



Ministerie van Economische Zaken
en Klimaat

Summary of the Memorandum on Scope and Level of Detail

Operating life extension of Borssele nuclear power plant

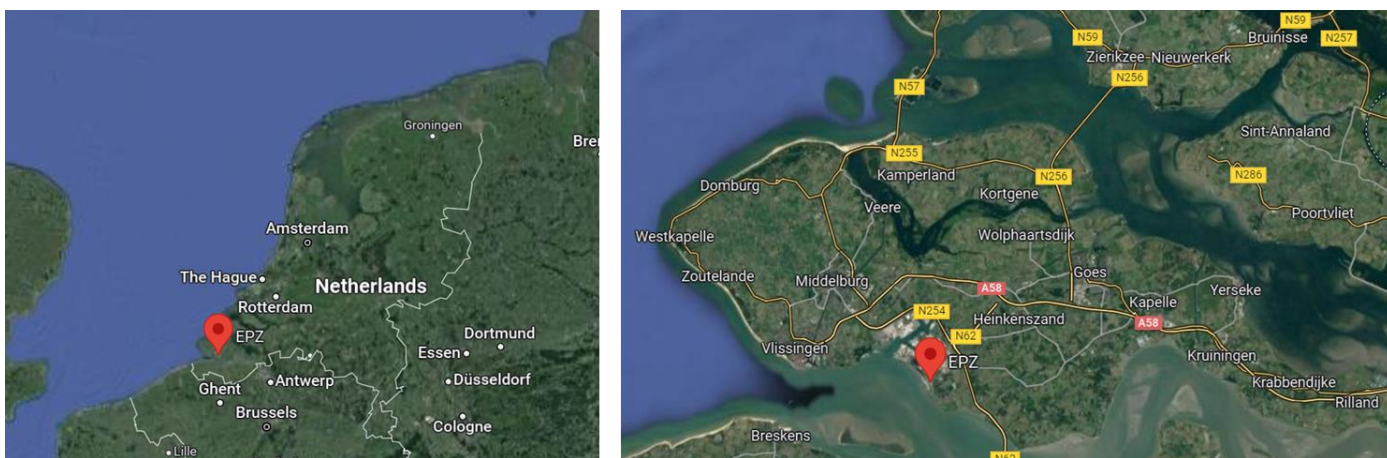
Dutch Ministry of Economic Affairs & Climate Policy

This report is an English translation of a document originally drawn up in the Dutch language. In case of a contradiction, the Dutch text is leading.

Summary of the draft NRD

Purpose

This is the summary of 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.



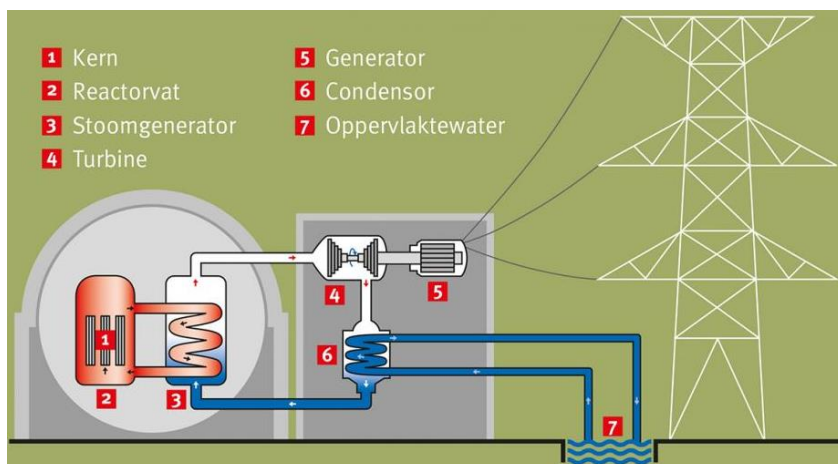
The objective of the draft NRD is to inform everyone about the proposed activity, i.e. the operating life extension of Borssele nuclear power plant, and to specify which environmental aspects will be investigated in the EIA for the purposes of the legislative amendment. The summary of the draft NRD will enable readers to determine whether and why the NRD is relevant them.

The Borssele nuclear power plant is the only nuclear power plant in the Netherlands currently in operation. The plant is owned by N.V. Elektriciteits-Produktiemaatschappij Zuid-Nederland (EPZ) and generates approximately 3.8 terawatt hours of electricity per year. This is approximately 3% of total electricity generation in the Netherlands.

In outline, the operation of the Borssele Nuclear Power Plant is as follows (see the simplified representation of the nuclear power plant below).

The heart of the nuclear power plant is the reactor [2]; the nuclear fission process takes place in the core [1], protected by extensive safety measures. In the process of splitting uranium nuclei, energy is released in the form of heat. The heat is used to make steam [3]. The steam drives a turbine [4] to produce electricity in the generator [5]. The residual heat from the steam is converted back into water in the condenser [6]. The water is discharged into the Westerschelde [7].

Used fuel rods are recycled by a specialist plant in France, where the radioactive waste is separated from reusable material. The waste is then securely stored at COVRA in the Netherlands.



Procedure

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. These require careful and long-term study. What is already certain is that a change in the law is required. Based on the current provisions of Section 15a of the Nuclear Energy Act, the licence granted to EPZ for maintaining the nuclear power plant in operation will expire on 31 December 2033 as regards the release of nuclear energy. Changing this section of the Act is the necessary first step towards securing an operating life extension beyond 2033.

The EIA for the operating life extension of the Borssele nuclear power plant is 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 relates to an EIA at strategic level that also complies with the requirements of an EIA plan. 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 to facilitate an extension of the plant's operating life. 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. 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, 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 an EIA will be drawn up for the LTO licence. This draft NRD only relates to the EIA for the legislative amendment and as such has a higher (strategic) level of abstraction than the anticipated EIA for the LTO licence.

The draft NRD and the participation plan will be made available for inspection. This will take place between 31-05-2023 and 11-07-2023. During this period, anyone can respond to the draft NRD and the participation plan. More information about this may be found on the website www.platformparticipatie.nl/kerncentraleborssele. In addition, the EIA Committee 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.

Planning (indicative)	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).

Background

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. The stated objective for 2035 is that no CO₂ should be emitted in the production of electricity. These objectives are set out in the coalition agreement (for the Rutte IV cabinet). Nuclear energy is being deployed as one of the energy sources in a total mix of energy sources to meet the demand for energy.

Through a combination of all these efforts, the government believes that the 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.

The composition of the energy mix required to achieve the optimal combination of different energy sources for the Netherlands (e.g. natural gas, solar energy, wind energy and nuclear energy) is considered in more detail in other, separate, initiatives such as the National Energy System Plan (NPE). This plan also addresses the role of nuclear energy in the energy mix. Next autumn, everyone will be given the opportunity to share their views on this plan. Another initiative is the National Energy Network Programme. This discusses how the required energy infrastructure may be realised.

The Climate and Energy Outlook (KEV) 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. 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 resulting supply gap will need to be filled in another manner.

Alongside sources such as offshore wind, solar roofs, green gas 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. This makes them 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 generate. 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. In view of recent geopolitical developments since the invasion of Ukraine, energy self-sufficiency has grown in importance.

Nuclear energy 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.

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.

Objectives

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: ***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.***

Proposed activity and alternatives

Currently, not all the technical modifications required in order to facilitate the operating life extension are known. 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.

In the EIA, the environmental impacts of the proposed activity are investigated based on alternatives. 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:

- Alternative 1: The expected environmental impacts given an operating life extension of 10 years.
- Alternative 2: The expected environmental impacts given an operating life extension of 20 years.

The periods of 10 and 20 years correspond to those explored in the technical feasibility studies by EPZ.

As yet, there is no concrete proposal for legislation, which means that there is still potential for the legislative amendment to take on different forms. For the sake of completeness, in a third alternative we consider the possible environmental impacts if no end date is specified in the Nuclear Energy Act.

- Alternative 3: The expected environmental impacts given an indefinite operating life extension. Alongside the environmental impacts, this involves looking at 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.

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).

Procedure for environmental assessment in the EIA

In the EIA, the environment impacts, both positive and negative, will be described and compared with the reference situation using an assessment framework.

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. Autonomous developments are developments that arise in isolation and about which decisions have already been taken, such as the Nederwiek 1 offshore wind farm and the Westerschelde Nature Package. Decisions have yet to be taken on the construction of two new nuclear power plants, and these are therefore not included in 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 on the surrounding area, the EIA considers developments that will affect the project, such as climate change. Where relevant, the EIA will also shed light on the cross-border impacts on neighbouring countries. The EIA will also identify the knowledge gaps that exist and their significance to the decision-making.

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

The impacts of decommissioning are not considered in the EIA. This is a specific activity that will be considered in a separate environmental impact assessment in due course.