

Draft Memorandum on Scope and Level of Detail

**Operating life extension of Borssele nuclear power plant
Ministry of Economic Affairs & Climate Policy**

9 May 2023

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1 Introduction

1.1 Why this draft Memorandum on Scope and Level of Detail?

This is the draft Memorandum on Scope and Level of Detail (draft NRD) for the amendment of the Nuclear Energy Act as the necessary first step towards extending the operating life of the Borssele nuclear power plant beyond 2033. The Dutch government intends to keep this nuclear power plant open longer as part of the transition to energy sources that do not emit greenhouse gases and achieving a fully climate-neutral energy supply. In order to facilitate the operating life extension, it is necessary to amend (at least) Section 15a of the Nuclear Energy Act (KEW). The Borssele Nuclear Power Plant Covenant (2006) will also have to be amended, augmented or replaced. In order to identify the environmental consequences of amending the legislation, an Environmental Impact Assessment (EIA) will be drawn up.

The nuclear power plant is located in the municipality of Borsele in Zeeland, on the Zuid-Beveland peninsula.

Figure 1 shows the location within the Netherlands and in more detail within the Zeeland region.

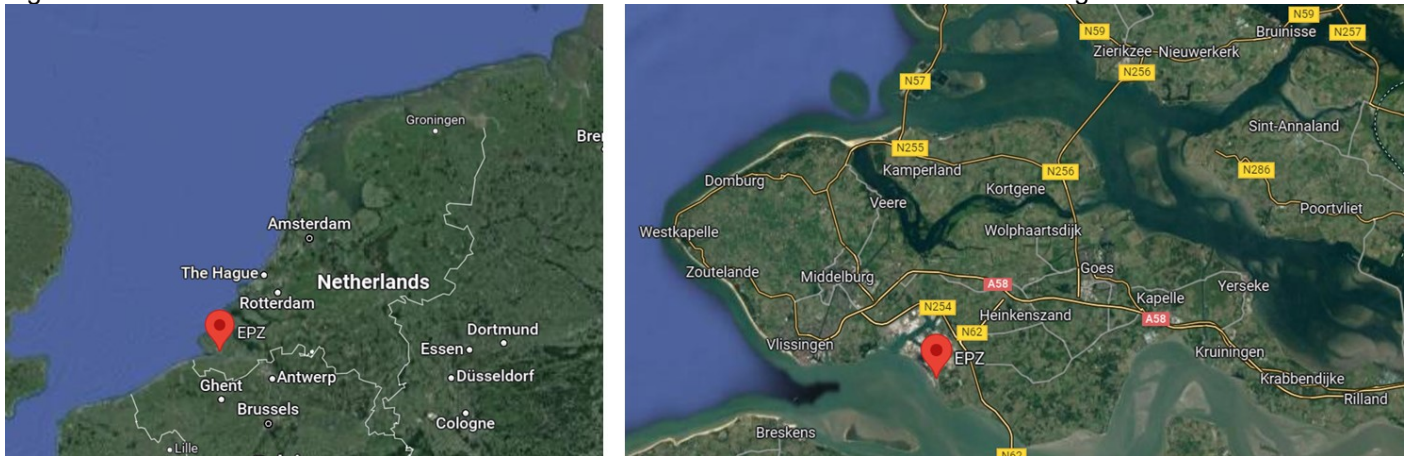


Figure 1 Location of Borssele nuclear power plant within the Netherlands and the surrounding area

In order to obtain a clear picture of the environmental impacts and in view of the obligations regarding (cross-border) public consultation – under the Aarhus and Espoo Conventions – the government has decided to complete an EIA procedure during the preparations for this legislative amendment. In this EIA procedure, the Minister of Economic Affairs and Climate Policy and the State Secretary for Infrastructure and Water Management are the competent authority. To ensure an appropriate separation of duties, the Ministry of Economic Affairs and Climate Policy (EZK) will act as the initiator and the Ministry of Infrastructure and Water Management (IenW) will act as the competent authority.

The objective of this draft NRD is to inform everyone about the proposed activity, i.e. the operating life extension of Borssele nuclear power plant, and to specify which environmental aspects will be investigated in the Environmental Impact Assessment for the purposes of the legislative amendment.

Giving notice of the intention to amend the law and the draft NRD are the first steps in the EIA procedure. The draft NRD describes the boundaries and approach of the environmental study that will be carried out to substantiate the legislative amendment. Among other things, the draft NRD sets out which alternatives will be explored in the EIA (scope) and according to which environmental aspects they will be evaluated (level of detail). In addition, this draft NRD will be used to canvass the opinions of parties including regional and other government agencies, legal advisers and the Netherlands Commission for Environmental Assessment, and to give them the opportunity to provide information about the described approach. The Netherlands Commission for Environmental Assessment is an independent organisation that gives advice on the content of environmental impact assessments.

The draft NRD will be made available for inspection and everyone, including stakeholders outside the Netherlands, for example residents just across the border, will have the opportunity to submit their views on the draft NRD.

1.2 Borssele nuclear power plant

The Borssele nuclear power plant is the only nuclear power plant in the Netherlands currently in operation; see Figure 2. The plant is owned by N.V. Elektriciteits-Produktie­maatschappij Zuid-Nederland (EPZ). EPZ is jointly owned by ZEH Energy B.V. and Energy Resources Holding BV, which in turn is part of the German energy company RWE. The nuclear power plant generates electricity and has a thermal power output of approximately 1366 MW and a net electrical power output of 485 MW. The existing nuclear power plant generates around 3.8 terawatt hours (TWh) of electricity per year, representing slightly more than 3% of total electricity generation in the Netherlands in 2021¹. In concrete terms, that is sufficient electricity to power a good-sized city, including trams, trains and a large airport. The electricity generated is sold on the open market.

The Dutch government had previously decided that the Borssele nuclear power plant should not generate electricity beyond the end of 2033. This was laid down in the Borssele Nuclear Power Plant Covenant (2006) and Section 15 of the Nuclear Energy Act.



Figure 2 Borssele nuclear power plant

How does the nuclear power plant work?

The operation of the Borssele nuclear power plant is described in the Safety Report (part of the nuclear power plant's licence under the Nuclear Energy Act). This description of the existing situation in the Safety Report provides the basis for this EIA process. The operation of the nuclear power plant is explained in outline below.

¹ Figures based on publication by Statistics Netherlands: <https://www.cbs.nl/nl-nl/nieuws/2022/10/meer-elektriciteit-uit-hernieuwbare-bronnen-minder-uit-fossiele-bronnen>.

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The reactor is the heart of the nuclear power plant. It consists of a reactor pressure vessel (RPV) in which the reactor core containing fissile material is located and where the fission reaction takes place. In the fission reaction, approximately three neutrons are released, along with a large quantity of energy in the form of heat. The neutrons are able to cause new fission reactions, creating a chain reaction. The reactor is safely shielded by thick concrete walls.

In principle, the nuclear power plant works like a big steam engine – see Figures 3 and 4. But instead of burning fossil fuels like coal or oil, the nuclear power plant generates steam from the heat released from the splitting of uranium nuclei. That steam, in turn, is used to drive a turbine that generates electricity.

The splitting of atoms creates radioactive materials, which is why a nuclear power plant has extensive safety provisions. They make the nuclear power plant a safe facility. These provisions are mainly aimed at guaranteeing the functions of cooling, isolating and controlling criticality (criticality is the probability of failure, for example due to a runaway reaction in the reactor).

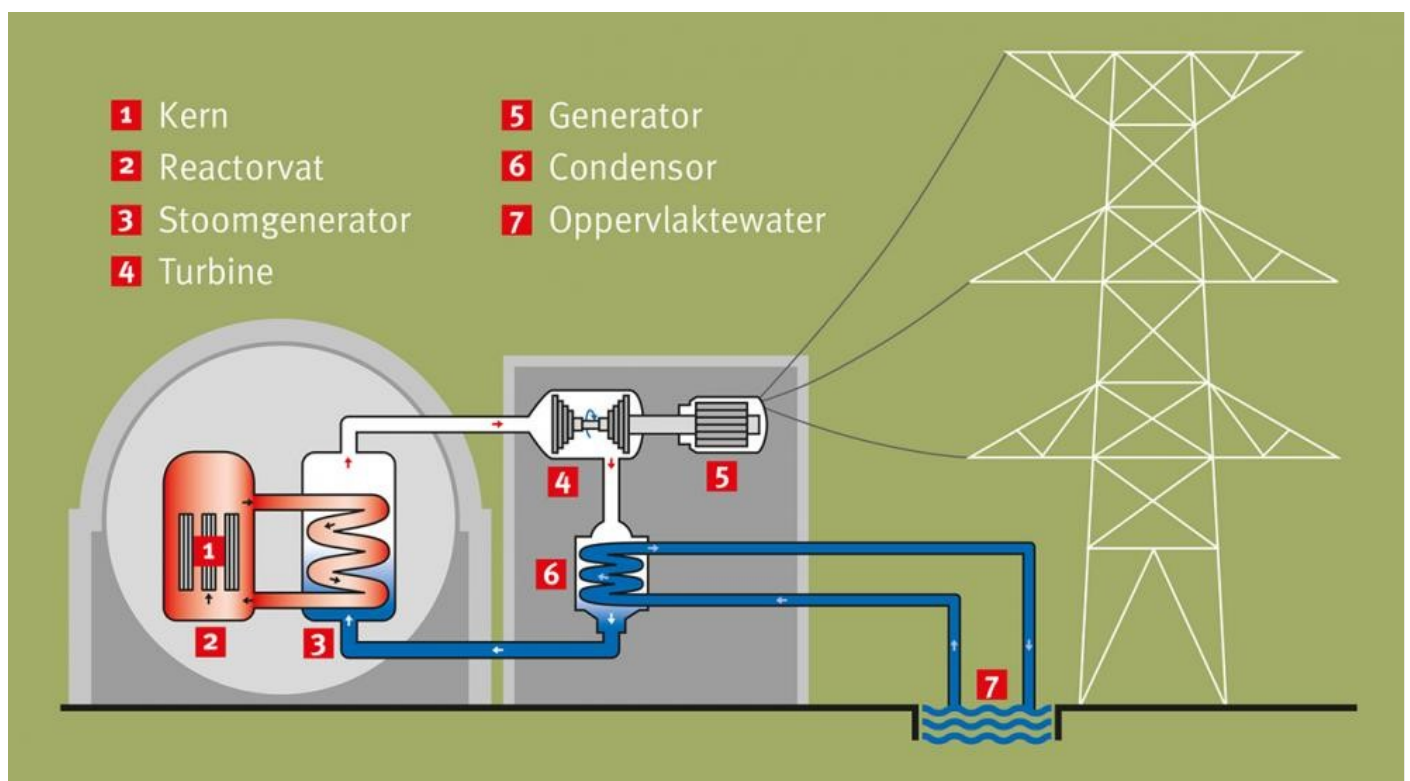


Figure 3 Operation of Borssele nuclear power plant

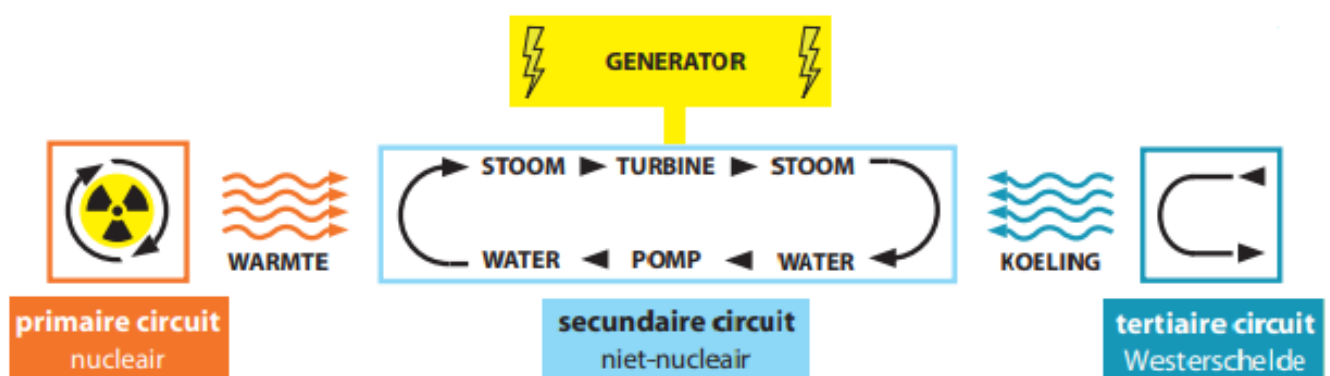


Figure 4 Systems in Borssele nuclear power plant

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The operation of the nuclear power plant is described in the above figures. Figure 3 shows the most important systems and Figure 4 clearly shows the relationship between the three circuits. The figures between brackets in the text below refer to the numbering in Figure 3.

Primary circuit (first circuit)

The heat from nuclear fission [1] is absorbed by water in the first (nuclear) circuit. The nuclear fission process is regulated by means of boric acid in the primary water and can quickly be stopped by means of control rods. The water is pumped through the reactor [2] at high pressure so that it does not boil and so that the water can transport heat from the reactor. With this heat, steam is generated in the second (non-nuclear) circuit of the steam generator [3].

Secondary circuit (second circuit)

The steam produced in the steam generator drives a turbine [4]. The turbine is situated on an axle with the generator [5], by means of which electricity is generated. The electricity produced is supplied to the grid.

Tertiary circuit (third circuit)

After the steam has passed the turbine [4], it has not yet released all its heat. In order to turn the steam back into water, the remaining heat has to be removed from the steam in a condenser [6]. In the condenser, the remaining heat is transmitted to colder surface water [7] from the Westerschelde. The quantity of heat that the Borssele nuclear power releases to the Westerschelde is small compared to the quantity of water that flows through the Westerschelde. Thanks to this 'flow-through cooling' using water from the Westerschelde, this nuclear power plant does not need cooling towers, as some other nuclear power plants do.

It is important to note that the water from the Westerschelde does not come into direct contact with the water in the primary system of the nuclear power plant.

Radioactive waste

The radioactive waste is safely and responsibly stored by the Central Organisation for Radioactive Waste (COVRA). In order to safely process this waste, special measures are required – for instance, remotely operated equipment, thick walls made of reinforced concrete and doors a metre thick. COVRA has the statutory duty to collect, process and store all radioactive waste in the Netherlands. Besides radioactive waste from the nuclear power plant, that also includes radioactive hospital waste and radioactive waste from the chemical processing industry.

The spent fuel is not stored at COVRA straight away but is first taken to a specialist recycling plant in France. There the radioactive fission products (the radioactive waste) are separated from the reusable uranium and plutonium. In the recycling plant in France, the radioactive fission products are mixed with liquid glass. The mixture is then sealed in impermeable stainless steel barrels. The radioactive substances are now locked within the structure of the solid block of glass and can no longer escape.

According to its own figures, the nuclear power plant produces approximately eight barrels of this highly radioactive waste every year. In addition, medium and low-level nuclear waste is produced during the operation of the nuclear power plant. The high-level radioactive waste and the medium and low-level radioactive waste are all stored safely and responsibly by COVRA.

Safety

Because the nuclear power plant has been operational since 1973, a lot is known about the behaviour of the facility. From the start of production, the condition of vital components has been monitored and the operation of the nuclear power plant has been regularly improved using new insights into nuclear safety. Based on that knowledge and experience, the operator must be able to demonstrate that the condition of safety-critical components is good enough in order to be permitted to continue to operate the nuclear power plant. In this light, every ten years a compulsory evaluation takes place to see whether improvements are possible, drawing on the latest state of technology, that will increase nuclear safety, and plans are made to implement them. The current ten-year evaluation (2023) is based on the end date specified in Section 15a of the Nuclear Energy Act.

In addition, a nuclear power plant must be operated by well-trained staff and good procedures must be in place in order to operate the plant properly. The Authority for Nuclear Safety and Radiation Protection (ANVS) issues licences for the nuclear power plant and oversees its safety and licence. A requirement in this regard is that the nuclear power plant takes cognisance of internationally available knowledge and has audits carried out by international experts.

1.3 Operating life extension

One of the biggest challenges of our time is climate change. The Netherlands' climate objective for 2050 is to be climate-neutral; for 2035, the objective is that no CO₂ should be released in the production of electricity².

In order to maintain progress in making energy consumption more sustainable, it is important that there is sufficient supply to meet rising demand for CO₂-neutral energy. One of the avenues the government is exploring in order to achieve this is nuclear energy. Nuclear energy is envisaged as one of the energy sources in a total mix of energy sources. Not only does a nuclear power plant supply CO₂-neutral electricity, the big power plants are also important for assuring the stability of the electricity network because they deliver a constant supply of electricity, without major peaks and troughs.

Extending the operation of the plant is one of the measures that have been chosen, alongside the construction of two new nuclear power plants. The value and necessity of extending the operation of the nuclear power plant is explained further in chapter 3.

1.4 Structure of this document

In order to be able to generate electricity after 2033, the technical and economic feasibility of extending the operating life of the nuclear power plant will be examined and an EIA procedure will be completed in order to identify the environmental impacts. In chapter 2, the procedure to be completed is explained. In chapter 3, background information is provided in order to explain the value and necessity of the proposed amendment to the Nuclear Energy Act. We also describe the objective of the proposed amendment.

The proposed amendment to the Nuclear Energy Act and the alternatives to be explored are described in chapter 4. In this Environmental Impact Assessment for the legislative amendment to facilitate the operating life extension, environmental impacts, both positive and negative, will be described and evaluated in relation to the reference alternative. In chapter 5, the reference situation and the evaluation framework that will be used are clarified.

² Climate Memorandum 2022, Ministry of Economic Affairs and Climate Policy (November 2022).

2 Procedure to be completed

2.1 Decisions to be taken and Environmental Impact Assessment

Section 15a of the Nuclear Energy Act stipulates that the licence granted to EPZ for maintaining the Borssele nuclear power plant in operation expires on 31 December 2033 as regards the release of nuclear energy. Section 15a of the Nuclear Energy Act provides that no application will be considered for a licence for the release of nuclear energy in the Borssele nuclear power plant after 31 December 2033. In order to enable the operating life extension beyond 31 December 2033, Section 15a of the Nuclear Energy Act needs to be amended. This legislative amendment is the necessary first step towards achieving an operating life extension beyond 2033. The legislative amendment will be adopted by the government and the States-General.

The second necessary step towards achieving an operating life extension for the release of nuclear energy after 31 December 2033 is a decision on the licence for the release of nuclear energy (hereinafter: LTO licence). Together with the legislative amendment, this licence represents the permission for the operating life extension as referred to in the EIA Directive. The ANVS will assess whether the application for the licence complies with the statutory framework and make a decision on whether to grant the licence.

The Environmental Impact Assessment is an aid to decision-making. The purpose of the Environmental Impact Assessment is to give full weight to the environmental aspect in reaching a decision on a plan or project. An important element of the Environmental Impact Assessment is objectively describing the relevant environmental impacts of a plan or project in an Environmental Impact Assessment. The EIA instrument structures decision-making information and also plays an important role in creating transparency and in participation. The EIA must assume the maximum possible impacts of the plan or project and describe, evaluate and compare alternatives.

There is no good and comparable precedent for the EIA in relation to the operating life extension of the Borssele nuclear power plant. However, the proposed activity displays a strong resemblance to the situation regarding the operating life extension of the nuclear power plants in Doel (Belgium) and the permissions granted to that effect. It may be concluded from case law of the Court of Justice of the European Union (the Court) about this operating life extension (the 'Doel judgment') that the legislative amendment for the operating life extension of Borssele nuclear power plant may be classified as the first phase in granting permission (a licence) for a project in the sense of the EIA Directive. The LTO licence is the second phase.

The EIA for the operating life extension of the Borssele nuclear power plant is also being completed in two steps. Linked to the legislative amendment, a so-called first-phase project EIA (an EIA for the legislative amendment) will be drawn up to catalogue the environmental impacts of extending the operating life of the plant. This will be based on the existing facility and existing operation, because it is currently not yet known which technical and other measures are needed for the plant. In line with the case law of the Court of Justice of the European Union, the environmental consequences will be described as fully as possible. For the LTO licence after 2033, it is necessary to first conduct research into whether measures are necessary, and if so which ones. The potential environmental impacts of these measures are as yet unknown. Before the licence to release nuclear energy after 2033, the LTO licence, can be issued, research will need to take place into the measures to be taken. The environmental impacts of these measures are not yet known. If there are environmental impacts resulting from these measures, they will be described in a second-phase project EIA (an EIA for the LTO licence). At the time of writing, the expectation is that it will not be possible to catalogue all the environmental impacts in the EIA for the legislative amendment and that a second-phase project EIA will be conducted in due course.

This draft NRD only relates to the EIA for the legislative amendment. This EIA has been commissioned by the Ministry of Economic Affairs and Climate Policy and will take place at a higher (strategic) level of abstraction than the EIA for the licence. Although the legislative amendment is not expected to be a plan or programme in the sense of the SEA (Strategic Environmental Assessment) Directive, as a precaution, this EIA will also comply with the substantive and procedural requirements that would apply to SEA. In view of the nature and content of the legislative amendment, little additional effort will be required to this end. The current expectation is that the EIA for the LTO licence will be drawn up in due course by the licensee EPZ. The two EIA reports together constitute the EIA for the proposed operating life extension.

The steps in each phase of the EIA procedure are explained further in section 2.2. Finally, section 2.3 deals with participation, public consultation and advice.

2.2 Procedural steps per phase

An environmental impact assessment is drawn up in order to evaluate the (potential) impacts of the proposed activity. For example, these may be impacts on nature, the environment, archaeological heritage, the living environment and other uses of the areas in question. This draft NRD indicates which environmental impacts may play a role in the operating life extension and must therefore be investigated in the EIA. In reaching a decision on the operating life extension, the competent authority will also include the environmental information from the EIA in its deliberations. The environment is one of the interests that will be considered in the decision. Alongside the environment, other interests that will play a role in the decision-making process include finances, technology and public support. The authors assume that the comprehensive EIA procedure will be followed.

NRD phase

The draft NRD gives notice of the proposed activity and indicates which environmental aspects will be investigated in the EIA, in other words: the scope and the level of detail of the EIA. By making the draft NRD available for inspection, everyone can take cognisance of the proposed activity and the scope and the level of detail of the investigations. There will also be an opportunity to respond with a statement of views.

The steps in the NRD phase are:

- Giving notice of the intention to amend the law.
- Publicising the draft NRD and making it available for inspection for the purpose of public consultation about the proposal and participation plan.
- An opportunity for the public to have a say on the draft NRD, requesting advice from the Netherlands Commission for Environmental Assessment ('NCEA) and obtaining advice from legal advisors and involved administrative bodies.
- Adoption of the NRD.

EIA phase

Following the adoption of the NRD, the environmental research will be initiated and the environmental impact assessment drawn up. In reaching a decision on the legislative amendment, the environmental information from the EIA will also be included in the deliberations. The steps to be taken are:

- Drawing up the EIA and drawing up the draft legislative amendment.
- Publishing the draft legislative amendment with the EIA as an appendix and making it available for inspection.
- Obtaining advice (including from the EIA Committee) and statements of views on the draft legislative amendment and the EIA.
- Adopting the draft legislative amendment with the EIA as an appendix.
- Monitoring and evaluation of the environmental impacts, following the implementation of the project.

We are currently still looking into which kinds of agreements will be included in the covenant to be concluded. To the extent that the amended, augmented or new covenant will involve agreements regarding environmental information, the intention currently is that such agreements will be made available for inspection at the same time as the draft legislative amendment and the EIA.

2.3 Participation, public consultation and advice

2.3.1 Methods of participation

The Ministry of Economic Affairs and Climate Policy (in the role of initiator) and the Ministry of Infrastructure and Water Management (in the role of competent authority) regard participation with stakeholders of the project at an early stage as very important. The thinking behind this, based on experience, is that intensive collaboration with local communities and other stakeholders leads to better projects that enjoy more support. Added to that, collaboration serves to increase the understanding of each other's interests and points of view.

Due to the nature of the project and its location, cross-border impacts cannot be ruled out. The core of the Espoo Convention is that in the event of possible cross-border environmental consequences, the public and authorities in the neighbouring country where cross-border impacts may be anticipated must be involved in the EIA procedure in the same way and at the same time as the authorities and the public in the Netherlands.

The Convention came into force on 10 September 1997 and has been transmitted to the European Directive 'on the assessment of the effects of certain public and private projects on the environment'. Both the Convention and the relevant article of the European Directive have been implemented in the Environmental Management Act. As regards the EIA, account will be taken of the requirement for international public consultation in both the NRD and the EIA phase by translating the executive summaries (public versions) into English, French and German. The NRD and the EIA will be translated into English in their entirety. In addition, the Aarhus Convention sets out requirements for public participation on decisions relating to operating life extensions of nuclear power plants. Public participation must take place at the time of the initial decision because at that point, the options will still be open. This will be achieved by enabling public consultation on the proposed legislative amendment and the NRD, and on the draft of the legislative amendment and the EIA.

Table 1 provides a summary of steps in the decision-making process. The associated timetable may also be found there. All the dates given are provisional. The table shows at which times (milestones) the official documents will be published and made available for inspection. It also makes clear when you can provide your input, make contributions and submit your statement of views or response.

The procedure to be followed is explained in more detail in the following paragraphs. In the periods between the milestones referred to above, the detail of the next step in the project will be prepared.

Relevant parties will be involved at an early stage. How this will be achieved in each phase is described in the participation plan. The participation plan will be updated at each step of the procedure.

Table 1 Steps in participation and timetable (provisional)

Planning	Step	How can input be given?
Q2 2023	Draft NRD and updated participation plan made available for inspection	A statement of views may be submitted on the draft NRD and participation plan, for example digitally or during a public information meeting.
Q4 2023	Adoption of the final NRD	Opportunity to take cognisance of the NRD, including the alternatives to be investigated in the EIA.
Q4 2023	Investigation of environmental impacts of alternatives and/or variants and their recording in the EIA	The participation plan, which will be updated before this time, will explain how contributions can be made.
Q2 2024	Draft legislative amendment and appendices (including EIA) made available for inspection	Opportunity to submit a statement of views on the draft legislative amendment and the Environmental Impact Assessment (EIA).

Participation during the NRD phase

The goal of participation around the (draft) NRD is to gather information, local knowledge (specific characteristics of the local region), areas of concern, ideas and opportunities. These may relate to the environmental impacts to be identified, the evaluation framework or the participation process itself. One purpose of participation is to ensure that the interests of both national and international stakeholders are included in the decision-making.

Between January and April 2023, a plan was drawn up with the Ministry of Economic Affairs and Climate Policy and the Ministry of Infrastructure and Water Management, in close consultation with the affected municipalities and provincial authority, in order to define participation and communication around this process. This plan focuses on national, regional and local dimensions of this proposal.

Finally, after this draft NRD has been published, there will be an opportunity to provide input via the formal consultation procedure.

2.3.2 Consultation procedure and advice by Netherlands Commission for Environmental Assessment

This draft NRD will be made available for inspection and everyone will have the opportunity to submit a statement of views. Regarding the time limit for public consultation and other relevant information, see the notification accompanying this memorandum.

Once the deadline for submission has passed, all statements of views received will be read and evaluated. A response to the statements of views will be given in a response memorandum. This memorandum will state how views will be used in the rest of the process. Anyone who submitted a statement of views will be informed about this.

The Netherlands Commission for Environmental Assessment will be asked for advice about the level of detail and the scope of the EIA to be drawn up, as will the legal advisors and the involved administrative bodies. The NRD will be finally adopted by the competent authority. The statements of views received, the advice of the Netherlands Commission for Environmental Assessment, advice from legal advisors and the administrative bodies involved, as well as the results of inter-agency discussions, will be included in the decision. The draft NRD will be used in drawing up the EIA and the requisite investigations.

2.4 Background

This chapter looks at the value and necessity of extending the operating life of the Borssele nuclear power plant. By extending the operating life of the nuclear power plant, the Ministry of Economic Affairs and Climate Policy aims to contribute to a CO₂-neutral electricity supply and hence to the Netherlands' climate objective of climate neutrality by 2050. This means that no more greenhouse gases will be emitted on balance. Nuclear energy is being deployed as one of the energy sources in a total mix of energy sources to meet the demand for energy. Alongside nuclear energy, the Dutch government is pushing for energy saving, the generation of electricity from energy sources like solar and wind and the storage of energy in batteries and energy carriers like hydrogen.

Through a combination of all these efforts, the government believes that the Netherlands' climate objective in terms of energy is achievable while also meeting the growing demand for electricity. Extending the operating life of the nuclear power plant will improve the reliability of supply and retain nuclear expertise in the region. The more electricity the Netherlands generates itself, the less dependent it will be on imports of electricity from other countries. These aspects are discussed in more detail below.

The Netherlands' climate objective and energy mix

One of the biggest challenges of our time is climate change. Good climate policy offers opportunities to build a sustainable and strong economy and create new jobs in a healthy living environment. The Netherlands' climate objective for 2050 is to be climate neutral; for 2035, the objective is for no CO₂ to be emitted in the production of electricity³. These objectives are also set out in the coalition agreement of the Rutte IV cabinet. Thus, the coalition agreement states the commitment of climate neutrality by 2050; the goal is to achieve a 55% CO₂ reduction by 2030. In order to be sure of achieving this goal, the government is directing policy towards a CO₂ reduction of 60%.

In order to achieve these objectives, the Dutch Government is seeking to establish a climate-neutral energy mix. While the need for energy will remain, there will be a transition to energy sources that do not emit greenhouse gases. In order to reduce the use of gas for heating, there will be a drive for electrification (for example in households and industry). In this way, the government aims to rapidly cut the use of fossil fuels while at the same time assuring

³ Climate Memorandum 2022, Ministry of Economic Affairs and Climate Policy (November 2022).

reliability of supply and the affordability of energy. Since increased electrification will result in an ever increasing demand for electricity, all sustainable energy sources will be needed in order to both meet demand and achieve the CO₂ objectives. In addition, efforts will be made to reduce energy consumption in order to lessen the increasing pressure on the electricity grid in the long-term and to make it easier to meet energy demand sustainably⁴.

The National Energy System Plan⁵ (NPE) describes the composition of the energy mix in more detail. The objective of the NPE is to develop a vision of an energy system for the Netherlands that equates to a climate-neutral society by 2050. The energy mix is the combination of different energy sources (such as natural gas, solar, wind, nuclear) and energy carriers (such as hydrogen). The National Energy Network Programme⁶ (PEH) describes the required infrastructure in more detail. The PEH establishes a national framework to enable local and regional government and constructors to effectively plan new energy infrastructure. Both programmes are separate from the EIA to be drawn up. To what extent nuclear energy can be part of the energy mix is answered in these two programmes. Both programmes also focus on a responsible approach to safety and health in the energy transition as a precondition⁷. Civil society organisations and citizens will also be involved in these programmes in order to generate support for and acceptance of the choices made.

The draft plan for the NPE will be presented in the second quarter of 2023. This will be followed by a public consultation, which will be open to everyone who wants to share their thoughts on this subject. Following the consultation, the final plan will be drawn up in late 2023. This plan will then be used to prepare for the Climate Plan 2024. More information about this procedure can be found at: <https://www.rvo.nl/onderwerpen/energiesysteem>. This website explains how public participation will be facilitated in the public consultation round.

Growing demand for electricity

The Netherlands faces the major challenge that the demand for CO₂-neutral energy will increase significantly in the near future based on predictions by the Dutch government⁸ and the results of the Climate and Energy Outlook⁹ (KEV). In order to maintain progress on making electricity consumption more sustainable, it is important that there should be sufficient supply to meet rising demand for CO₂-neutral electricity.

The Netherlands currently generates electricity from the following sources: wind, solar, gas, coal, biomass, hydroelectric, and nuclear. In 2021, the total supply of electricity was 122 billion kWh, 1 billion kWh more than in 2020. Domestic electricity production fell by 2 billion kWh, while imports increased by 3 billion kWh. The reason for this reduction¹⁰ is that electricity production from fossil sources fell by more than the increase in electricity production from sustainable sources. The fall in electricity production from fossil sources (a reduction of 22% to 55.3 billion kWh) was largely caused by high gas prices. An additional effect of high gas prices was that significantly more electricity was generated using coal (an increase of 72% to 16.5 billion kWh). Due to factors including high gas prices, there was also an increase in electricity production from sustainable sources such as wind and nuclear (an increase of 18% to 43.3 kWh). The reduction in domestic electricity generated from fossil sources and the increase in electricity imports demonstrates the importance of stable and sufficiently large electricity production. Extending the operating life of the nuclear power plant will contribute to an increased supply of CO₂-free electricity after 2033.

⁴ Letter to Parliament from the Ministry of Economic Affairs and Climate Policy (3 February 2023), DGKE-DE / 25710726, regarding: National energy-saving targets.

⁵ Netherlands Enterprise Agency (RVO), <https://www.rvo.nl/onderwerpen/energiesysteem>

⁶ Netherlands Enterprise Agency (RVO), <https://www.rvo.nl/onderwerpen/bureau-energieprojecten/lopende-projecten/peh>

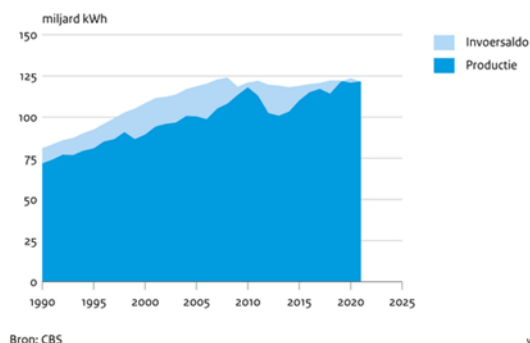
⁷ Letter to Parliament from the Ministry of Economic Affairs and Climate Policy (4 November 2022), DGKE – DSE / 22517363, regarding: Responsible approach to safety and health in the energy transition.

⁸ Letter to Parliament, 9 December 2022, Further elaboration of the coalition agreement regarding nuclear power.

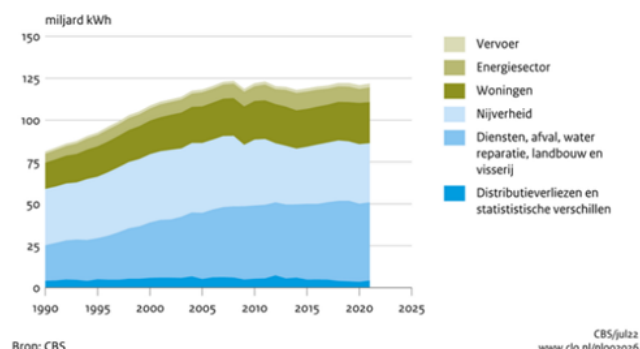
⁹ PBL, TNO, Statistics Netherlands and RIVM (2022), Climate and Energy Outlook 2022. The Hague: Netherlands Environmental Assessment Agency.

¹⁰ Statistics Netherlands, "Meer elektriciteit uit hernieuwbare bronnen, minder uit fossiele bronnen" ["More electricity from renewable sources, less from fossil sources"] (7 March 2022), via cbs.nl.

Aanbod van elektriciteit



Verbruik van elektriciteit



The growing demand for electricity is considered in the Climate and Energy Outlook. This is an annual publication outlining developments in greenhouse gas emissions and the past, current and future energy system in the Netherlands. The Climate and Energy Outlook evaluates proposed developments based on the important national and European climate and energy objectives.

The Climate and Energy Outlook states that increasing electrification of consumption in the commercial sector (e.g. industrial enterprises) and mobility will result in a significant rise in the demand for electricity. That will also extend to electrification in general, such as hydrogen electrolysis and hybrid boilers. This development calls for sufficient reliability in the supply of electricity. In parallel to that is the expectation that in the coming years, the quantity of electricity generated within the Netherlands will fall, for instance as a result of the ban on generating electricity from coal after 2030.

The electricity that is currently being generated by coal-fired power stations will have to be produced using a different source in view of the growing demand for electricity. In order to meet the climate objective, that will have to be a CO₂-neutral source of electricity.

Nuclear energy in the energy mix

The results of the Climate and Energy Outlook 2022 reveal that we will need all available CO₂-neutral energy sources in order to achieve the climate objectives. As regards the role of nuclear energy in the energy mix, retaining the existing nuclear power plant (operating life extension) is envisaged, alongside building two new nuclear power plants in the Netherlands. The existing nuclear power plant has an electrical capacity of 485 megawatts (MW) of electricity and generates approximately 3.8 TWh of electricity every year. In total, this is approximately 3% of the electricity consumed by the Netherlands annually.

Alongside sources such as offshore wind, solar roofs, geothermal, green gas, aquathermal and hydrogen, nuclear energy can make a significant contribution to the objective of generating exclusively CO₂-neutral electricity by 2035. Nuclear power plants are a proven technology that can supply electricity 24 hours per day, regardless of the season and weather conditions, day and night, making it a reliable source of electricity in periods when renewable energy sources such as wind and solar are not available. Compared to other energy sources, nuclear power plants require little space for the power they are able to generate¹¹. By opting for diversification of energy sources, such as a combination of solar, wind and nuclear, the Netherlands will become less dependent on a single source. In addition, using nuclear energy will reduce the Netherlands' dependence on imported electricity.

No CO₂ is emitted when generating electricity in a nuclear power plant. CO₂ is emitted during the construction and eventual decommissioning of nuclear power plants, in the extraction and transport of uranium and in the processing and storage of nuclear waste. An international panel of climate scientists (Intergovernmental Panel on Climate Change) has calculated that the total greenhouse gas emissions of nuclear energy over the entire life-cycle is approximately equivalent to the emissions of wind energy and actually lower than those of solar energy¹².

11 Scenario study Witteveen + Bos, eRisk group and HCCS; <https://hcss.nl/report/scenariostudie-kernenergie/>

12 Working Group III contribution to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change; [ipcc_wg3_ar5_annex-iii.pdf](#)

Generally speaking, nuclear energy is not more expensive than renewable sources such as wind and solar. This is primarily because building energy infrastructure, balancing the grid and meeting the connection costs of wind and solar require significant investments that are currently paid for by network operators and consumers. If these costs are included, the cost of nuclear energy is comparable to that of wind and solar energy.¹³ Extending the operating life of the existing nuclear power plant, which requires no additional construction and decommissioning activities, depending on the measures to be taken, is one of the cheapest and fastest ways of generating CO₂-free electricity.

A drawback of nuclear energy is that it requires uranium as a fuel, a raw material which is not available in the Netherlands. However, there are currently sufficient stocks of uranium worldwide, as well as a range of suppliers. No country has a monopoly on this raw material. The geopolitical risks associated with nuclear energy are therefore relatively limited. In addition, uranium can be stored for quite some time without incurring significant risks and without the material degrading. This means it is possible to build up long-term stocks.

Grid stability and reliability of supply

Now that the electricity supply in the Netherlands is relying more heavily on renewable sources such as wind and solar, sources such as nuclear energy are needed in order to contribute to the stability of the grid. All the electricity that is consumed at any one moment in time needs to be generated somewhere else at virtually the same moment. If not, power cuts may result. However, in the case of wind turbines and solar panels, we cannot assume constant production because the sun does not shine 24 hours per day and sometimes the wind can die down for days. In the winter months in particular (as a result of days of cloud cover and/or precipitation), this can lead to a reduced supply of electricity. Due to these fluctuations, it is not possible to guarantee reliability of generation and supply of electricity. Nuclear energy can make a contribution to the required base load capacity and grid stability.

Dependence on foreign imports and retention of expertise

Committing to nuclear energy also contributes to reducing our dependence on foreign countries for our electricity supply and to the diversification of energy sources in order to meet the demand for electricity. In terms of gas, for example, the Netherlands has been highly dependent on Russia in recent years, which since the invasion of Ukraine has been used as a geopolitical weapon and was an important cause of the recent energy crisis, resulting in sky-high energy prices and knock-on inflation. Besides gas, the Netherlands is also dependent on foreign countries for imports of rare raw materials required for making solar panels, for example.

Added to that, extending the operating life of the nuclear power plant will serve to retain nuclear expertise in the region. Much of that expertise is currently employed in the operation of the Borssele nuclear power plant, but it also resides in the supply chain, consultancy and nuclear research.

2.5 Objective

The Dutch government wants the Borssele nuclear power plant to continue to contribute to meeting the demand for CO₂-free electricity after 2033. In order to make this possible, a legislative amendment and a decision on the LTO licence are required; together, they represent the permission to extend the plant's operating life. This draft NRD provides the first step towards that end, namely the amendment of the Nuclear Energy Act to enable the operating life extension.

The objective of this project is as follows.

Enabling the operating life extension of the Borssele nuclear power plant in a safe and responsible manner so that it can continue to contribute to meeting the demand for CO₂-free electricity after 2033.

With regard to this first step, the environmental impacts of the operating life extension are being catalogued for the benefit of the legislative amendment. Alongside changing the Nuclear Energy Act, other steps are also being set in train, such as subsidising various feasibility studies and amending, augmenting or replacing the existing covenant. Ultimately, it is up to the shareholders of the nuclear power plant to make the decision on the operating life extension. To this end, EPZ will have to submit an application for an LTO licence to the Authority for Nuclear Safety and Radiation Protection.

¹³ Nuclear Energy Agency (NEA) - The Full Costs of Electricity Provision (oecd-nea.org)

3 Proposed activity and alternatives

3.1 Proposed activity

Proposed activity

The proposed activity consists of enabling an operating life extension of the Borssele nuclear power plant in order to achieve CO₂-neutral energy generation in a safe and responsible manner.

3.2 Basic assumptions underlying the operating life extension

Currently, not all the technical modifications required in order to facilitate the operating life extension are known. Various technical feasibility studies are being carried out in order to identify these technical modifications, which require careful and long-term study. A common term for this is Long Term Operation (see text box below). Thus it is first necessary to explore whether measures need to be taken in order to be able to safely extend the operating life of facilities (or parts of facilities) by ten or twenty years, and whether it is also possible to take these measures for the nuclear power plant. The Authority for Nuclear Safety and Radiation Protection will carefully evaluate the studies, from the perspective of nuclear safety but also based on other technical criteria. Technical studies are not yet available at the time of this EIA and can therefore not be included in the discussion.

Because the required feasibility studies for the operating life extension have not yet been performed, at this stage it is not yet clear which measures will be required. For the purposes of identifying the consequences of an extension, this EIA is therefore based on the existing operational management of the nuclear power plant without measures. Consequently, in the EIA for the legislative amendment, the environmental impacts of extending the operating life will be made clear to the extent currently possible.

The legislative amendment is the first step in the decision-making process for the operating life extension. A decision on the LTO licence is also required for the operating life extension. Based on extensive studies, the licensee (EPZ) will then make an economic judgement. At the time of the application for the LTO licence, based on the studies and the evaluation by the Authority for Nuclear Safety and Radiation Protection, it will be clear what work will be required for the operating life extension. At the time of writing, the expectation is that it will not be possible to identify all the impacts in the EIA for the legislative amendment and that a separate EIA will be drawn up for the LTO licence. The EIA for the LTO licence is expected to be drawn up in due course by the licensee, EPZ.

Long Term Operation (LTO)

'Long Term Operation' (LTO) is the usual term which the International Atomic Energy Agency (IAEA) uses to describe an 'operating life extension' of a nuclear power plant. An operating life extension requires a decision on an LTO licence and will be substantiated by careful analyses.

Operating life and design life.

Regarding Long Term Operation (LTO), it is important to draw a distinction between the terms 'operating life' and 'design life'.

- The operating life is the period during which the nuclear power plant is actually operated. The length of the operating life is mainly determined by operating costs.
- The design life is the period during which the nuclear power plant is demonstrably technically capable of continuing to safely produce electricity.

The length of the design life is determined by the demonstrability of the quality of several primary components, such as the reactor pressure vessel (RPV). Theoretically, there is no limitation to the operating life from a technical perspective. Wear and tear and obsolescence are managed by means of repair or replacement of components. As long as the nuclear power plant is safe, whether it remains in operation is therefore primarily determined by economic considerations.

Demonstrably safe

The design of the Borssele nuclear power plant assumes an operating life of 40 years. At the time of its design, structural engineering calculations were used to demonstrate that the most important systems and components would be able to perform their function safely for at least 40 years, meaning that the design life was 40 years. In the LTO-I evidence project that provided the basis for the application for the LTO-I licence, structural engineering analyses were used to demonstrate that the most important components could safely perform their function for 60 years. Based on this, the design life was extended to 60 years.

Above all else, the design life of the plant is determined by the condition of the reactor pressure vessel (RPV). Replacing it would not be economically feasible. During construction, it was demonstrated that the RPV would still be sufficiently resilient after 40 years of exposure to neutrons. It has since been established that the condition of the RPV at Borssele has deteriorated so slowly since 1973 that a longer operating life (after 2033) may be possible. Technical studies are being carried out to confirm this conclusion.

3.3 Alternatives to be investigated

In the environmental impact assessment, the environmental impacts of the proposed activity are investigated based on alternatives. Alternatives are the possible ways in which the proposed activity can be realised. The number of alternatives to be worked out depends on the type of initiative; working out the reference situation is a statutory requirement, while other reasonable alternatives must be considered in an environmental impact assessment. In deciding whether an alternative is reasonable, the decision-makers consider whether it:

- Is feasible: the initiator must be able to realise the alternative without being dependent on third parties.
- Is technically feasible: it must be achievable with due observance of applicable rules and standards.
- Is affordable: the alternative must not be disproportionately expensive.
- Is relevant in view of the environmental impacts: there is no added value in developing more than one alternative if they do not differ in terms of their potential environmental impacts.
- Meets the objectives: the alternative must be such that the objectives of a plan or project can at least largely be achieved.
- Prevents/mitigates environmental impacts: measures that are capable of preventing, limiting or compensating significant environmental impacts can be part of an alternative or can be put forward as an independent alternative.

In order to evaluate the impact of extending the operating life of the Borssele nuclear power plant compared to shutting it down, the environmental impacts of the following alternatives are described in the EIA:

- Reference situation (described in more detail in section 5.2): The expected environmental impacts of the Borssele nuclear power plant, assuming shutdown in 2033, including autonomous developments.
- Alternative 1: The expected environmental impacts of the Borssele nuclear power plant given an operating life extension of 10 years.
- Alternative 2: The expected environmental impacts of the Borssele nuclear power plant given an operating life extension of 20 years.

The extensions of 10 and 20 years correspond to the periods investigated in the feasibility studies by EPZ. Whether extension is possible, and if so by how many years, will depend on the outcomes of several studies. Ultimately, the ANVS will evaluate the results of the studies conducted.

At this point, there is no concrete legislative proposal, which means that the legislative amendment could still take several different forms. For the sake of completeness, a third alternative explores the potential environmental impacts if no end date is specified in the Nuclear Energy Act.

- Alternative 3: The expected environmental impacts of the Borssele nuclear power plant given an indefinite operating life extension.

Alongside the environmental impacts, this alternative will also consider the question of how safe and responsible operation can be assured if no end date is specified.

For the reference situation and the three alternatives, the environmental impacts until 2033 are the same. For this reason, the EIA will only consider the differences in environmental impacts from 2033.

In Figure 5, the alternatives are presented schematically. It should be noted that the impact of termination of operation in 2033, indicated by the grey block, will in some cases will be reduced or completely eliminated. For example, after termination of operation, no more nuclear waste will be produced as a result of electricity generation. Other impacts will persist until the decommissioning is completed. These may include nuclear safety (the irradiated nuclear fuel elements continue to be radioactive, even after shutdown) and landscape integration (the demolition of buildings is part of decommissioning). The environmental impacts after termination of operation of the Borssele nuclear power plant are in any event no greater than the environmental impacts of the normal operating situation. The normal operating situation is represented by the grey horizontal line.

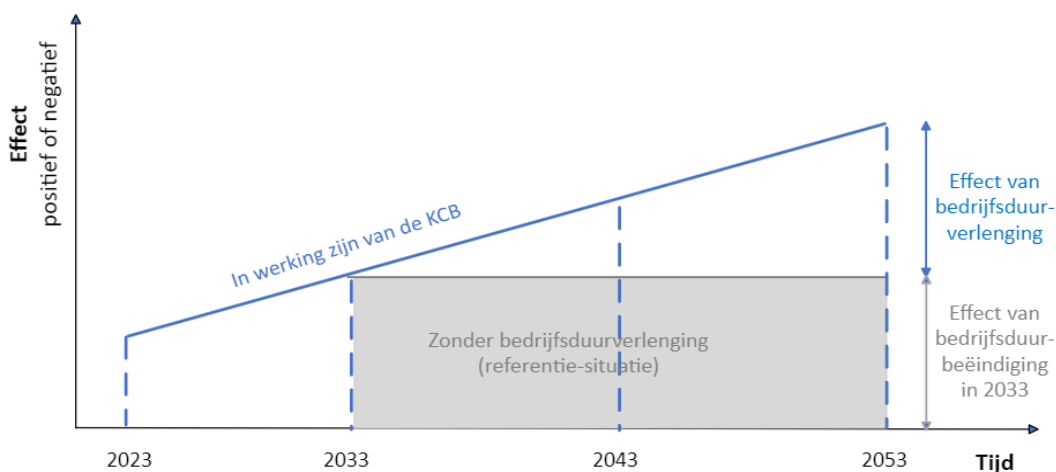


Figure 5 Schematic representation of alternatives and years

Out of scope

The impacts of decommissioning are not considered in the EIA. Whether or not its operating life is extended, the nuclear power plant will need to be decommissioned at some point. The environmental impacts of decommissioning are not dependent on the moment at which the nuclear power plant is shut down. Different impacts would only arise if new methods and technologies were developed in the (far) future that might lead to different environmental impacts. Decommissioning is a specific activity that will be considered in due course in a separate environmental impact assessment specifically for the environmental impacts of decommissioning.

The EIA will not consider alternatives for the energy mix, such as a combination of nuclear, solar and wind energy, because the decision at issue concerns the legislative amendment and not the potential alternatives within the Netherlands' energy mix. Such alternatives are currently being considered as part of the National Energy Network Programme (PEH) and the National Energy System Plan (NPE). The EIA will take the existing energy mix as its starting point for the purposes of comparing the alternatives and the reference situation. The NPE will come up with a draft plan before the summer, based in part on the results of a national energy consultation. This draft plan will be presented for public consultation to all who wish to share their thoughts on this subject. More information about the NPE and how people can participate will be made available at Energy 2050 (rvo.nl).

4 Procedure for EIA environmental assessment

4.1 Introduction

In the Environmental Impact Assessment for the operating life extension of Borssele nuclear power plant, environmental impacts, both positive and negative, will be described and evaluated in relation to the reference situation (see section 5.2). To this end, an assessment framework will be used (see section 5.3). Section 5.4 describes the approach to knowledge gaps and monitoring and evaluation.

Planning area and study area

The size of the study area – the area within which potential impacts may occur – varies depending on the environmental aspect. In general, the study area is (significantly) larger than the planning area – the area in which the proposed activity will take place. Where the planning and study areas for an environmental issue are not the same, this will be clearly indicated. The study area may be different for different environmental issues. Such cases will also be clearly stated in the EIA. The expected impacts will be described and qualitatively evaluated. Where possible and useful, the description of the impact will be substantiated with figures.

Evaluation scale

The environment impacts will be compared with the reference situation using a plus and minus scale. This will be done for the different aspects and criteria. To this end, the seven-point scale described in Table 2 will be used. In order to be able to quickly distinguish between the different scores in the EIA, a colour scale has been adopted.

Table 2 Evaluation scale

Score	Impact	Rating compared to the reference situation
+++	Very positive	The proposed activity leads to a strongly noticeable positive change
++	Positive	The proposed activity leads to a noticeable positive change
+	Moderately positive	The proposed activity leads to a small positive change
0	Neutral	The proposed activity does not differ from the reference situation
-	Moderately negative	The proposed activity leads to a very small negative change
--	Negative	The proposed activity leads to a noticeable negative change
---	Very negative	The proposed activity leads to a strongly noticeable negative change

In the impact assessment, the reference alternative will be taken as neutral (score zero) because this is the situation in which Borssele nuclear power plant is shut down and decommissioned in 2034.

If an alternative is rated as moderately positive, positive or very positive in comparison with this reference alternative, these impacts will be indicated with a +, ++ or +++, respectively. If an alternative results in negative impacts, these impacts will be indicated in the table with a -, -- or ---, depending on the seriousness and size of the impact in question. In the EIA, an explanation will be provided per criterion.

4.2 Reference situation

The reference situation is the current situation, including the autonomous developments. This is the situation in which the operating life extension does not take place. The area will then develop in accordance with adopted or proposed policy, but with no extension to the operating life of Borssele nuclear power plant. This situation serves as the reference framework for the impact description.

Autonomous developments

Autonomous developments are developments that arise in isolation and about which decisions have already been taken at the time of writing this NRD, and that will result in a change in the same area. They will take place independently of the proposal. The following autonomous developments may be relevant: IJmuiden Ver Alpha offshore wind farm, Sloegebied high-voltage substation, Nederwiek 1 offshore wind farm and the Westerschelde Nature Package.

Uncertain autonomous developments

There are a number of developments in and around the planning and study area that have not achieved the status of definite developments for the purposes of the decision-making process. In the EIA, these developments will therefore not be included in the assessment of the impacts, unless they are definite at the time of drawing up the EIA. For this project, for example, they include the decision on the construction of two new nuclear reactors, the Borssele compensation plan and the Zeeland hydrogen network.

4.3 EIA assessment framework

This draft NRD determines the scope and the level of detail of the EIA. As regards the scope, we focus on the (probably) most significant environmental issues and impacts, and differentiate them from other, less relevant, issues. This will allow us to focus on the essence during the process. Two factors are important when determining significant environmental issues:

- The identification of possible impacts (i.e. could this impact occur?).
- Establishing the significance (i.e. is there a possibility that the impact could be substantial?).

The ability to answer these questions requires knowledge of the project, of the characteristics of the local area and of the expected relationships between interventions and their impacts. In determining whether impacts are potentially substantial, factors usually taken into account include the following:

- The nature, scale, duration and irreversibility of the impacts.
- The significance, degree of rarity and sensitivity or vulnerability of the environmental factors influenced by the impact.
- The location of the proposed initiative, in relation to the policy objectives and legal provisions that apply to the environment in which it will be implemented (environmental priorities).
- The extent to which studying a particular impact significantly contributes to the decision that is supported by the EIA.

The following table lists the expected impacts for each aspect. Besides identifying the impacts of the operating life extension of Borssele nuclear power plant, the EIA focuses on the relevant developments around the plant, because these developments are themselves relevant to the operating life extension. Examples of such developments are climate change and its ramifications for the height of dykes and dyke safety.

Where relevant, the EIA will also shed light on the cross-border impacts on neighbouring countries.

Table 3 Expected impacts and criteria to be evaluated

Theme	Aspect	Criteria
Non-radiological impacts	Soil	Impacts on soil quality
	Ground water	Impacts on ground water quality
	Surface water	Impacts on surface water
Nature		Impacts on protected areas Impacts on protected species
	Air quality	Impacts on air quality, including nitrogen
Noise		Noise impacts as a result of industrial activities Noise impacts as a result of road traffic
	Safety	Impacts with regard to safety (including water safety)
	Health	Impacts on the health climate
	Climate change	Impacts in the area of climate change
Radiological impacts	Radiation protection	Impacts in the area of radiation protection
	Nuclear safety	Impacts on nuclear safety
	Radioactive waste	Impacts on the production and quantity of radioactive nuclear waste

Because the chosen starting assumption is that the operating life extension will be implemented without additional measures, no impacts are anticipated in the following areas:

- Cultural history and archaeology.
- Spatial/visual impacts.

Because no impacts are anticipated, these areas will be excluded from consideration in the EIA.

4.4 Knowledge gaps, monitoring and evaluation

The EIA will identify the knowledge gaps that exist and their significance to the decision-making. An evaluation programme will be outlined to address the identified knowledge gaps, uncertainties and important outcomes of the impact assessment in the EIA. This will help determine whether the measured impacts correspond with the predicted impacts and whether other or additional measures are needed to limit the impacts.

Bijlage A Explanation of policy frameworks

Legal framework	Abbreviation	Relevance to this project
Aarhus Convention	N/A	The Aarhus Convention relates to public access to information, public participation in decision-making and public access to justice in environmental matters. When a decree is published (the initial decree if there are multiple decrees on the same subject), under the Aarhus Convention, a public participation round must take place in which stakeholders and interested parties can contribute to the decision-making process.
Environmental Impact Assessment Decree	EIA Decree	The EIA Decree is a General Administrative Order (AMvB). Under the EIA Decree, a decision is taken as to whether an EIA procedure is required, based on the activities in question. The EIA is a procedure with the primary objective of making sure the environmental interest is given full weight.
Zeehaven and Sloe industrial estate land use plan 2018	N/A	The land use plan is a legally binding document for the authorities and for businesses and citizens. In a land use plan, the municipality lays down the permissible uses and permissible construction on a plot of land or area within that municipality. In concrete terms, this means that a proposal must comply with the rules set out in the land use plan; otherwise, permission for the proposal might not be granted.
Third Electricity Supply Structure Plan	SEV III	SEV III was announced as part of the Spatial Policy Document (Parliamentary Papers II, 2004-2005, 29 435, no. 154, p. 198) and is a key spatial planning decision. Under SEV III, the government reserved land for large-scale electricity generation (from 500 MW) and high-voltage connections (from 220 kV). SEV III ran until 2020 and has now expired. SEV III was succeeded by the National Strategy on Spatial Planning and the Environment and the National Energy Network Programme.
Espoo Convention	N/A	The heart of the Espoo Convention is that in the event of (potential) cross-border environmental consequences, the public and authorities in the neighbouring country must be involved in the EIA procedure in the same way and at the same time as the authorities and the public in the Netherlands.
Euratom Treaty	N/A	The Netherlands is obliged to submit its nuclear activity to international oversight. As such, every nuclear facility automatically falls under the oversight of the EU (Euratom) and the International Atomic Energy Agency in Vienna (IAEA), and the licensee is obliged to supply necessary information.
European Water Framework Directive	WFD	The objective of the WFD is to assure the quality of surface and ground water in Europe. Bodies of water that fall under the WFD must comply with the objectives of the WFD.
Nuclear Energy Act	KEW	The Nuclear Energy Act provides the foundation for nuclear safety and protection against harmful consequences of ionising radiation and contains a licensing system which prohibits the establishment or alteration of a nuclear facility without a licence, including a nuclear power plant. The Nuclear Energy Act is a framework act, which means that only the main points are set out in the act and that a number of matters are regulated in more detail in an order in council and/or a ministerial regulation. Examples are the Nuclear Facilities, Fissionable Materials and Ores Decree (BKSE), the Decree on Basic Safety Standards for Radiation Protection (BBS) and the Safety of Nuclear Facilities Regulations (RNVK).
Environmental Programme 2023-2027	-	In February 2023, the Provincial Council adopted the Environmental Programme 2023-2027. Together with the Zeeland Strategy on Spatial Planning and the Environment, this makes up the provincial Environmental Policy Plan, as referred to in the Environmental Management Act. The Environmental Programme details the implementation policy for the short term (the next four years). The goal of the programme is "a healthy, clean and safe Zeeland", with the environmental quality of the physical living environment being protected and enhanced. By means of the Environmental Programme, the provincial authority is implementing the statutory tasks devolved to it by the national government. The Environmental Programme also sets out the province's own aims.
National Energy System Plan	NPE	The national government is currently developing the NPE. The NPE describes how the Netherlands will develop an energy system appropriate to a climate-neutral society. The NPE sets out a long-term vision of the energy system in 2050, the route to getting there and the contributions required of the national government and other public authorities (such as municipalities). Every five years, the NPE is amended and updated where necessary in order to be able to take advantage of innovations and

MEMORANDUM ON SCOPE AND LEVEL OF DETAIL

Legal framework	Abbreviation	Relevance to this project
		reflect developments in society. More information about the NPE and how people can get involved is available at Energy System 2050 (rvo.nl).
National Strategy on Spatial Planning and the Environment	NOVI	The Environment and Planning Act stipulates that all strategic policy stemming from existing policy documents and new strategic policy in relation to the physical living environment should be included in the National Strategy on Spatial Planning and the Environment (NOVI). NOVI is a strategic vision produced by the national government and contains the primary elements of policy for the physical living environment.
Zeeland Nature Management Plan	N/A	The current Zeeland Nature Management Plan provides the policy framework for the acquisition, design and management of areas of high ecological value and agrarian management areas in the Netherlands Nature Network (NNN) areas in Zeeland. The protection of ecological values is regulated by legislation including the Nature Conservation Act and the Spatial Planning Act. The most current version is the Nature Management Plan 2024 and has been amended on a number of points compared to the previous version. The Nature Management Plan 2024 has not yet come into effect; until such time as it does, the previous plan will apply (the consolidated version, i.e. the Nature Management Plan 2023).
Environment and Planning Act	OW	The Environment and Planning Act is a new Dutch act which, when it enters into force, will replace nearly all the existing legislation relating to the physical living environment. Legislation including the EIA Decree, the Environmental Permitting (General Provisions) Act, the Activities Decree and the Spatial Planning Act will be entirely replaced by the provisions of the Environment and Planning Act. The aim of the Environment and Planning Act is to strike a good balance between utilising and protecting the physical living environment. The act will reduce the number of rules and provide a coherent approach to the living environment, afford scope to tailor rules to local conditions and enable better and faster decision-making. At the time of writing this NRD, the introduction of the Environment and Planning Act is scheduled for 1 January 2024.
National Energy Network Programme	PEH	The PEH is a programme in the terms of the Environment and Planning Act. The draft PEH is expected to be published in the first half of 2023. The stimulus for developing the PEH is the Netherlands' commitment to achieving an energy transition. This objective requires a good energy infrastructure incorporating new, clean forms of energy. The PEH seeks to act in timely fashion to facilitate the national energy network, balancing this objective against other challenges and interests, within a national/international context and based on the precondition of a good quality living environment. The PEH takes the period from 2030 to 2050 as its time horizon and encompasses the entire territory of the Netherlands (with the exception of the North Sea). The PEH replaces and updates SEV III, among other policy instruments, and offers a perspective on the energy system for 2030-2050 and the way in which this system can develop.
Zeeland Provincial Environmental Regulation	PMZ	All provincial authorities in the Netherlands, and therefore also Zeeland, must adopt an ordinance to protect the environment. The Zeeland Provincial Environmental Regulation contains rules on preventing or limiting a number of environmental impacts.
Structural Vision for Borsele municipality 2015-2020	N/A	The spatial policy of Borsele municipality is expressed in its own structural vision. The most recent structural vision covers the period from 2015 to 2020. In view of the imminent introduction of the Environment and Planning Act, many municipalities have not amended their structural visions because the act removes their obligation to do so. In a structural vision, the municipality describes what its central policy objectives are and how it means to put them into practice.
Water Act	N/A	The Water Act regulates the management of water systems, including flood defences, surface water and groundwater bodies, as well as activities in, on or with those water systems. The goal of the Water Act is to prevent and limit water scarcity, waterlogging and flooding and improve water quality.
Soil Protection Act	WBB	The WBB sets out the conditions that may be attached to the performance of actions in or on the soil. As well as soil protection, the WBB is also concerned with soil remediation. The WBB only covers terrestrial soils; aquatic soils are regulated by the Water Act.

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Legal framework	Abbreviation	Relevance to this project
Environmental Management Act	WM	The Environmental Management Act defines the legal tools that can be used to protect the environment. The WM provides general rules for various topics, from substances and waste substances to enforcement, the publication of environmental data, which authority issues which permits and which plans must be drawn up by which authorities, along with appeals procedures. For instance, the WM contains a chapter about environmental impact reporting, specifically about how and when this instrument must be employed. The WM adapts to developments. For instance, relevant European regulations are incorporated into the WM when they come into force. Once the new Environment and Planning Act takes effect, it will largely subsume the WM.
Nature Conservation Act	WNB	The Nature Conservation Act regulates the protection of plant and animal species, including in designated Natura 2000 areas. With respect to Natura 2000 areas, its provisions relate primarily to impacts on flora and/or fauna (for example, as a result of disturbance) and to acidification of nature (through nitrogen deposition). For example, a WNB licensing requirement is triggered when nitrogen deposition increases by >0.00 mol/ha/year, calculated using the Aeries calculator, with respect to the licensed situation. Provincial nature policy is determined by the provincial authority.
Spatial Planning Act	WRO	The WRO is an instrument designed to balance spatial needs such as living, working, mobility, water and nature in a coherent approach. For instance, structural visions and land-use plans are drawn up on the basis of the WRO.
Zeeland Provincial Environmental Regulation	-	The Provincial Environmental Regulation is an instrument of the Zeeland provincial authority. The Provincial Environmental Regulation contains all the provincial rules relating to the physical living environment. The Provincial Environmental Regulation currently in force dates from 2018. The Provincial Environmental Regulation 2018 will be superseded by the Environment and Planning Act. A new Provincial Environmental Regulation will then come into effect, based on the Environment and Planning Act.
Zeeland Strategy on Spatial Planning and the Environment	-	The Strategy on Spatial Planning and the Environment is an instrument of the Zeeland provincial authority in which it sets out its goals and ambitions for the long term. In November 2021, the Zeeland Strategy on Spatial Planning and the Environment was adopted by the Provincial Council. The Strategy on Spatial Planning and the Environment sets out the objectives for 2023 and the ambitions for 2050. A strategy on spatial planning and the environment is an instrument under the Environment and Planning Act, which has yet to come into effect. Until the Environment and Planning Act comes into effect, this strategy on spatial planning and the environment is not yet binding.

Bijlage B Abbreviations and glossary

Term/abbreviation	Meaning
ANVS	Authority for Nuclear Safety and Radiation Protection; supervisory authority for nuclear power plants in the Netherlands under the Nuclear Energy Act.
EIA Decree	Environmental Impact Assessment Decree under the Environmental Management Act.
Greenhouse gas	Greenhouse gases are various gases that can absorb the heat of the sun. Examples include carbon dioxide and methane.
NCEA	Netherlands Commission for Environmental Assessment (Commissie voor de milieueffectrapportage)
CO₂	Carbon dioxide, a greenhouse gas.
EC	European Community (now: EU).
Electric power	The rate of electric energy transfer in an electrical circuit. Refers to the quantity of electricity that an element consumes or generates at a particular moment.
Energy mix	A combination of different sources of primary energy used to generate electricity. Examples of CO ₂ -neutral sources are nuclear energy, solar energy, wind energy, aquathermal energy and geothermal energy. An energy mix can also consist (in part) of non CO ₂ -neutral sources, such as a coal-fired power plant.
EPZ	Elektriciteits-Produktiemaatschappij Zuid-Nederland, operator of the Borssele nuclear power plant.
EU	The European Union.
EZK	The Ministry of Economic Affairs and Climate Policy.
Court	The Court of Justice of the European Union.
IenW	The Ministry of Infrastructure and Water Management.
KCB	Borssele nuclear power plant.
KEV	Climate and Energy Outlook.
kW/kWh	Power in kilowatts (1 kW is 1000 Watts)/consumption in kW of power for the duration of one hour.
EIA requirement	The requirement to complete an EIA procedure for an initiative.
EIA procedure	The procedure by which the EIA is achieved.
EIA	The Environmental Impact Assessment.
MW/MWh	Power in megawatts (1 MW is 1,000,000 Watts)/consumption in MW of power for the duration of one hour.
NPE	National Energy System Plan.
NRD	Memorandum on Scope and Level of Detail.
PEH	National Energy Network Programme.
Planning area	The area covered by the proposal.
RvS	Council of State (the highest administrative law body in the Netherlands).
SEA Directive	The European Strategic Environmental Assessment Directive.
Fissionable material	A radioactive substance, the atomic nuclei of which may be split, such as uranium.
Study area	The area in which environmental impacts may potentially occur as a result of the proposal.
TW/TWh	Power in terawatts (1 TW is 1,000,000,000,000 Watts)/consumption in TW of power for the duration of one hour.