report, the Special Investigator concludes that the existing permitting regime - currently undergoing legislative reform - is no longer fit for purpose. The present system requires parallel licensing procedures under two separate legal frameworks: the Nuclear Activities Act (*lagen om kärnteknisk verksamhet*) and the Environmental Code (*miljöbalken*). Based on these laws different entities approve the permits – the Swedish Radiation Agency (as pertains to the Nuclear Activities Law) and the Land and Environment Court (as pertains to the Environmental Code). In the former case the decision is anchored in international practice (e.g. recommendations from the IAEA) and involves a stepwise process.³² Moreover, provisions pertaining to safety and radiation protection aspects can also be found in both documents.³³ This dual permitting process has been deemed as too complicated and overburdening.

³¹ Winberg, J. Z. (2025). *Strålsäkerhetsmyndigheten: Regeringens tidsplan för ny kärnkraft håller inte*. SVT Nyheter. <https://www.svt.se/nyheter/inrikes/regeringens-tidsplan-for-ny-karnkraft-haller-inte>

³² Kärnkraftsprövningsutredningen. (2025). *Ny kärnkraft i Sverige – effektivare tillståndsprövning och ändamålsenliga avgifter* (SOU 2025:7). Regeringskansliet. p. 19-20

³³ Foyen Advokatfirma. (2025). *Ny kärnkraft i Sverige – hur förändras tillståndsprövningsprocessen?* <https://www.foyen.se/aktuellt/ny-k%C3%A4rnkraft-i-sverige-hur-f%C3%B6r%C3%A4ndras-tillst%C3%A5ndsprocessen>

Thus the Nuclear Power Permitting Inquiry has proposed specific legislative amendments, namely the adoption of a new Act on Principle Decisions (*lag om principbeslut*). The stipulated change would address the political dimension of nuclear projects at an early stage and reduce the risk of late-stage rejections. As for the Environmental Code, the special investigator proposes that the Land and Environment Court's assessment should concern primarily environmental impact and not nuclear safety and security elements. It is worth emphasising that this is not the solemn amendment to the Environmental Code (please see below for more details.) The proposed legislative changes have been considered a step in the right direction, leading to a more efficient and predictable permitting process.

The second special investigator led the Nuclear Power Review Inquiry. The aim of the inquiry is to establish a coherent system for the management of radioactive waste and spent nuclear fuel that will go beyond the current needs but also address future challenges.³⁴ The current system is based on all nuclear power operators paying a fee for every kwh of electricity generated into the Swedish Nuclear Waste Fund.

The special investigator stipulates that an entirely new, unified system of managing radioactive waste should be designed, aiming to establish new legislative solutions and introduce a new coordinator for nuclear waste.³⁵ One reason for a new system stems from the fact that radioactive waste and spent fuel from new reactors cannot be accommodated in the disposal facilities that currently exist. Recently, the government has decided to take on some of the risks related to managing radioactive waste, e.g. by setting aside SEK 183 billion for managing nuclear waste for the next 124 years starting from 2035.³⁶

Finally, the latest report by the special investigator seems to address an issue somewhat resolved by the government, i.e. the new law on nuclear energy project application and compensation.

³⁴ Kärnkraftsprövningsutredningen. (2025). *Ny kärnkraft i Sverige – ett samlat system för omhändertagande av radioaktivt avfall* (SOU 2025:104), p. 18

³⁵ Kärnkraftsprövningsutredningen. (2025). *Ny kärnkraft i Sverige – ett samlat system för omhändertagande av radioaktivt avfall* (SOU 2025:104), p. 20

³⁶ SVT (2026). *Regeringens besked: 183 miljarder till nytt lager för kärnavfall*. SVT Nyheter.

<https://www.svt.se/nyheter/inrikes/regeringens-besked-183-miljarder-till-nytt-lager-for-karnavfall>

Other legislative changes undertaken in the last year

It is worth noting that the government acts upon the proposals of the special investigators and those of the national coordinator. At times the required changes are implemented by other relevant authorities. The processes of amending/implementing necessary changes are diligently monitored by the national coordinator.³⁷ Given such granular work at the preparatory phase, the government has a clear plan forward. Within the last year, the government has prepared the governance and legislative groundwork. Most recently, the parliament (Riksdag) has voted into law the following bills:

- Sections 3–4 of the Environmental Code, meant that large parts of the Swedish coastline were effectively closed to nuclear power development. On 5 March 2026, the Government submitted a bill on new locations (*Ny kärnkraft i Sverige – fler möjliga platser vid kusten*) to Riksdag. The bill proposes to remove the prohibition on nuclear installations from coastal areas and archipelagos.³⁸ In practical terms, this means that a substantial number of coastal areas that have previously been unavailable for nuclear power development will become eligible for consideration.
- Another bill that has been recently approved is the new Act on Government Approval of Nuclear Installations (*lag om en mer ändamålsenlig prövning av kärntekniska anläggningar*).³⁹ It replaces some of the provisions of the Environmental Code pertaining to application and permitting. The government would be able to approve a nuclear facility if it has previously adopted a plan for nuclear facilities covering the area and the installations to which the application relates. The law does not alter the so-called municipal veto or municipal consent, which remains a mandatory precondition for the project's approval.

³⁷ Nationell samordnare för utbyggnad av kärnkraft. (2025). *Delrapport 3: Redovisning av Kärnkraftssamordnarens insatser avseende utbyggnad av ny kärnkraft i Sverige – november 2025*. Kärnkraftssamordningen.

<https://karnkraftssamordningen.se/aktuellt/karnkraftssamordnarens-tredje-delrapport-till-regeringen/>, p. 10–11

³⁸ Regeringen. (2026). *Ny kärnkraftsreglering – öppna upp för fler platser för kärnkraft* (Prop. 2025/26:160). Riksdagen <https://data.riksdagen.se/dokument/HD03160>

³⁹ Regeringen. (2026). *En mer ändamålsenlig prövning av kärntekniska anläggningar* (Prop. 2025/26:171). Regeringen. <https://www.regeringen.se/rattsliga-dokument/proposition/2026/03/prop.-202526171>

- The last legislation worth mentioning is the Act on State Support for Investments in New Nuclear Power (lag om statligt stöd för investeringar i ny kärnkraft).⁴⁰ It details the support of the state to new nuclear projects, which materialises in two forms: government loans and Contracts for Difference (CfDs). The loans cover construction and commissioning, while the CfDs agreement provides a minimum price during the nuclear power plants operation. Support may be granted to dedicated project companies for nuclear reactors with a combined installed capacity of at least 300 MW at one site.⁴¹

Some limitations

Despite such extensive preparatory work on the legislative frameworks, further governance work is required. One such sphere related to nuclear skills and competences. The national coordinator for new nuclear build has explicitly stated that the current nuclear expertise pool is limited and person-dependent.⁴² One institution, which is dependent on such highly-specific expertise and skill set is the Swedish Radiation Safety Authority, which requires experts in a number of nuclear energy related subsectors including nuclear engineering, reactor physics, thermal hydraulics, severe accidents and nuclear chemistry, and nuclear material control and non-proliferation.

Expert assessments produced by Swedish and international institutions with relevant subject-matter expertise indicate that the state lacks a national strategy for competence supply specifically within the field of radiation safety.⁴³ The National Coordinator for Nuclear New Build has drawn attention to the United Kingdom's experience and its

⁴⁰ Lag (2025:587) om statligt stöd för investeringar i ny kärnkraft. (2025). <https://lagen.nu/2025:587>

⁴¹ Foyen Advokatfirma. (2026). *Ny kärnkraft i Sverige – spelplanen ritas om*. Foyen.

<https://www.foyen.se/aktuellt/ny-k%C3%A4rnkraft-i-sverige-spelplanen-ritas-om>

⁴² Nationell samordnare för utbyggnad av kärnkraft (2026). *Delrapport 5: Rekommendationer avseende kompetensförsörjning för ny kärnkraft*. Kärnkraftssamordningen.

<https://karnkraftssamordningen.se/aktuellt/karnkraftssamordnarens-femte-delrapport-till-regeringen/>, p.2

⁴³ Strålsäkerhetsmyndigheten, & Lysio Research. (2025). *Framtidens kompetensbehov inom strålningsområdet*. Strålsäkerhetsmyndigheten.

<https://www.stralsakerhetsmyndigheten.se/globalassets/forskningsfinansiering/las-rapporten-framtidens-kompetensbehov-inom-stralningsområdet.pdf> ; Research Institutes of Sweden. (2025). *Kunskapslyft krävs när Sverige ska bli kärnkraftsnation*. RISE.

<https://www.ri.se/sv/energi-och-elektrifiering/elproduktion/karnkraft/berattelse/kunskapslyft-kravs-nar-sverige-ska-bli>

competence-building framework as a potential reference point, while acknowledging the significant differences in the governance structures underpinning competence development in the UK and Sweden.⁴⁴

Value chain composition and comparative advantages

A comprehensive report published in 2025 by Business Sweden on behalf of the Swedish Government analyses the national value chain for new nuclear energy build, mapping domestic capabilities and international dependencies.⁴⁵ The report breaks down the Swedish nuclear programme into six well-defined segments: Development, Construction, Primary Circuit (the nuclear island), Secondary Circuit (the turbine island), Balance of Plant (BoP) and Switchyard, with each of them having different cost and technical characteristics, as well as different levels of national and regional capabilities.⁴⁶

	DEVELOPMENT	CONSTRUCTION	PRIMARY CIRCUIT <i>Nuclear Island</i>	SECONDARY CIRCUIT <i>Turbine Island</i>	BALANCE OF PLANT	SWITCHYARD <i>Grid connection</i>
	-10% of costs*	-40% of costs	-15% of costs	-15% of costs	-15% of costs	-5% of costs
Swedish capabilities	Moderate capabilities	Moderate capabilities	Limited capabilities	Limited capabilities	Moderate capabilities	Strong capabilities
Nordic offering (incl. Sweden)	Moderate capabilities	Strong capabilities	Limited capabilities	Moderate capabilities	Strong capabilities	Very strong capabilities
International dependency	High dependency (reactor core design)	Moderate capabilities (management experience for nuclear projects)	Full dependency	High dependency (turbine)	Moderate capabilities (nuclear graded products)	Low dependency

Figure 3 - Domestic capabilities throughout the value chain, Source: Business Sweden

With decades of experience in integrating nuclear power into the electricity system, Swedish and Nordic capabilities have become particularly significant towards the latter stage of the nuclear project lifecycle, especially in grid connection and the BoP. Sweden is home to global leaders in the field of transformers and switchgear, such as Hitachi Energy

⁴⁴ Nationell samordnare för utbyggnad av kärnkraft (2026). *Delrapport 5: Rekommendationer avseende kompetensförsörjning för ny kärnkraft*. Kärnkraftssamordningen.
<https://karnkraftssamordningen.se/aktuellt/karnkraftssamordnarens-femte-delrapport-till-regeringen/>, p.7

⁴⁵ Business Sweden. (2025). *Powering the Future: Analysis of Sweden's Nuclear New Build Value Chain*.
<https://www.business-sweden.com/4a5d71/contentassets/91536de8e3fc4630a3f5fb0edd2ed5f9/powering-the-future.pdf>

⁴⁶ Business Sweden, *Powering the Future*, pp. 3-4.

(a joint venture between Hitachi and ABB formed in 2020) and ABB, and has an extensive base of high-voltage cable manufacturers, including NKT, Amokabel and Habia Cable, making Swedish companies able to supply most of the components and services for nuclear switchgear.⁴⁷ With vast experience in delivering major infrastructure projects, local capabilities in nuclear construction are also regarded as substantial. Companies such as Skanska and NCC have a proven track record of working on nuclear facilities, including the expansion of the waste repository (SFR) at Forsmark and the construction of test facilities for a new generation of reactors at Oskarshamn.⁴⁸ The challenge comes down to scale, as a potential future construction of a large-scale reactor (LSR) would require the involvement of 7,000–10,000 workers, almost equivalent to the entire workforce of the country's two largest construction firms.

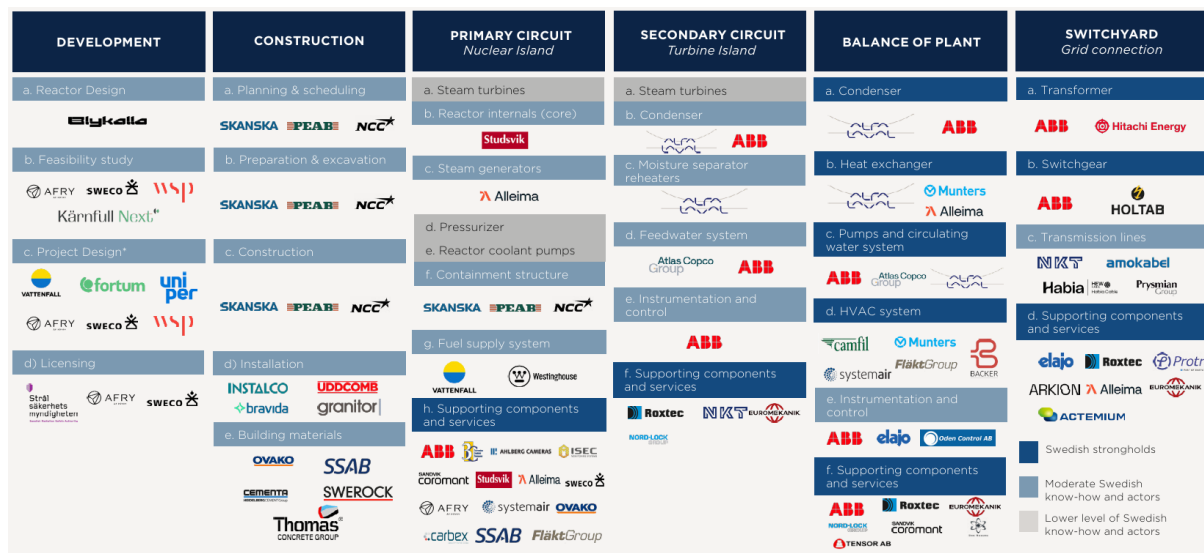


Figure 4 - Swedish companies throughout the value chain, Source: Business Sweden

What makes Sweden stand out in the nuclear value chain is the fact that the country has a nuclear fuel facility that manages the entire process of manufacturing fuel from enriched uranium.⁴⁹ The plant is located in Västerås. It is owned by Westinghouse Electric Sweden, which since 2023 has been part of Brookfield Renewable (BEP) and Cameco. The nuclear

⁴⁷ Ibid Business Sweden, *Powering the Future*, pp. 39-40.

⁴⁸ Ibid. Business Sweden, *Powering the Future*, pp. 31-32.

⁴⁹ Strålsäkerhetsmyndigheten. (2024). Westinghouse Electric Sweden. Strålsäkerhetsmyndigheten. <https://www.stralsakerhetsmyndigheten.se/omraden/karnkraft/karntekniska-anlaggningar-i-drift-i-sverige/westinghouse-electric-sweden/>

fuel facility supplies not only nuclear fuel, but also reactor components, electrical and control systems to a wide range of customers globally.

Critical international dependencies remain particularly visible in the Primary and Secondary Circuit, as well as in the reactor design and development. Given that Sweden has not built a single new reactor since the 1980s, the country has effectively lost the ability to develop new nuclear projects independently. The shortcomings stem mainly from a lack of domestic intellectual property rights to reactor technologies and production capacity for key, highly specialised components, such as pressure vessels, heavy forgings, steam turbines and generators.⁵⁰ As a result, Sweden must rely on partnerships with international technology suppliers which means that the role of Swedish industry in these sectors is currently limited to supporting functions, such as analytics, integration engineering and construction work on the containment structure.

The development of new nuclear facilities in Sweden is expected to bring significant economic benefits and is regarded as a strategic project for the country. According to the baseline scenario, a single large-scale reactor (LSR) with a capacity of 1,200 MW could generate around SEK 50 billion in domestic investment, a contribution of SEK 40 billion to Swedish GDP and the creation of nearly 33,500 full-time equivalent (FTE) jobs.⁵¹ In the case of a small modular reactor (SMR) with a capacity of 300 MW, domestic investment is estimated at SEK 12 billion, with a contribution to GDP of SEK 9 billion and the creation of around 7,500 jobs. The analysis shows that knowledge-intensive activities, such as licensing, design and R&D, offer the highest return on GDP, achieving a value-added multiplier of 0.63.⁵² The civil construction sector remains the biggest driver of employment, generating over 1,300 jobs for every billion crowns invested.

The Business Sweden report repeatedly emphasises the need to coordinate plans for the development of nuclear energy on a regional level. In order to fully leverage the advantages and encourage global technology suppliers (OEMs) to build module factories in Sweden or the Nordic region, it is essential to ensure a steady orderbook of sufficient scale. The break-even point for fully localising module production is estimated at 7 GW⁵³

⁵⁰ op. cit. Business Sweden, *Powering the Future*, pp. 26-28.

⁵¹ Ibid. Business Sweden, *Powering the Future*, p. 5.

⁵² Ibid. Business Sweden, *Powering the Future*, p. 46.

⁵³ Ibid. Business Sweden, *Powering the Future*, pp. 48-49.

of capacity in the region, whilst a scale of 4–7 GW already justifies the construction of plants for the prefabrication of steel structures and modules. Given the current plans of Sweden and its neighbours, Finland, Estonia and Norway, which amount to a total of 7–10 GW of new capacity by 2045, the region has the potential to become an attractive production hub and centre of nuclear expertise, which would enable Sweden to evolve into a regional technology supplier.

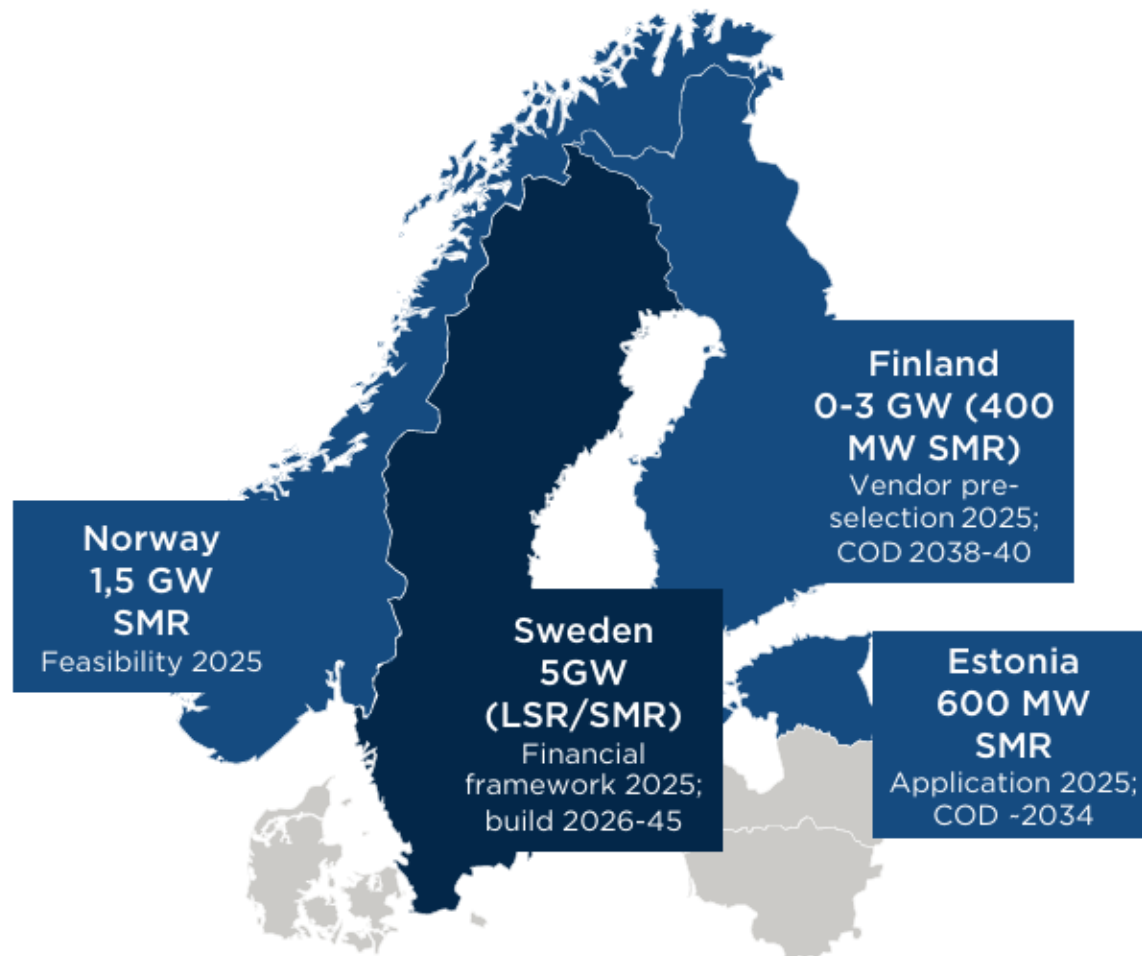


Figure 5 - Plans of the nuclear energy development in the Nordic-Baltic Region, Source: Business Sweden

However, a complementary assessment of Sweden's nuclear infrastructure in the context of the planned expansion prepared by the engineering and consulting firm AFRY highlights further systemic gaps and structural bottlenecks within the Swedish nuclear ecosystem.⁵⁴ Contrasting Business Sweden's optimism, the report indicates that substantial

⁵⁴ AFRY. (2025). *Självutvärdering av aktuell status inom svensk kärnkraftinfrastruktur för utveckling av ny kärnkraft*.

<https://karnkraftssamordningen.se/wp-content/uploads/2025/06/AFRYs-slutrapport-Sjalvutvardering-av-aktuell-status-inom-svensk-karnkraftinfrastruktur-for-utveckling-av-ny-karnkraft.pdf>

interventions are required before any new build plans can materialise. In the preparation stage the most significant shortcomings were identified in the areas of national strategy and human resources development. Despite clear political declarations, Sweden still lacks a unified national nuclear strategy that would fully justify and define a roadmap for new nuclear deployments in accordance with International Atomic Energy Agency (IAEA) standards. Although the country has significant experience in nuclear plant operations, there is still a shortage of specialists with direct experience in the construction of new nuclear reactors. New projects will have to compete for staff with existing power stations, and there are no specific plans for recruiting and training staff for the construction and operational phases. With regard to financing, despite government proposals for risk-sharing models, prolonged negotiations on financing arrangements have affected the level of confidence among lenders and private investors.

Another key issue that still needs to be clarified are the financial arrangements between the state and private investors concerning the long-term management and disposal of the nuclear waste generated by new reactors. The current nuclear waste management system (SKB) is legally and technically designed to cater for the existing 12 reactors and it does not automatically cover waste from the new nuclear programme.



Photo 4 – Forsmark nuclear power plant, Source: Vattenfall AB

Bottlenecks and risks

Financing

The costs of a nuclear power project can be divided into three main categories: construction financing, and operating and decommissioning costs. Construction costs are high, and the time required for construction is lengthy compared with other forms of power generation. Investment and financing costs therefore account for a significant proportion of the total cost of nuclear power.

As aforementioned the government has taken a bulk of responsibilities related to the financial side of the new nuclear build; these commitments include state credit guarantees, favourable loans, extensive risk-sharing, a guaranteed high electricity price for 40 years - 80 öre per kWh (€0.07) based on the contract for differences (C-f-D) and financial responsibility for radioactive waste.⁵⁵

Critics emphasise the huge cost burdens that will be paid by the taxpayers in the long-run.⁵⁶ Opposition to reviving nuclear power does not solemnly come from the Green party or environmental activists, but also from experts, scholars and financial institutions. Experts from the liberal think tank Timbro argue that a guaranteed, pre-determined price is against liberal market principles as it allows the state to set and control the electricity pricing thus weakening the market role.⁵⁷ Furthermore, another potential adverse consequence is that the policy may reduce incentives for companies to invest in alternative energy sources. Finally, the Swedish Fiscal Policy Council (Finanspolitiska rådet) - a government agency tasked with providing an independent evaluation of the Government's fiscal policy- has expressed concern that the state's financial involvement in the nuclear project will affect public finance at a time of increased defence spending. In the council's opinion, the project will put further pressure on public finances.⁵⁸

⁵⁵ Elander, S. (2026). *Timbro sågar regeringens kärnkraftsplan: "Jätteskeptisk"*. Klimatgranskaren. <https://klimatgranskaren.se/timbro-sagar-regeringens-karnkraftsplan-jatteskeptisk/>

⁵⁶ Ibid. Elander S. (2026)

⁵⁷ Kopsch, F. (2025). *Därför tänker regeringen fel om kärnkraften*. Timbro. <https://timbro.se/smedjan/darfor-tanker-regeringen-fel-om-karnkraften/>

⁵⁸ Finanspolitiska rådet. (2026). *Svensk finanspolitik 2026: Finanspolitiska rådets rapport*. Finanspolitiska rådet. <https://www.fpr.se/publikationer/arsrapporter.html>

Proponents of the nuclear renaissance argue that Sweden needs new electricity generation and that such a financial model gives more stability and predictability to prospective project developers.⁵⁹ Sweden has moved from restricting nuclear power development to three locations to opening up the coastline for potential new projects. This represents a historic shift. Whether it results in actual nuclear construction will not be determined by legislation alone, but by the actors that choose to make use of the new regulatory and financial instruments. The fact that the first application for new nuclear reactor deployment in 50 years was submitted only weeks after the legislative package was presented demonstrates that developments are now progressing rapidly.

It may also be argued that, by assuming a significant share of the financial risks and introducing statutory compensation mechanisms in the event of future policy changes, the current government has increased the political and legal costs of reversing the nuclear policy. This may, in turn, constrain the policy choices available to future governments pursuing a different energy policy orientation.

Timeline

Another risk concerns the ambitious timeline set by the government, which aims to have new reactors operational by the mid-2030s. The government has initiated several steps to enable nuclear energy development, including the aforementioned legislative changes and state participation in the financing model. However, the model must first be approved by the European Commission under EU state aid rules (expected around the third quarter of 2027), followed by formal permitting procedures involving municipal approval, the Swedish Radiation Safety Authority, the Environmental Court, and consultations with the Swedish Armed Forces. A final investment decision is therefore not expected until around 2030, after which construction would likely take an additional five to seven years.

The feasibility of this timeline depends on several factors, including the choice of reactor technology, the timing and scale of investment decisions, the industry's capacity to deliver

⁵⁹ Dagens Nyheter. (2025). *Industrin satsar på ny kärnkraft ihop med Vattenfall*. Dagens Nyheter. <https://www.dn.se/sverige/industrin-satsar-pa-ny-karnkraft-ihop-med-vattenfall/>

projects, and developments in nuclear expansion in other countries affecting technology availability and supply chains.⁶⁰

Nuclear waste

There is currently a functioning system in place for managing nuclear waste from the existing nuclear power programme. Since the mid-1980s, a final repository for so-called operational waste, SFR, and an interim storage facility for spent nuclear fuel, Clab, have been in operation. What remains is to construct and bring into operation a final repository for spent nuclear fuel and long-lived radioactive waste.

SKB has developed a method for this purpose whereby the fuel is placed in copper canisters surrounded by bentonite clay approximately 500 metres deep in the Swedish bedrock at Forsmark in the Municipality of Östhammar. The parts of the system intended to manage the encapsulation and final disposal of spent nuclear fuel are currently being prepared.

Security considerations and a threat assessment

Following the full-scale invasion of Ukraine and Sweden's accession to NATO, the planned expansion of nuclear energy has been re-evaluated through the lens of national security and the Total Defense (*Totalförsvaret*) framework. The strategic guidelines drawn up by the Swedish Armed Forces (*Försvarmakten*) and the Civil Defence Agency (*Myndigheten för civilt försvar*) in the document called '*Utgångspunkter för totalförsvaret 2025–2030*' (Foundations of Total Defence 2025–2030) directly identify damaged nuclear power stations as a potential source of radioactive contamination.⁶¹ Drawing on lessons from the war in Ukraine, particularly the occupation of the Zaporizhzhia Nuclear Power Plant and systematic strikes on grid infrastructure, Swedish defense planners recognize that enemy forces do not need to breach a reactor's containment structure to cause severe disruption. Instead, targeted attacks on surrounding transformer stations, cooling systems, or spent fuel storage facilities can induce severe power grid collapse or trigger radiological

⁶⁰ En nationell samordnare för utbyggnad av kärnkraft. (2025). *Delrapport 3: Redovisning av Kärnkraftssamordnarens insatser avseende utbyggnad av ny kärnkraft i Sverige*. En nationell samordnare för utbyggnad av kärnkraft, p.16

⁶¹ Försvarmakten & Myndigheten för civilt försvar. (2026). *Utgångspunkter för totalförsvaret 2025–2030*. <https://rib.msb.se/filer/pdf/31385.pdf>

blackmail. As a result, expanding nuclear capacity inherently increases Sweden's military vulnerability surface, requiring continuous operational readiness to protect these strategic assets against long-range missile strikes, drone surveillance, and state-sponsored sabotage.

A political assessment of how the upcoming election can influence the development of nuclear energy

While the current governing coalition maintains a strong consensus regarding the necessity of expanding nuclear capacity, the future of Sweden's nuclear renaissance remains uncertain in case of a possible government change following the September general election. The question remains at the heart of the ongoing campaign and has been a dominant topic in the pre-election television debates between political leaders.⁶²



Photo 5 – The Swedish Parliament (*Riksdag*), Author: Melker Dahlstrand/Swedish Parliament

Although the standpoints of all four opposition parties have been clearly set out in their election programmes, the approach of the **Social Democrats (Socialdemokraterna – S)**, the largest opposition party, remains highly ambiguous. After years of advocating for a gradual phase-out of reactors in favour of renewable energy sources, the party's stance on nuclear power has shifted towards a more favourable one. In their 2026 election

⁶² SVT. (2026). Partiledardebatt 2026/05/03 - del 1. [Video]. YouTube. <https://youtu.be/2ecsBgtP4a4>

programme, the Social Democrats agreed to the construction of new reactors, but only at the sites of already existing power plants (Ringhals, Forsmark, Oskarshamn), firmly opposing governmental subsidies intended exclusively for nuclear power and demanding technological neutrality in the long-term energy system development strategy.⁶³

Both the **Left Party (*Vänsterpartiet* – V)** and the **Greens (*Miljöpartiet de gröna* – MP)**, who technically could become coalition partners in a potential Social Democratic government, have historically always been opposed to the expansion of nuclear power. The Greens reject the construction of any new reactors (both large ones and SMRs), arguing that the government's support for nuclear power is delaying the climate transition, hindering the development of low-cost offshore wind power, and creating unresolved financial and environmental risks.⁶⁴ Similarly, the Left Party rejects the plans to expand nuclear power as a way out of fossil dependence, emphasising the environmental and social impact of uranium mining, nuclear fuel production and its eventual disposal.⁶⁵ Both parties advocate for a large-scale expansion of renewable energy sources, accelerated electrification without nuclear power, and a return to a systemic target of 100% renewable energy.

The **Centre Party (*Centerpartiet* – C)**, also viewed as a potential coalition partner for the Social Democrats, has ceased to oppose nuclear power on principle and agreed to the repeal of the legally-imposed limit on the number of reactors. However, the party firmly opposes government loans and price guarantees, maintaining that any new reactor project must be commercially viable under free-market conditions.⁶⁶

Given differences in their economic and energy policies, the prospect of a government coalition comprising all four of the current opposition parties seems unlikely. The Left Party has already announced that it will not support a government in which it does not receive ministerial posts and the Centre Party maintains that it will not join a government that includes the Left.⁶⁷ Although the Social Democrats led by former PM Magdalena

⁶³ Socialdemokraterna. (2026). Kärnkraft. <https://www.socialdemokraterna.se/var-politik/a-till-o/karnkraft>

⁶⁴ Miljöpartiet. (2026). Kärnkraft och radioaktivt avfall.

<https://www.mp.se/bollnas/politik/karnkraft-och-radioaktivt-avfall/>

⁶⁵ Vänsterpartiet. (2026). Kärnkraft. <https://www.vansterpartiet.se/var-politik/politik-a-o/karnkraft/>

⁶⁶ Centerpartiet. (n.d.). Kärnkraft.

<https://www.centerpartiet.se/centerpartiets-politik/centerpartiets-politik-a-o/energi/karnkraft>

⁶⁷ Kvartal. (2026). Intern kritik mot Dadgostars ministerkrav.

<https://kvartal.se/nyheter/artiklar/intern-kritik-mot-dadgostars-ministerkrav/cG9zdDo5NzgwMA>

Andersson are clearly leading in the election polls, they may struggle to secure support even for a minority government.⁶⁸ The scenario in which the centre-right coalition retains power also remains possible. The main uncertainty comes down to the support for the Liberal Party (L), currently below the electoral threshold (4%), and the question of the Swedish Democrats' (SD) role, as they become increasingly vocal in their demands for official entry into the government, pointing to their electoral mandate.⁶⁹

The issue of nuclear power is becoming increasingly present in the ever more polarised political landscape, drawing heavily on right-wing nostalgia for the nation's post-war era of prosperity. In this vision, reviving atomic energy represents a return to a time when cheap, reliable power fueled the Swedish welfare state and established the country as a global economic power.⁷⁰ The government ministers and spokespeople regularly warn voters that a Social Democratic victory will result in the permanent flight of heavy industry from Sweden due to the lack of guarantees for a stable electricity supply.⁷¹

It is worth noting that unlike in Poland where there is strong support for nuclear energy, the Swedish public is more divided on the matter. Opinion polls indicate that just over half of the Swedish population is in favour of nuclear energy, while only a third would like to have such a facility in their neighbourhood, which is not that all surprising given the well-known NIMBY effect).⁷² Interestingly, there are differences in support for nuclear among men and women (three times as many men support nuclear as women) and there is a clear political cleavage among those that support the current government and those that vote for the opposition (69% of proponents of the government support development of nuclear energy, while only 9% of opposition voters share this view).

⁶⁸ ewybory.eu. (n.d.). Sondaże / Szwecja <https://ewybory.eu/sondaze/szwecja/>

⁶⁹ Gasslander, T. (2026). *Åkesson: Om högern vinner valet vill vi ha hälften av ministerposterna*. Omni. <https://omni.se/akesson-om-hogern-vinner-valet-vill-vi-ha-halften-av-ministerposterna/a/OpLVOE>

⁷⁰ SVT. (2025). *Spelet om kärnkraften: 3. In i det okända*. <https://www.svtplay.se/video/8rQomzQ/spelet-om-karnkraften/3-in-i-det-okanda>

⁷¹ Tidningen Näringslivet. (2023). Busch: "Välstånd ska byggas med kärnkraft". <https://www.tn.se/article/29564/busch-valstand-ska-byggas-med-karnkraft/>

⁷² Sveriges Radio. (2026). *Varannan svensk för ny kärnkraft – en av tre i sin kommun*. Sveriges Radio. <https://www.sverigesradio.se/artikel/varannan-svensk-for-ny-karnkraft-en-av-tre-i-sin-kommun>

Proposed alternatives to nuclear energy

The opposition's criticism of the government's nuclear renaissance strategy revolves largely around its disproportionately high costs in comparison to renewable energy sources. The Left Party and the Greens repeatedly oppose state subsidies and long term price guarantees for new nuclear capacity and emphasise the competitive price advantage of renewables, especially regarding the offshore wind projects. The current political dispute over the future of Sweden's energy system largely comes down to an increasingly ideological conflict between supporters of nuclear power and advocates of offshore wind energy whose development has been blocked as a result of the 2024 veto by the Swedish Armed Forces (*Försvarsmakten*).⁷³

A 2025 report prepared by researchers at Chalmers University of Technology analyses the most cost-effective ways of meeting Sweden's rapidly growing energy demand. The document compares three main scenarios: 1) one with no nuclear build allowing for full use of offshore wind, 2) one with no nuclear build and the existing cap on offshore wind power in the southern Baltic Sea, and 3) one involving a significant expansion of nuclear capacity with the offshore wind cap maintained. The main conclusion of the report is that a system based on new nuclear power (in this case 6 GW by 2065) involves significant additional costs to society, estimated at between 660 and 1,490 million euros per year, compared with systems based on renewable energy sources. Although systems dominated by wind power require greater expenditure on grid balancing (batteries, gas turbines, synchronous compensators), these costs (around EUR 110–120 million euros per year) are still significantly lower than the difference in investment costs compared with nuclear power. The report also refutes the claim that nuclear power guarantees low variability in energy prices, as Sweden is integrated into the Northern European market dominated by variable wind power generation.

The industry report 'FörNUbart 24/7', produced jointly by Siemens Energy, OX2 and Svensk Vindenergi, further demonstrates that it is possible to meet the projected energy and capacity shortfall in southern Sweden using only renewable energy sources and

⁷³ Regeringskansliet. (2024). Avslag på 13 havsbaserade vindkraftparker i Östersjön.
<https://www.regeringen.se/pressmeddelanden/2024/11/avslag-pa-13-havsbaserade-vindkraftparker-i-os-tersjon/>

technologies that are already commercially available today.⁷⁴ The strategy relies mainly on a large-scale expansion of onshore and offshore wind farms and solar power, as well as the use of batteries and e-fuels to stabilise the grid. The model indicates that the optimal installation would include 7,000 MW of offshore wind power, 8,500 MW of onshore wind power, 12,000 MW of solar power and 1,400 MW of battery storage. The authors argue that with capital expenditure of around 430 billion SEK, it is possible to build a well-balanced system capable of ensuring sufficient capacity at every hour of the year, even under the most extreme weather conditions.

Although the most ardent supporters of nuclear and offshore wind power often present these two solutions as almost mutually exclusive, there exists, of course, the possibility of developing an energy system that combines both of them. As often stated by the politicians from the government coalition in response to the claim that expanding nuclear capacity is economically unfeasible, the real risk is not the over-development of a single technology, but rather the under-development of them all as Sweden needs to almost double its electricity generation by 2045.⁷⁵



Photo 6 – Kriegers Flak Offshore Wind Farm, Source: Vattenfall AB

⁷⁴ Siemens Energy, OX2, & Svensk Vindenergi. (2024). *FörNUbart 24/7*.

https://www.ox2.com/files/Sweden_documents/energiomstallningen/FORNUBART247.pdf

⁷⁵ SVT. (2026). Partiledardebatt 2026/05/03 - del 1. [Video]. YouTube. <https://youtu.be/2ecsBgtP4a4>

Recommendations for Poland

While Poland and Sweden differ significantly in their nuclear tradition and domestic technical expertise, the Swedish experience can offer practical insights for Polish policymakers. Specifically, Poland should:

- **Adopt a Whole-of-Government (WoG) Approach** **a)** Learn from the Swedish example of meticulous and advance planning, reviews as an inspiration on how to spearhead the governance framework; **b)** Think about introducing an entity outside government, yet within the public administration parameters that can evaluate in advance the shortcoming of the system, Swedish examples of the coordinator (not entirely similar to the Polish plenipotentiary for strategic energy infrastructure) and the special investigator
- **Drive Regional Demand Aggregation:** Lead a procurement alliance with neighboring CEE countries planning nuclear deployments (particularly SMRs) to aggregate regional demand, thereby reaching the critical orderbook scale needed to incentivize global original equipment manufacturers (OEMs) to invest in local manufacturing hubs.
- **Update the Radioactive Waste Framework:** Expand the national nuclear waste strategy to explicitly accommodate spent fuel compositions from SMRs alongside large-scale reactors, establishing early regulatory clarity and dedicated reserve funds to secure public trust and mitigate local opposition (NIMBY).
- **Consolidate a Centralised National Strategy for Nuclear Human Capital:** Integrate fragmented academic initiatives, such as the "Nuclear at Universities" (*Atom na uczelniach*) programme and specialised postgraduate courses, under a unified national framework to prevent severe workforce shortages and institutional talent poaching.

Recommendations for Sweden

While Sweden possesses a mature nuclear infrastructure and a 50-year operational track record, the ambition to construct up to 10 new reactors requires taking decisive targeted steps. Specifically, Sweden should:

- **Consider Reestablishing the Good Tradition of a Broad Political Agreement:** Build a long-term consensus between the government and the opposition, drawing on the heritage of historical energy agreements (*Energiöverenskommelse*), to de-risk billion-crowns capital investments and prevent policy reversals across election cycles.
- **Integrate Nuclear Energy with Renewable Expansion:** Shift the national energy narrative away from a false dichotomy between renewables and nuclear power, creating a balanced system design where low-cost variable renewables (wind and solar) are synergistically complemented by nuclear baseload capacity to lower overall systemic costs.
- **Capitalise on the Opportunity to Become a Regional Industrial Hub:** Leverage early SMR initiatives (such as Blykalla) and aggregated Nordic-Baltic demand to position Swedish industry as a dominant regional provider of nuclear prefabrication, high-voltage equipment, and engineering services.
- **Proactively Address Municipal Veto Risk and Local NIMBYism:** Offer clear financial incentives, transparent infrastructure plans, and structured local compensation packages for candidate municipalities to prevent local opposition from triggering the statutory municipal veto (*vetorätt*).

Conclusions

Sweden's energy policy has undergone a decisive transformation, moving from a planned phase-out back to the centre of the country's long-term energy strategy. This U-turn is primarily driven by projected national electrification goals, which expect Sweden's electricity demand to nearly double, reaching 330 TWh by 2045. The government administration deserves recognition for its thorough and structured preparatory work. Through special inquiries and dedicated coordinators, the state has addressed regulatory bottlenecks and introduced comprehensive risk-sharing frameworks, resulting in a surge of new planned commercial SMR projects. However, further structural bottlenecks, ranging from licensing delays to supply chain constraints, still require clear, structured solutions to ensure these ambitions do not stall on paper.

Furthermore, the proposed financial model places a heavy burden on public expenditure, shifting considerable long-term financial risk onto taxpayers to attract private capital. This challenge is compounded by the uncertainty hanging over the revival ahead of upcoming elections. Political divisions remain sharp and potential coalition shifts could alter funding structures or stall new developments, creating commercial risk for long-term investments. To build a resilient energy system, Swedish political actors must depolarise the debate and move beyond the discourse that pits renewables against nuclear power. Low-cost variable renewables and nuclear baseload are not mutually exclusive and together they offer the most stable and reliable path to meet surging demand.

Looking ahead, Sweden has a distinct opportunity to leverage its industrial strengths to establish itself as a regional nuclear technology and prefabrication hub across the Nordic-Baltic area. For other countries navigating similar energy transitions, Sweden provides vital lessons: the necessity of rigorous administrative groundwork, the importance of long-term political consensus to de-risk capital-intensive projects, and the value of planning an integrated grid that harmonizes baseload nuclear capacity with cheap renewable energy.

The Casimir Pulaski Foundation is an independent, non-for-profit, non-partisan Polish-think tank conducting research on different aspects of European and Transatlantic security, with a special focus on Central and Eastern Europe.

The Foundation brings together dozens of international experts in various fields (foreign policy, defence, energy, democratic resilience) and publishes analysis describing and explaining international events, identifying trends in the European and Transatlantic security environment and recommending solutions for government decision-makers and the private sector.

The Casimir Pulaski Foundation is also the initiator and main organizer of the Warsaw Security Forum conference, which since 2014 annually gathers over 1500 stakeholders from more than 60 countries in order to elaborate shared responses to common transatlantic security challenges.

Each year the Foundation presents the "Knight of Freedom" award to outstanding figures who contribute to the promotion of the values of General Casimir Pulaski, such as freedom, justice and democracy. It is also the home to the Polish branch of the Women in International Security network.

The Casimir Pulaski Foundation has been ranked as the first among Polish Think Tanks dealing with defence and national security according to the 'Global Go To Think Tank Index' report in 2018, 2019 and 2020 respectively. The Foundation also has a status of a partner organization of the Council of Europe.

For the sake of the highest standard and quality of the research carried out and valuing the reliability of analytical work, the Casimir Pulaski Foundation obliges its employees and collaborators to comply with the European Code of Conduct for Research Integrity of 2023.