

*Response memorandum*

*Draft Memorandum on Scope and Level of Detail*

Construction of New Nuclear Power Stations

*January 2026*



# 1 Introduction

## Draft Memorandum on Scope and Level of Detail

The [draft Memorandum on Scope and Level of Detail](#) was available for public inspection between Friday 16 May and Thursday 26 June 2025. The aim was to inform all stakeholders and interested parties about the background and the nature of the proposed activities, i.e. the proposed construction of two new nuclear power plants. Additionally, anyone who wished to, had the opportunity to submit a response about what ought to be investigated in the SEA-r.

The Memorandum on Scope and Level of Detail is the research plan for the Strategic Environmental Assessment report (SEA-r) that is being drawn up for this project. In the SEA-r, possible alternative locations for new nuclear power plants are considered and their impacts assessed on aspects such as environment, physical living environment and safety. Alongside an SEA-r, an Integrated Impact Analysis (IIA) is being drawn up, which will also address cost and technical aspects and describe the local environment. The SEA-r and the IIA together provide the information on which the Minister of Climate Policy and Green Growth and the Minister of Housing and Spatial Planning will base their decision on a preferred location for two new nuclear power plants. This is the 'preferred solution'.

## Responses

537 responses were received to the draft Memorandum on Scope and Level of Detail, of which 46 were identical. The (anonymised) responses were collated into an online [consultation document](#). All the unique responses have been answered by the ministry in a response memorandum.

Various responses prompted textual clarifications or the provision of further supporting evidence in the final Memorandum on Scope and Level of Detail, the SEA-r or the IIA. Where applicable, this is indicated in the response memorandum. The responses received have not resulted in any changes to the research plan.

#### NCEA advisory report

The draft Memorandum on Scope and Level of Detail was presented to the Netherlands Commission for Environmental Assessment (NCEA) for its recommendations. The NCEA published details of its [recommendations](#) on 25 September 2025. The NCEA is of the opinion that if environmental interests are to be included in the decision-making on the location, the SEA-r must at least include the following information (shown in brief).

Firstly, a clear overview of all the necessary decisions on which the construction and operation of the two new nuclear power plants are dependent. This will make it clear to everyone what is being decided where and when, and when each environmental study is taking place.

Secondly, the NCEA regards the following as essential information for the environmental study and to make the environmental case for the alternative locations:

- further evidence to support the nuclear energy safeguarding policy update report and the proposed new areas and locations;
- evidence to support the choice of technology and specific detail on the nature of the installations and their space requirements and construction;
- analysis of the local environment at each location demonstrating, among other things: 1) the requirements imposed by the current use of the environment of a location on new nuclear power plants, 2) specific environmental characteristics of a location, including sensitivity to flooding, ground condition, cooling water situation and ease of evacuation and 3) the potential for spatial integration of the plants, including the specifics of the additional physical and/or environmental

space required for construction sites, soil depots, infrastructure, accommodation for construction personnel and discharge of cooling water.

- elaboration of the construction phase and the cooling of the plants at each location plus the relevant variants;
- investigation and description of the environmental impacts in terms of safety (disasters and evacuation), water, nature and construction nuisance (noise, dust, odour);
- environmental comparison of the alternative locations for both the multi-year construction phase and the operational phase (up to 2040 and 2100);
- for each location, a verdict on whether the location is feasible and achievable technically and from an environmental perspective, for example by taking (mitigating) measures. In particular, this should address the consequences for local residents (construction phase) and for Natura 2000 sites during the construction phase (nitrogen) and the operational phase, in any event including cooling water.

The recommendations of the NCEA will be adopted almost in full. Depending on the subject of the recommendation, it will be incorporated into the final Memorandum on Scope and Level of Detail, the SEA-r or the IIA. Most of the revisions involve the clarification of various points raised by the NCEA in its recommendations. How the Ministry will address the various recommendations of the NCEA will be described more specifically at the end of this response memorandum and in the final Memorandum on Scope and Level of Detail.

#### More information

You can find more information about nuclear energy in the Netherlands at [www.overkernenergie.nl](http://www.overkernenergie.nl). You can find information about the project procedure that will be completed for this project on the online project page: <http://www.rvo.nl/nieuwbouw-kerncentrales>.

## 2 *Thematic answer*

### 2.1 Usefulness and necessity

#### General

The government has set itself the target of being climate neutral by 2050. On the way to that goal, the Netherlands needs to be emitting 55% to 60% less CO<sub>2</sub> by 2030. In order to be able to achieve the target for 2050, sustainability upgrades to the energy system will be needed, by making electricity the main energy carrier.

There are various energy sources available in the Netherlands that can contribute to achieving climate neutrality because they are virtually carbon-neutral in the generation of electricity. They are wind energy, solar energy, nuclear energy and biomass and gas-fired power stations in which CO<sub>2</sub> can be captured. An advantage of nuclear energy is that it is not weather dependent and offers a certain degree of flexibility while also being able to continuously generate a particular quantity of electricity. As such, nuclear energy represents a supplement to wind and solar, which will generate the bulk of the electricity required in the Netherlands in the future. The addition of nuclear energy to the electricity system will also contribute to more stable electricity prices. In view of the urgency of the climate issue, the Netherlands does not have the luxury of ruling out particular carbon-neutral energy sources. Electrification is the most efficient sustainability pathway for many applications. The government is aiming to ensure that, by 2050, domestic electricity production is sufficient to meet the direct electricity demands of the various end-user sectors (which will be much greater by then).

The government has chosen to pursue an operating life extension for the existing nuclear power plant in Borssele and preparations for the construction of two large new nuclear power plants. There will also be two additional nuclear power plants, with the potential for building multiple small plants also being considered. These two additional nuclear power plants

(including possibilities for multiple small plants) fall outside the scope of this procedure. Other benefits of nuclear energy are as follows:

- Moving towards a more independent energy system, with a greater ability to meet our own energy requirements, is of value for Europe.
- Nuclear energy requires considerably less space per MW than other energy sources.

### Drawbacks of nuclear energy

Besides benefits, nuclear energy also has drawbacks such as waste and safety concerns. Safety is an absolute precondition for the operation of a nuclear power station. For this reason, Dutch nuclear reactors have to meet strict national and international safety requirements, as a result of which the risk of accidents is very small. Should an incident occur, a substantial array of measures are in place to limit its impact.

Nuclear power plants produce radioactive waste, which in the Netherlands is stored above ground for at least one hundred years by the Central Organisation for Radioactive Waste (COVRA) in the municipality of Borsele in Zeeland. Ultimately, it will need to be stored in a final geological disposal facility underground. This is designed to ensure that the waste remains isolated from the human living environment for thousands of years.

In addition, numerous and lengthy preparations are required before a nuclear power plant is built and operational. These relate to the research phase and the licensing process, with technical challenges and financial risks. Estimates of construction costs and lead times are uncertain in the early phases of the project.

### Scope

Two nuclear power plants are envisaged with a joint maximum capacity of 3.3 GW which, based on a capacity factor of 90%, will be able to generate 25 TWh on an annual basis. The government's ambitions to realise two additional nuclear power plants, as well as the option of multiple small plants, fall outside the scope of this project procedure. This procedure does not address the question 'why include nuclear energy in the energy mix?'. At the recommendation of the NCEA, the Ministry of Climate Policy and Green Growth has set out the environmental case regarding the usefulness and necessity of nuclear energy in the energy mix and sent it to the House of Representatives on 17 October 2025. This environmental case describes different future energy mixes including varying amounts of nuclear energy, ranging from 0 GW to 8.3 GW of nuclear energy. The main conclusion is that nuclear energy represents a good supplement to wind and solar energy. The environmental impacts of the different energy sources differ and call for a specific assessment on a case-by-case basis.

### *Dunkelflautes* and nuclear energy

In an energy context, the term 'dunkelflaute' (low-wind, no-sun period) refers to a period of time when barely any energy is generated by wind and solar, because of the simultaneous occurrence of darkness and/or mist and a lull in the wind. In the pursuit of a broad energy mix, the government foresees a role for nuclear energy. The primary reason for deploying nuclear energy is not to compensate for the possible reduced production of wind and solar but to contribute to the robustness of the energy system.

Like other generating technologies, nuclear energy is not zero carbon

Although nuclear power plants do not emit CO<sub>2</sub> during their operational phase, no energy source is 100% CO<sub>2</sub>-free, viewed over its entire life cycle, because raw materials are required in order to develop every energy source. In the case of nuclear energy, uranium needs to be mined and enriched. This process releases CO<sub>2</sub>. The carbon footprint of nuclear energy per quantity of electricity generated is comparable to renewables.

Choices in other countries

Choices with regard to the energy system are a matter for national governments. Ambitions differ per country. For instance, some European countries want less nuclear energy. However, there are also countries, like the Netherlands, that actually want to make greater use of nuclear energy, such as Poland, the Czech Republic, Finland, Sweden and Slovenia.

Cost

In October 2025, the Netherlands Organisation for Applied Scientific Research (TNO) published its [research report](#) 'Nuclear energy system cost analysis'. In the study, the system costs of the future Dutch energy system are calculated, based on realistic assumptions and the latest insights. It compares a scenario in which investment is put into two or four large-scale nuclear power plants with a scenario without nuclear power plants. The main conclusion is that the energy system including two or four nuclear power plants with a total maximum production capacity of 6 GW would have comparable system costs to a system in which this production capacity is met by an additional quantity of offshore wind of 9.5 GW and required flexible technologies. See also the description under the thematic answer 'Cost and planning'.

## 2.2 Alternatives

Zero option: no nuclear energy

A number of the responses point out that, under the Aarhus Convention, the so-called zero option must be part of the consultation procedure. This Convention contains provisions on legal avenues open to residents, consultation on decision-making about environmental matters and access to environmental information. A recommendation document published in

2015 proposed supplementing the Aarhus Convention, *inter alia* on the point of the so-called 'zero option', in this case a situation with no nuclear energy whatsoever. The Ministry of Climate Policy and Green Growth has since explored the environmental considerations with regard to nuclear energy and the associated choices. Removing all nuclear energy would mean halting the increase in radioactive waste and removing the potential risks to the local environment in the (very unlikely) event of an emergency. On the other hand, wind and solar have greater associated space requirements and have their own impacts on the environment and the local area. The fact is that no source of energy generation has no concomitant forms of nuisance whatsoever and none is entirely CO<sub>2</sub>-free.

The current project procedure envisages the construction of two new nuclear power plants, including a consultation process. In the EIA procedure, we assume a reference situation: the situation as it would be in 2040 without the construction of these two new nuclear power plants, but with the existing Borssele nuclear power plant.

#### SMRs

Small Modular Reactors (SMRs) is an umbrella term for a large number of different designs for nuclear power plants. An SMR knowledge module is available. SMRs commonly have a smaller capacity than conventional plants like the ones currently being built. There are many designs under development worldwide (more than 80), differing in aspects including cooling method, fuel used and energetic application. SMRs can potentially play a role in making industry more sustainable in the more remote areas of the Netherlands. No SMRs have yet been built in the Western world, nor is it clear when SMRs could be commercially available in the Netherlands and how much they would cost. We do know that Canada and the United Kingdom are taking concrete steps towards building SMRs. As such, they are the leaders in the Western world in terms of SMRs. The expectation is that the first SMRs will be constructed in those countries by early 2030. A recent market analysis revealed that the minimum lead time for the licensing and construction of an SMR is approximately 7 years, provided the design is based on existing technology and has already been built somewhere in the world. Based on the above expectations, the construction of an SMR in the Netherlands close to 2040 appears possible. Alongside a commitment to four conventional plants, the government programme of the Schoof I government included options for multiple small reactors (SMRs). In order to identify the potential of SMRs for the Netherlands and accelerate developments around SMRs, the Ministry of Climate Policy and Green Growth has launched an SMR programme. The approach will ensure that various preconditions are identified and the required knowledge is collected and disseminated. Gathering knowledge jointly puts stakeholders in an informed position, allowing them to respond adequately to developments. The exploration of alternative renewable and other energy sources, such as SMRs, is not part of this procedure.

### Other alternatives

In order to meet its climate goals, the government wants to use a mix of clean energy sources to meet energy demand in the coming years. As such, nuclear energy represents a supplement to wind and solar, which will generate the bulk of the electricity required in the Netherlands in the future. It is expressly not the case that one energy source impedes or competes with another. In view of the urgency of the climate issue, the Netherlands does not have the luxury of ruling out particular carbon-neutral energy sources. Energy storage, potentially on a large scale, and hydrogen (including green hydrogen) will also be utilised to achieve the targets. Thorium reactors are still under development and are therefore not yet an option.

### Energy conservation

Multiple actions will be needed in order to meet the targets for the energy transition. Energy conservation is one of the cornerstones of policy, because energy that is not consumed is energy that does not have to be generated, purchased or imported and transported. Conserving energy contributes to affordability and reduces the demand for energy and dependence on other countries. Energy conservation should also help to limit technical challenges, such as grid congestion, making the challenge of the energy transition more manageable and reducing its impact on the Dutch energy system. This aspiration is also in line with the European Energy Efficiency Directive (EED).

The National Energy Conservation Programme is aimed at improving coordination of energy conservation. The goal of the programme is to reduce energy consumption and increase energy efficiency in the demand sectors. This programme is a collaboration between government bodies, industry, knowledge institutions, other institutions and NGOs aimed at switching to an energy-efficient and sustainable energy system. Exploring energy conservation is not part of the project procedure for new nuclear power plants.

## 2.3 Locations

### General

The location of the two new nuclear power plants has not yet been decided. That decision will be taken later, on the basis of this procedure. Based on different aspects and a comprehensive assessment between them, it will be determined whether a location is more or less suitable for building nuclear power plants. Safety is a very important aspect, but the following are also important:

- Geographical position in relation to highly populated urban centres and whether the requirements for the safety of local residents can be met.
- Accessibility (for the emergency services, supply and removal of fuel, etc.).

- The presence of sufficient and suitable cooling water.
- The suitability of the electricity infrastructure and future scope for investment in modifications.
- The vicinity of potential users/purchasers of the energy generated (and possibly of waste products).
- The potential for spatial integration, including the corresponding measures, such as earthmoving or changes to infrastructure.
- The information on the impacts of the different locations is set out in the SEA-r and the IIA. These documents provide the basis for the decision on the preferred location. The rationale and choice of location are described in the (draft) Preferred Solution.

How research locations were identified for the project procedure

If all the safety requirements are met and the land use/zoning plan allows it, nuclear power stations may be built anywhere in the Netherlands. However, there are several areas of the Netherlands that have been designated for the construction of large-scale nuclear power stations (with a capacity of at least 500 MW), which are thought to be the most suitable. Spatial developments are prohibited at these locations and in their surrounding areas that would prevent nuclear power stations from being constructed there. These are the locations for nuclear power stations listed in the Safeguarding Policy. Until 1 January 2024, the concrete details of this policy were set out in the Physical Planning (General Rules) Decree (BARRO) and, following the entry into force of the Environment and Planning Act, were incorporated into the Living Environment (Quality) Decree (BKL). Land use and zoning plans around these locations may not permit the development of new objects of a vulnerable nature – such as hospitals and schools, or housing for more than five thousand residents – within a radius of one kilometre.

#### *Safeguarding policy*

The safeguarding policy for nuclear facilities was first laid down in a key planning decision (PKB) in 1986. For this 1986 planning decision, 32 potential locations that were deemed suitable for large-scale energy production were evaluated. The criteria used are still relevant today. After several rounds of deliberations, five potential locations for building nuclear reactors emerged: Eemshaven, Borssele, Moerdijk, Maasvlakte and Westelijke Noordoostpolderdijk. The most recent review of suitable locations was conducted in 2008 as part of SEV III (National Structure Plan for Electricity Supply), based in part on an SEA-r. Following this study, three potential locations were reconfirmed: Vlissingen/Borssele (Slogebied), Eemshaven and Maasvlakte I.

#### Update report

In order to enable a choice of location, the scoping phase of the project procedure will work towards a legally mandated comparative assessment of “alternatives that ought reasonably to be considered”. The project procedure need not be limited to the locations from the safeguarding policy. For this reason, the alternatives that ought reasonably to be considered are

described in the Draft Memorandum on Scope and Level of Detail. To this end, the assessments made as part of the safeguarding policy have been brought up to date in an Update Report, by examining the locations previously considered as potential locations for nuclear energy in the light of the knowledge available today. The Update Report recommends considering two additional areas (Terneuzen and Maasvlakte II) in the EIA procedure.

#### Draft Memorandum on Scope and Level of Detail locations

The draft Memorandum on Scope and Level of Detail describes at length how the locations from the Safeguarding Policy and the Update Report led to a longlist of areas. It also describes how the location suggestions from the responses to the Intention and Proposal for Public Participation which was available for public inspection in early 2024 were handled.

Based on the above, for the draft Memorandum on Scope and Level of Detail, the following longlist was assessed for impediments at each location, grouped under the headings of safe operation, technical concept, availability and local environment:

1. Sloegebied;
2. Maasvlakte I;
3. Maasvlakte II;
4. Terneuzen;
5. Eemshaven.

Relevant to assessing whether the siting of nuclear power plants should be further investigated in Eemshaven are the adoption of the Beckerman motion and the Mulder & Sienot motion in 2021, which rule out nuclear power plants in Groningen, and on the basis of which Eemshaven is to be scrapped from the safeguarding policy. However, this area has not been excluded from the assessment of locations in the draft Memorandum on Scope and Level of Detail because it does meet preconditions such as the potential availability of 380 kV and cooling water, the absence of significant environmental impediments and the location of population concentrations at some distance away. As such, Eemshaven is a location that ought reasonably to be considered, and from the EIA perspective it is necessary to further investigate locations within this area in order to be able to arrive at a legally watertight decision.

Based on the analysis of the areas described in the draft Memorandum on Scope and Level of Detail, it was concluded that Maasvlakte I should be disregarded as a potential location for new nuclear power plants due to insufficient availability of

cooling water within the existing port infrastructure and spatial limitations. In relation to the other areas, it was concluded that 7 locations would be investigated in the SEA-r:

- Sloegebied:
  1. EPZ-north
  2. Thermphos site
- Terneuzen:
  1. Westelijke Mosselbanken/Paulinapolder
- Maasvlakte II:
  1. Arianahaven west side
- Eemshaven:
  1. Westereemweg/Emmapolder
  2. Eemshaven power plant
  3. Eems power plant

#### Distribution option

Building two nuclear power plants side-by-side at the same location offers significant advantages in a financial sense and in terms of lead time. Building two nuclear power plants at two different locations presents significant disadvantages in terms of cost and construction time and is therefore not financially feasible. For this reason, this procedure only considers the siting of two nuclear power plants that are linked together and will stand side-by-side at a single location. There are clear benefits to taking this approach. The arguments and supporting evidence for this approach are provided by reference projects abroad involving the construction of multiple reactors at a single location: Hinkley Point C and Sizewell C in the United Kingdom and Gravelines in France. There are three points that support this approach:

- Cost Price per MW/h: The cost per generated megawatt per hour is lower if more energy is generated at a single location and this energy can enter the power grid.
- Less impact: Instead of setting up construction projects of this size at multiple locations, the impact on the surrounding area is generally more limited if there is only one construction project to set up, because nuisance is only experienced in one region; in addition, it is also only necessary to set up compensation, communication, participation and stakeholder management for one region.
- Learning effects: By not building the nuclear power plants in parallel but with a delay of one year between them, a 'learning effect' is created. As a result, it is anticipated that the construction of the second reactor will proceed more smoothly thanks to everything that is learned during the construction of the first reactor.

## 2.4 Safety

### General

Safety is an absolute precondition for building and commissioning a nuclear power plant. Dutch nuclear reactors must meet strict national and international safety requirements. An important element of this is so-called 'layered safety', which may be described as the interaction between technical, organisational, procedural and administrative measures. These measures are divided into levels and are primarily designed to control escalating circumstances. Since this means that in the event of an incident, there is always an independent back-up layer, the probability of the entire safety system failing at once is very small.

A nuclear power plant is evaluated every ten years and where necessary modified in line with the state of the art. This evaluation is called the 10EVA. In a 10EVA, the installation(s) will be evaluated against the state of the art. This results in potential improvement measures which are assessed and prioritised. The licensee must take all necessary measures to prevent accidents or – if an accident does occur – limit any associated impacts (article 6(1) and (2) of the Safety of Nuclear Facilities Regulations). Finally, a summary assessment report and an 'implementation plan' are drawn up, setting out how the improvement measures will be implemented.

The 10EVA is carried out by the licensee, with the Authority for Nuclear Safety and Radiation Protection (ANVS) overseeing the implementation of the improvement measures. Alongside the role of the ANVS in the assessment of the 10EVA, it carries out ongoing oversight. The ANVS ensures that the highest standards of nuclear safety and radiation protection are met in the Netherlands. The ANVS performs that role by laying down rules, issuing licences, ensuring that licence-holders abide by the conditions and, if the need arises, taking enforcement action. In addition, there is continuous control of safety in accordance with fixed protocols.

A nuclear power plant can withstand extreme external circumstances, for example an earthquake or flooding. In spite of strict rules and stringent supervision, accidents cannot be ruled out.

The Minister of Infrastructure and Water Management and the other ministers involved are responsible for preparing the organisation for an effective response to nuclear accidents. Another concept on which nuclear safety is based is that of 'continuous improvement'. The licensees of nuclear installations are responsible for the safety of those installations. This means they are required to conduct research into and evaluate the nuclear safety of their installations and take measures to improve nuclear safety in timely fashion. When conducting this research and evaluation they must take account of national

and international developments and experiences in the field of nuclear safety and radiation protection. As a result, the probability of accidents is very low.

New insights gained over time, in some cases through developments at other plants around the world, lead to new requirements for nuclear power plants. Those new requirements must be implemented, resulting in the achievement of a safety level that is in line with current scientific and other insights. With a view to nuclear safety, the radiological consequences of normal operation and the radiological impacts of accident scenarios are identified in the SEA-r. External risks are part of the assessment framework used.

#### Rise in sea level and flood risk

Both the project procedure and the design process expressly consider the rise in sea level. This aspect is evaluated in the SEA-r. Water boards and Rijkswaterstaat are involved in the planning process, in part in order to ensure the stability of dykes, which falls within the remit of those parties. In the design process for the nuclear power plants, allowance is made for the fact that in the event of flooding, no water must be able to reach vital systems, which means that a nuclear power plant is resistant to flooding.

#### Terrorism

A nuclear power plant is thoroughly secured against terrorism, whether targeted physical actions or digital cyber attacks. In new nuclear power plants, the core is generally located underground and terrorist worst-case scenarios are assumed in the design. An example would be an aircraft impact. A concrete package of security measures is taken on the basis of established 'reference threats', which is assessed by the ANVS. Specific information about the measures and reference threats is not made public for security reasons. An assessment criterion for the safety of the local environment is included in the SEA-r, which is used to assess high-risk businesses and military targets in the surrounding area, for example.

#### Radiation

A lot of know-how is present in the Netherlands about radiation and what it means for health. There are policies in place for nuclear safety and protection against radiation in our country. The aim is to protect humans and the environment against the risks of exposure to ionising radiation. In line with this aim, exposure to radiation must be justified, must be as low as reasonably achievable and must remain below certain values. Although every resident of the Netherlands is exposed to radiation on an annual basis (indoors or during medical examinations), it is important to offer protection against the risks of that radiation, because excessive exposure is a hazard to health.

The National Institute for Public Health and the Environment (RIVM) studies radiation and health impacts and helps the government protect citizens, patients and employees against the harmful effects of radiation – for example by taking preventative measures, such as providing iodine pills. The radiological impacts are part of the impact assessment for the SEA-r.

#### Escape routes

An assessment of possible escape routes will be included in the SEA-r. This subject is considered when identifying the consequences of a nuclear power plant for the self-reliance of people in the surrounding area and the group risk. It is important for the emergency services to have a good understanding of escape routes, and local residents and employees also need to be able to flee safely in the event of an emergency.

#### Examples from abroad

Some of the responses received refer to the disasters in Fukushima (Japan) and Chernobyl (former Soviet Union). These situations are not directly comparable with one another. The Chernobyl disaster was caused by a combination of human error and design faults, whereas in Fukushima there was a combination of multiple natural disasters (earthquake, tsunami) which cannot occur in the Netherlands.

## 2.5 Radioactive waste

#### General

Generating nuclear power produces radioactive waste. This needs to be dealt with in a responsible and safe manner. Current practice is for the greatest possible number of spent fuel rods from the Borssele nuclear power plant to be recycled. This takes place in France. The remainder of the waste is then temporarily stored above ground and managed by the Central Organisation for Radioactive Waste (COVRA) in Nieuwdorp in the Dutch province of Zeeland for at least a hundred years. Research is being conducted into options for recycling fuel for the planned new nuclear power plants.

Today, geological disposal is internationally regarded as being the safest and most suitable solution for the final disposal of highly radioactive waste. The aim of geological disposal is to keep the highly radioactive waste segregated such that it cannot influence humans and the environment for a period of thousands of years. The precise form this geological disposal will take is still being investigated. The aim is to take a decision around 2050 on the location and management method of the geological disposal facility.

#### The policy

The policy on radioactive waste is part of the policy on nuclear safety and radiation. The aim of that policy is to protect humans and the environment against the risks of exposure to ionising radiation. In order to achieve this, exposure to radiation must be justified, must be as low as reasonably achievable (ALARA) and must remain below certain values. Since 1984, the safe management of radioactive waste has been based on the following principles:

- Minimising the creation of radioactive waste
- The safe management of radioactive waste
- No undue burdens to be placed on the shoulders of future generations
- The cost of managing radioactive waste to be borne by those who cause it

The policy is laid down in the National Programme for Radioactive Waste (adopted in 2016). The government is currently working on a new National Programme for Radioactive Waste (NPRO) which is planned for the first half of 2026.

#### Storage of radioactive waste at COVRA

All radioactive substances produced in the Netherlands are temporarily stored above ground in the buildings of the Central Organisation for Radioactive Waste (COVRA) in Zeeland. The waste can be stored safely in those buildings for at least 100 years.

#### Final disposal

In September 2024, the government announced its intention to bring forward its decision on the final storage or so-called 'final disposal' of radioactive waste. This decision was originally not due to be taken before 2100. The aim is to decide on a location and management method for the final disposal of radioactive waste by 2050. The government thus wants to choose the final disposal method and location at an earlier date than originally planned. The decision-making process will be gradual, participatory and highly meticulous, starting after 2027. In order to formalise that process, the Ministry of Infrastructure and Water Management is working to elaborate a concrete Action Programme for the Final Disposal of Radioactive Waste (AERA) and its implementation. This Action Programme will be sent to the House of Representatives by late 2027 and will be based on multiple tracks, which will make up the different components of the AERA. At present, those tracks are (in alphabetical order): Final Disposal, Financial, Governance, Legal, Multinational Strategy, Participation and Research.

The design of a final disposal facility has yet to be determined. Various types of management methods are possible, ranging from surface storage (0 to 200 metres depth), deep geological repository (500 to 900 metres depth) to ultra deep boreholes (4000 to 5000 metres depth).

#### Quantity and types of radioactive waste

Although all radioactive waste emits radiation, not all the waste emits equal amounts of radiation or equally long-term radiation. For instance, highly radioactive waste emits a lot of radiation and in some cases remains radioactive for tens of thousands of years. Short-lived radioactive waste may have finished emitting radiation after two years and then be processed as normal waste. In between there are waste streams that emit relatively little radiation but do remain radioactive for an extended period of time. In the Netherlands, less than 1% of the volume of radioactive waste currently consists of highly radioactive waste.

Transport to and from a potential nuclear power plant

Radioactive waste substances are transported by air, water, road and rail. This is subject to strict rules. Transports containing nuclear material are always guarded and secured. For each transport movement, a permit must be requested from the Dutch Authority for Nuclear Safety and Radiation Protection (ANVS) The ANVS assesses whether all conditions have been met.

## 2.6 Nuclear fuel chain

Dependence on uranium

Uranium is commonly occurring in nature. However, it cannot be directly used as fuel in a nuclear power plant. Firstly, uranium ore has to be mined. Kazakhstan, Canada, Namibia and Australia are the main countries where this takes place, and together they supply 75% of the global market. Whereas in Kazakhstan a kilo of uranium can be economically extractable from a price of 40 dollars, in Australia this is only the case if a kilo costs 80 dollars or more. The next step after mining is conversion: turning the uranium into a form that can be enriched. Conversion is possible in France, China, Russia, Canada and the US.

Following conversion, the uranium is enriched, for example by the partly Dutch-owned company Urenco, with locations in the Netherlands, Germany, the UK and the US, and the French company Orano. Other global players in the field of enrichment are Russia and China. Because Western countries do not wish to use Russian enriched uranium, Urenco and Orano are expanding their operations in order to be able to meet this demand. After the uranium has been enriched, it is turned into fuel rods which can be used as fuel in nuclear power plants.

Reuse of uranium (spent fuel)

At the Borssele nuclear power plant, the used fuel is reused as much as possible. EPZ, the operator of the plant, has an agreement with a European supplier for this purpose. This supplier uses a Russian subcontractor for one step in the process

of making the uranium suitable for reuse. The Dutch nuclear power plant in Borssele does not directly do business with Russia. The existing contracts for the fuel were concluded with European parties.

At present, there is no alternative globally for the processing step that is carried out in Russia. In collaboration with various parties, research is being conducted into possible solutions for this. In addition, the consequences of not reusing uranium are also being explored. It should be realised that an alternative is not achievable in the short term. Building or modifying a nuclear facility is complex, time-intensive and expensive, and must therefore take place diligently.

#### Uranium exports

An export permit for (depleted) uranium can only be granted for civilian purposes. Strict conditions apply for licensing, based on the guidelines set out in the export control regime of the Nuclear Suppliers Group (NSG) and the EU dual-use regulation. The material also falls under the system of supervision of the International Atomic Energy Agency (IAEA).

## 2.7 Cost and planning

Cost, lead time and system integration play an important role in the construction of new nuclear power plants. The Letter to Parliament of 17 October 2025 explained how these aspects will be included in the decision-making going forwards. The results of the system costs analysis by TNO will be used to this end. This study showed that an energy system including two or four nuclear power plants has comparable total system costs to systems that generate the same quantity of low-carbon electricity exclusively using renewable sources, while delivering additional flexibility. In this scenario, the higher investment costs of nuclear power plants are compensated by the reduced investment required in hydrogen production, storage, grid reinforcement and imports.

The cost of nuclear power plants is largely determined during the tender process, when market operators submit their proposals, including cost, construction time and risk distribution. For this reason, the estimates in this phase are indicative. The eventual business case and the manner in which the plants are integrated into the energy system are key to their economic feasibility.

#### Role and deployment in the energy system

Nuclear energy can contribute to security of supply and price stability in the Netherlands because nuclear power plants can deliver weather-independent, continuous production. The TNO study calculated that nuclear energy results in a more stable electricity system, with a reduction in the need for additional flexibility, storage and grid reinforcement. In the models,

nuclear power plants are not deployed as traditional base load but are able to modulate their capacity within what is technically feasible for generation III+ plants. As regards the actual deployment of the nuclear power plants, this will be determined as part of a mix of solar, wind, nuclear energy, flexibility and demand management, with the total system, and hence the combination of sources, being decisive for the deployment.

#### Financing and role of central government

As for other large low-carbon projects, significant government support may initially be needed for nuclear power plants due to the high investment costs and the length of the design and construction phases. Options for appropriate financing constructions are currently being explored. This means looking at the wishes of technology suppliers, the financial sector and the possible role of central government, which may involve a Government Support Package (GSP). For major sustainable energy projects, the Netherlands often utilises instruments that distribute risks and returns in a predictable manner, such as contract-for-difference-type structures or programme financing. For nuclear energy, an approach of this kind is being investigated. In the operational phase, forms of support comparable to those commonly used for other low-carbon technologies may also be deployed. As before, it remains the case that the operators are responsible for costs such as decommissioning and that risks are equally spread.

The system analyses reveal that nuclear energy can be a prudent and cost-effective choice at system level. At the same time, delivery requires an appropriate Government Support Package in order to be able to bear the high initial investment costs and ensure a robust business case. As explained in the Letter to Parliament, a package of this kind is not only essential, it is also in the best interests of the Netherlands, because it will achieve the most cost-effective project and means the financial risks are distributed in a predictable and controllable manner.

#### Initial cost indication

The technical feasibility studies yielded an indicative bandwidth of €20 to €30 billion in construction costs for two nuclear power plants. This bandwidth includes the costs the owner must incur for the project (the owner scope) and which therefore do not fall under the future responsibility of the technology supplier. It excludes any financing costs (interest).

Naturally, the bandwidth is dependent on the technology supplier and the size of the different plants (1,050 to 1,650 MW). In addition, the eventual choice of location will have a major impact on the cost level. The uncertainty will therefore decrease as the project moves further into the selection process and the signing of a contract with a technology supplier approaches. This is typical for large infrastructure projects, which require various additional technical studies and negotiations by the project developer with its own supply chain about the lead time for the preparations for construction in order to obtain greater certainty regarding cost. Complete clarity about what the nuclear power plants will cost and what the central government will

contribute will only be achieved at the time of the Final Investment Decision (FID) – after contract negotiations with the preferred bidder.

The €5 billion earmarked for nuclear energy in the Climate Fund has, from the outset, been explicitly intended for the preparations for and a share in the contribution towards the construction of two plants. The Schoof government has set aside €9.5 billion as an additional contribution from the Dutch government towards the development and construction of the four nuclear power plants. The bandwidth of costs shows that the total required investment will be higher than the resources reserved in the Climate Fund. It is a realistic possibility that the remaining financing requirement will be greater than what can be attracted from the private market at desirable conditions. For this reason, the deployment of additional public financing instruments is being considered in order to meet the cost of construction, including the provision of debt financing for the project by central government.

#### Potential budget overrun

At this time, it is not yet clear exactly how much the construction of two nuclear power plants will cost: after all, it is not yet clear what type of plants they will be, where they will be built and which additional costs will be necessary at the location in order to enable construction there. Cost overruns are not unique to the construction of nuclear power plants, but they are more likely due to the complex technical designs and strict safety requirements. Naturally, great efforts are being made to limit costs as far as possible, without compromising on safety or due diligence. Lessons from abroad will be included in the Dutch approach for the construction of the two nuclear power plants in the Netherlands. An important option for reducing the risk of cost overruns is to choose proven technology (conventional generation III+ reactors), in order to prevent overruns from developing a First Of A Kind plant.

The TPR devotes a lot of attention to the concept of the delivery model. This is the model used by the different technology suppliers for implementing the construction programme, including the allocation of risks and the assigning of responsibilities to the owner. The delivery model is primarily elaborated in terms of the contractual structure for construction. A compelling consideration for the government for the coming years is what a large role for the Dutch government in the financing structure will mean for the allocation of risks during construction and responsibility for cost overruns. The design of the technology selection process is an important step in this.

#### Planning in relation to sustainability goals

As regards the planning of the construction of the nuclear power plants in relation to the sustainability goals, the reader is referred to the 'usefulness and necessity' section.

### Decommissioning costs

Many of the consultation responses received highlight the lack of money to dismantle the Dodewaard nuclear power plant. This nuclear power plant was shut down in the late 1990s and has been awaiting decommissioning since then. At the time of its construction in the 1960s, there was not yet a legal requirement under which the operator could be obliged to build up a fund from which the decommissioning could be paid after the end of the operating period. For this reason, in the case of the Dodewaard nuclear power plant, the decommissioning costs fall to central government.

Since the establishment of the Borssele nuclear power plant, the Nuclear Energy Act has contained a provision requiring the operator to have sufficient financial resources in all eventualities to enable decommissioning. This therefore also applies to the construction of new nuclear power plants – ensuring that it is the operator rather than the taxpayer who foots the bill for the decommissioning costs.

## 2.8 Quality of life and general well-being

### Zeeland conditions

In a Letter to Parliament in late 2022, the Rutte IV government announced that Borssele was its preferred location for the construction of two nuclear power plants. The government made this announcement in order to facilitate detailed research ahead of the start of the tender process. The move also created opportunities to make an early start on a participation process in the local area, since the construction of new nuclear power plants will have a significant impact on the local area, both before, during and after the construction period.

With a view to the impact on the local area, the central government and regional parties are working towards a joint package of measures, the so-called National/Regional Package. This is aimed at mitigating, as far as possible, negative consequences of construction if it goes ahead and taking advantage of joint opportunities in the area, so that a win-win situation arises for both central and regional government.

In 2023, Borsele municipality carried out a participation process, which yielded the Borsele conditions. They asked their residents and stakeholders which conditions they wanted to attach to potential large new energy projects in the region, including two new nuclear power plants. The conditions vary in terms of content and relate to such matters as house prices, cooling towers and accommodation for employees of the proposed nuclear power plants. In early 2024, these conditions were compiled by the municipal and provincial authorities and presented to central government.

On 4 September 2025, the Minister of Climate and Green Growth issued an initial response to the content of the Borsele and Zeeland conditions. This did not contain a final answer to the conditions.

Some of the conditions are already being met. Certain conditions are not achievable, for example because they are not technically possible, not proportional and/or conflict with applicable laws and regulations. With regard to many of the conditions, it is not yet clear what is possible, because studies are still underway or because a final answer can only be given at a later stage of the project, for example during the final design phase. Finally, there are conditions we would first like to discuss with those proposing the conditions in order to hear what the precise underlying concerns are and how those concerns can be met (as far as possible).

Borsele municipality and Zeeland province have utilised this initial response to continue their dialogue with those proposing the conditions. In addition, after summer 2025, Vlissingen and Terneuzen municipalities also launched their own participation processes in order to identify conditions and opportunities in partnership with their residents. In doing so, they are drawing on the knowledge gained during the earlier participation process conducted by Borsele municipality. The opportunity to initiate a participation process was also offered by the Ministry to Eemshaven and Maasvlakte.

#### National/Regional Package

The government takes the conditions very seriously. The translation of the conditions expressed regionally into concrete agreements is an important foundation for the National/Regional Package. A number of principles are used in order to determine to what extent those conditions can be met: they must be proportional, they must fit within the Dutch energy system, they must be legally feasible and they must be in accordance with legal frameworks. These principles are also applicable to other regions, should it transpire that the final location of the new nuclear power plants is not in Zeeland. In Zeeland, Mr. Raymond Knops has been acting as area connector since September 2024. He is performing an independent bridging role between the different parties in order to achieve a National/Regional Package in the time ahead. Working out this package will be a long-term process. For this reason, the Minister of Climate and Green Growth has signed a letter of intent with Borsele municipality and Zeeland province elaborating the procedural agreements for the National/Regional Package and underlining the importance of the collaboration. The parties have agreed the following guiding principles: our aim is to deliver a positive legacy for Zeeland's residents, we take each other seriously and we express ourselves honestly.

In 2026, the Ministry of Climate Policy and Green Growth, together with Zeeland province and Borsele, Vlissingen and Terneuzen municipalities, will draw up a provisional National/Regional Package that will be published simultaneously with the choice of location. It is not yet possible to draw up a final package because the technology supplier is not yet known. A final answer can only be given for some of the conditions once the technology supplier is known.

If a location other than one in Zeeland is chosen, more time will be needed in order to work out a National/Regional Package. The other regions besides Zeeland are now also being given support to build up knowledge about the possible arrival of the nuclear power plants and to contribute local and regional knowledge for a good and diligent participation process.

### Area-specific approach

In all the areas to be investigated, there are many other physical and other developments at local and regional level. For instance, in the field of energy, there may be initiatives around hydrogen, landfall sites for offshore wind or additional high-voltage connections. From the perspective of local residents and other stakeholders, such developments may be viewed in connection with the planning for nuclear power plants. All of these developments have a significant spatial impact. The IIA reveals which developments in the area may be affected by a decision on new nuclear power plants. The [Netherlands Enterprise Agency \(RVO\) website](#) contains an overview of all the national energy projects being coordinated by central government.

### Nuisance during the construction phase

The construction of two new nuclear power plants will have a significant impact on the local area in a number of respects. Noise nuisance, significant traffic movements, vibration, air pollution and dust will be limited as far as possible but cannot be prevented completely. The SEA-r must demonstrate to what extent there will be environmental nuisance and which mitigating measures can be employed in order to limit nuisance. The SEA-r will also investigate how much space is needed to provide room for all the construction activities.

### Societal impact

The construction of nuclear power plants can lead to changes to the social fabric. After all, the consequences for the local area are significant, with (at its peak) approximately 10,000 employees who will need places to live and work. These people will temporarily make use of all kinds of amenities: schools, doctors, supermarkets, bars, sports clubs, etc. As a result, existing residential areas will also feel the impact from the arrival of the nuclear power plants in the social sphere. Negative impacts must be avoided beforehand. Based on international examples, as well as the policy goals of the regions where we are conducting the research, we will look at which strategy is most suitable for accommodating those 10,000 employees. The results of the studies will be incorporated into a so-called socio-economic report and the IIA. The regions will be involved in the results: maintaining a good dialogue with them is vitally important in order to find good solutions to the accommodation issue.

### Reduction in the value of homes

The most suitable location for the construction of two new nuclear power plants is currently being investigated. The impact on the value of real estate will be investigated at a later stage, in studies focusing on the local impact of the construction and operation of two nuclear power plants at a single specific location.

#### Impact on tourism

The most suitable location for the construction of two new nuclear power plants is currently being investigated. The impact on tourism and other economic drivers will be investigated at a later stage, in studies focusing on the local impact of the construction and operation of two nuclear power plants.

## 2.9 Impacts on the environment

The impacts of the construction and operation of a nuclear power plant on the environment are currently being investigated. There are numerous possible impacts, such as from cooling water discharge, impacts on ecological values and the extent of nuisance for local residents during the construction phase. The latter may include noise nuisance, traffic movements, air pollution and windblown dust. In addition, the impacts of cooling water extraction, impacts on cultural-historical heritage, the landscape and possibilities for recreation are also being studied. The impact on the environment is, however, dependent on the precise location where the nuclear power plants are built. For this reason, the potential environmental impacts will be identified in an SEA-r at multiple points in the project procedure. In order to be able to choose a location, an SEA-r will first have to be drawn up; work is currently underway on this. This SEA-r is more global in nature and is intended to enable comparison of different locations, including in terms of the environment; the so-called alternatives. This SEA-r will be published together with the (draft) preferred solution. The precise environmental and other impacts of the chosen location will only be revealed in a project SEA-r to be published with the project decision. A project EIA-r is more detailed and focused on a specific location.

Transboundary impacts caused by the project will also be identified in the SEA-r. For example, the possible impacts on the Western Scheldt, which will also affect Belgium. However, there are limits to what may realistically be identified. For example, the extraction of uranium, the essential fuel for nuclear power plants, in a country like Kazakhstan does not fall within the scope of this EIA procedure. After all, the mining activities to this end take place at a remote location, at which the Dutch government cannot impose any legal requirements. For this reason, important negative environmental impacts of that activity are investigated and mitigated in the country where the activity takes place. However, the supply and removal of the fuel by road and rail in the Netherlands itself will be studied.

## 2.10 Electricity grid

### Development of electricity demand

In order to make our energy supply carbon neutral in the future, we will need to make less and less use of fossil sources such as coal, oil and gas. Added to that, our electricity demand is rising as a result of the growing use of electric vehicles, heat pumps and sustainability upgrades for industry. By 2050, this may mean a doubling or tripling of current electricity consumption. These changes will have an impact on the power grid and on the way in which energy is generated. Alongside a major role for renewable sources, such as energy from solar and wind, nuclear energy can make an important contribution in this transition as a low-carbon energy source.

### Risk of grid congestion

The nuclear power plants will be connected to the Dutch high voltage network. This needs to be coordinated with other developments in the energy system, such as the electricity supplied by offshore wind farms, electrification of industry and the grid expansion plans already scheduled. TenneT is the operator of the national high-voltage network and, in that role, every two years it decides what investments will be needed in the future in order to be able to continue to guarantee security of supply. Together with TenneT, we are investigating the potential impact of integrating the nuclear power plants on these investments if different locations are considered. An initial study was previously conducted into bottlenecks that could arise in 2035 if the Borssele or Maasvlakte locations were chosen.

This study was published on 29 February 2024. The analysis revealed that local bottlenecks would arise in both cases. A combination of two new nuclear power plants and additional connections for offshore wind energy (on top of the 21 GW objective set out in the roadmap for 2030) would exacerbate these bottlenecks.

For the location study, an additional analysis is being conducted with TenneT for the target year 2040, making use of the studies carried out for the 2026 Investment Plan that TenneT will publish in late 2025. This additional analysis identifies the possible bottlenecks at each location using the latest insights and plans of grid operators. It also considers the relationship with other developments such as landfall sites for offshore wind and which measures can be taken to prevent or remedy bottlenecks. The results will be included in the IIA.

### Damage to the landscape

Overground high-voltage lines have an impact on the landscape. Visual pollution in particular is a frequently cited argument. Whether and, if so, to what extent, additional overground high-voltage lines will be needed is dependent on the total volume of demand and supply in a grid area. The electricity generated by two large nuclear power plants in one such grid area can have a significant impact on that. The study with TenneT into integrating the plants into the network will consider which bottlenecks are likely to arise and which measures would be needed to prevent or remedy any bottlenecks.

### System costs

System costs comprise all the costs needed to achieve a reliable and flexible electricity system. Alongside the investments in the generating installations, the costs of transmission, distribution and storage also play an important role in this regard. For instance, renewable energy sources such as wind and solar require extra provisions (such as controllable generation, interconnection, demand management and storage) to absorb natural fluctuations. Nuclear power plants make a robust contribution to the system, which can reduce the need for expensive flexibility options. This means that, although the cost per kilowatt hour at installation level may be higher, the total system costs in the broader context may work out more favourably. Research by TNO has shown that a system including nuclear energy has similar system costs to an alternative system without nuclear energy. This fact, combined with the increase in the robustness of the energy system, has prompted the government to choose nuclear energy.

## 2.11 Procedure

### Minister of Climate and Green Growth as initiator and competent authority

The nuclear power stations fall into the category of energy infrastructure in the national interest. This means that the Minister of Climate Policy and Green Growth and the Minister of Housing and Spatial Planning are now the joint competent authority. In the first phase of the project, the Scoping Exercise, the Minister for Climate Policy and Green Growth is also the initiator. Following the Scoping Exercise, the initiative will be transferred to a participating interest that is currently being set up. In order to ensure due diligence, the roles within the Ministry of Climate Policy and Green Growth will be kept separate. For this project, the Nuclear Power Directorate will act as initiator of the intention during the scoping exercise. The Energy Transition Directorate will act as the competent authority on behalf of the Minister for Climate and Green Growth over the entire course of the project, i.e. both during the scoping exercise and the subsequent Plan Development Phase. The project procedure will be completed as soon as the decisions have become irrevocable. At this point, the realisation phase will commence.

### Aarhus Convention

For this project, a project procedure under Article 5.44 of the Environment and Planning Act will be completed. This procedure consists of different steps, with all the relevant information being disclosed for each step. This information includes research results, which will also be further elaborated and detailed during the procedure.

#### Espoo Convention

The Espoo Convention is a UN treaty signed in 1991 in the Finnish city of the same name which governs the prevention, limitation or control of negative transboundary environmental consequences for neighbouring countries. As a result, neighbouring countries must be involved in the EIA procedure in the same way as the authorities and the general public in the country in question. Although it is not always clear at the start of a project what the consequences will be for neighbouring countries, in the present project procedure it has been decided to inform all countries within a radius of 1000 kilometres about the start of the project (at the time of the Intention and Proposal for Public Participation). These countries will be kept informed about the project procedure as it progresses via the Espoo contact points. In addition, informal discussions have been initiated with Flemish and German stakeholders in order to inform them about and involve them in the project procedure.

## 2.12 Participation

The Ministry of Climate and Green Growth believes strongly in involving stakeholders properly. Experience shows that intensive cooperation with local actors yields a great deal of valuable information that benefits the quality of the process and the decision-making. Thanks in part to the local knowledge contributed, we obtain a better picture of so-called linking opportunities and achieve better spatial integration. We also value transparency and consistency. So we are clear about interests, tasks and how the process will proceed. We make sure information is disseminated more widely so that everyone can take note of where we are at in the procedure and how we are organising consultation within that procedure. In this way, we ensure that all the relevant interests have been included in consideration when the minister(s) take their decision. A detailed description may be found in the [participation plan](#) on the RVO website. This plan will be updated several times during the project procedure.

