BURDENS AND BENEFITS IN BALANCE

Impact report on the construction of Borssele nuclear power plants

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1. Introduction

1.1 Outline of the background situation and reason for this study

The Rutte-IV cabinet in late 2022 indicated that it would consider Borssele as the preferred site for the possible construction of two new nuclear power plants. In addition, the previous cabinet expressed a desire to keep the current nuclear power plant in Borssele open longer. In response, the Municipality of Borsele and the Province of Zeeland stressed that if these plans go ahead, the burdens and benefits for the residents of Zeeland should be balanced as much as possible. At the same time, the ambition of the Municipality of Borsele and the Province of Zeeland is to make the best possible use of the opportunities created by these developments and to make (additional) investments that will sustainably strengthen Zeeland, in order to realise structural added value for (the immediate surroundings of) Borsele and the Province of Zeeland.

To balance the burdens and benefits and realise structural added value, it is important that agreements are made with the Central Government and that they legally secured. These agreements should not be incidental or temporary, but long-term and structural in nature. For this reason, the Municipality of Borsele and the Province of Zeeland chose to draw up a package of conditions. On 11 January 2024, Municipal Council of Borsele adopted 39 conditions that apply to the arrival of several large-scale energy projects.[1] The conditions were formulated in an intensive participation process by 100 residents of Borsele with the help of 13 local experts (Borsele Conditions Group, BVG). Incidentally, for participants in the Borsele Conditions Group, participating in this process did not automatically mean that they were in favour of the arrival of one or more of the nine (energy) projects, including the nuclear power plants.

In parallel, the Province of Zeeland went through a consultation process in which civil society organisations, businesses, Zeeland municipalities, the Water Board and residents were consulted. Based on their input, Provincial Conditions were formulated, which were adopted by the Provincial Council on 9 February 2024.[2]

The Borsele Conditions and the Zeeland Provincial Conditions were presented to the then Minister for Climate and Energy (Minister Jetten) on 10 April 2024. These conditions packages were then provided to the House of Representatives for information. In response, the current Minister Hermans of Climate and Green Growth indicated in the parliamentary letter of 11 September 2024[3] that answering the conditions still requires a lot of research and that it is therefore too early to grant or remove conditions at this stage. In order to continue the chosen path, the Municipality of Borsele, the Province of Zeeland and the Minister of Climate and Green Growth entered into a Declaration of Intent in which agreements were made on how to jointly work towards agreements on the package of conditions. This Declaration of Intent also elaborated on the process agreements of the State-Region Package, underlining the importance of cooperation between the Central Government, the Province of Zeeland and the Municipality of Borsele.

1) See: Borsele Conditions | Municipality of Borsele.

2) See: Provincial Conditions Nuclear Energy | Province of Zeeland.

3) See: Parliamentary letter to Location Study new build nuclear power plants | Parliamentary paper | Rijksoverheid.nl.

The parliamentary letter of 11 September last states the following guiding principles: *"We are working on a positive legacy for the residents of Zeeland, we take each other seriously and we tell the honest story. An important basis for the Kingdom-Region package is the translation of the Borsele and Zeeland conditions into concrete agreements."*[4]

Both condition packages were shared with three potential builders in May 2024, namely: Westinghouse (US), Électricité de France (EDF, France) and Korea Hydro & Nuclear Power (KHNP, South Korea) (see also Chapter 3).

Initially, it was expected that the Ministry of Climate and Green Growth would make initial preparations for the tendering procedure for builders, for licensing and the preparation of an environmental impact assessment in the first half of 2025.[5] It was also expected that a decision on the site would be made by mid-2025.

After Minister Hermans in the parliamentary letter of 11 September 2024 announced that she would investigate suitable sites for nuclear power plants in Maasvlakte II and the Municipality of Terneuzen (in addition to the Borssele/Vlissingen (Sloe area) and Maasvlakte I areas), the Minister informed the House of Representatives about the status quo of new nuclear power plants to be built with the parliamentary letter of 22 November 2024[6]. On the aspects of progress and planning, the letter reported that decisions on the Central Government's role in the financing and ownership structure will be made in 2025. She also notes that actual budget decision-making will take place at a later date. The parliamentary letter of 22 November further explains that she is working towards the location decision and the start of the process for selecting a technology supplier in 2025. As an intention, it is announced that the Chamber will be updated three times a year on the overall status quo. Towards the second quarter of 2025, another update on the status quo is foreseen.

These current developments mean that the choice of location and other decisions that were to be made in mid-2025 have been postponed, that further research into the financing and ownership structure appears necessary, that research into other locations has also been announced, and that it is not yet clear when a decision will be made on the Borssele site.

1.2 Objective of the impact study

To further complement and sharpen the Borsele conditions, the Provincial Conditions and the potential opportunities for added value, the Municipality of Borsele and the Province of Zeeland commissioned HZ | University of Applied Sciences and Lysias Advies to carry out an impact study.

4) See: Declaration of Intent Central Government – Region Package New Build Nuclear Power Plants | Report | Rijksoverheid.nl.

5) Steps for this are: 1) the drafting of the Draft Outline Memorandum of Scope and Detail (RND, which indicates the exact location and level of detail for which an environmental impact assessment will be drawn up), 2) the draft environmental impact assessment, including the draft project decision (this describes the environmental effects of the location and sets a draft project decision) and 3) the final environmental impact assessment, including the preferred alternative (this definitively establishes the environmental impact assessment and takes the project decision). At the third step, public participation is no longer possible, but an appeal to the Council of State is possible.

6) See: Status of new nuclear power plants to be built | Parliamentary paper | Rijksoverheid.nl.

The objective of this study is to make a realistic assessment of the impact of the construction of new nuclear power plants in Borssele. This involves the impact of the construction and operation of two new nuclear power plants on residents in the immediate vicinity of the plants, residents in the rest of Zeeland and other stakeholders in the region.

In addition, the objective of the impact study is to gain insight into measures to be taken to prevent or reduce (mitigate) negative effects, and to identify possible opportunities that the two new nuclear power plants will bring for Zeeland.

The third objective of this study is to provide a good basis for baseline measurement and monitoring. Monitoring involves both the content: what do we want to monitor, and the process: in what way is monitoring done (e.g.: questionnaires and/or measurements). To set up this monitoring, a baseline measurement of the current situation is important. This impact study forms the basis for the baseline measurement and monitoring.

Finally, this study is intended to provide a firm foundation for the State-Region Package. The possible construction of two new nuclear power plants is the reason for entering into discussions with the Central Government about a State-Region Package. Argumentation for measures to be taken (and funding for them) also lies in the cumulation of effects of all major (energy) projects in Zeeland (see section 3.4). Therefore, this impact study was conducted with a good understanding of the broader context.

The above objective also means that this impact study is not a study into support for the arrival of two new nuclear power plants in Borssele. Similar processes in the UK did show that conducting an impact study can contribute to support and trust among stakeholders in the region, provided these stakeholders remain involved in the follow-up process of the impact study.

1.3 Focus and delineation of the impact study

In this impact study, the focus is on the area where the construction of the new power plants will have the most impact. For themes that play on a larger scale, a larger area was looked at. This also applies to possible measures to achieve positive impacts and added value for the whole area.

In relation to the scope of this study, we note that this impact report relates to the Borssele site. As noted above, while conducting our study, Terneuzen and Vlissingen were also mentioned as possible sites for the construction of new nuclear power plants. This report relates to the situation in Borssele. The possible construction of a nuclear power plant in Terneuzen and/or Vlissingen was not the subject of this study.

Technical feasibility studies are being carried out at the same time as conducting this impact study. This means that the (technical) question of spatial compatibility of the new nuclear power plants was not part of our impact study.

An environmental impact assessment also has to be prepared. The impact of the possible construction of two new nuclear power plants on the environment is important, but is less prominently covered in this report, as it is a main topic in the formal environmental impact assessment.

The results of the environmental impact study were not available at the time of writing this impact report.

1.4 Research approach

Research questions

The following two main questions were formulated for this impact study:

1. What is the expected impact of the arrival of two new nuclear power plants on the broad welfare in Zeeland for residents in the immediate vicinity of the plants (the Sloe villages[7]), for residents in the rest of Zeeland, and for other stakeholders?
2. What (additional) measures can be taken to ensure and strengthen the broad welfare in Zeeland during the construction and operation phase of the new nuclear power plants?

Broad prosperity

The concept of broad welfare is a workable approach for examining impact. In essence, broad welfare is about "*the quality of life here and now, taking into account the extent to which it affects the quality of life of future generations and people elsewhere in the world. This includes all aspects of prosperity and well-being, such as health, work, care, housing, equal opportunities, safety, education, quality of nature and the living environment*" (source: State Budget Memorandum, 2023).

The broad welfare approach offers a broader (more integrated) framework for consideration, also allowing room for intangible aspects of value, such as nature, environment, health and trust in institutions. In addition, the broad prosperity approach allows the use of existing figures to organise and interpret data. This makes it possible, for instance in the context of monitoring, to make comparisons (e.g. of Borsele or Zeeland compared to other areas and of developments over time). This approach also fits well with current thinking and language within the Central Government. This is important for the State-Region Package to be concluded.

Answering research questions

To answer the research questions, we carried out a document study, talked with a number of experts and experience experts from areas where other nuclear power plants have been or are being built (reference areas), and we organised several meetings with stakeholders and interested parties from the region.

To conduct our research, we used the Theory of Change (ToC). This is a research tool to systematically map an expected 'chain of change'.

Role assignment and research justification

This impact study was carried out by HZ | University of Applied Sciences and Lysias Advies, in close collaboration and with shared responsibility for the final result. HZ | University of Applied Sciences analysed the reference projects and interviewed the experts and experience experts from reference areas.

Its findings are incorporated in Chapters 4, 5 and 6 of this report. HZ and Lysias jointly organised the meetings with stakeholders and interested parties from the region. Lysias Advies carried out the analysis of policy documents and formulated the recommendations described in Chapter 2.

7) The Sloe villages are: Nieuwdorp, Borssele, 's-Heerenhoek and Lewedorp (source: Municipality of Borsele website).

Our research approach is detailed in Annex 2 (research justification). The summaries of documents consulted and interlocutors consulted are included as Annexes 4 and 5.

1.5 Status of this impact report: version 1.0

Important information was not yet available during the conduct of this study. This would include, for instance, the final decision on the preferred site Borssele, the results of technical feasibility studies, the Notitie Reikwijdte en Detailniveau (NRD), the environmental impact report, the conditions for licensing, the choice of contractor(s) and the contract terms to be agreed with the builder(s).

Information that was available for conducting this study included the impact studies of some reference projects (see Annex 1). We analysed the issues there and examined from the reference projects what is relevant for this study and for the situation in Borsele. At the same time, we took differences into account, such as the different context of reference projects and differences in laws and regulations. In the coming period, the translation from the reference projects used to the situation in Borsele can be made further.

This study provides important insights that can serve as input for the baseline measurement and monitoring as well as for contractor contracting, in particular on what conditions should be included in the authorisation and under what conditions construction can take place. Further deepening and additional analyses will be needed as more clarity emerges about the builder, the choice of site and other relevant factors.

This report should therefore be considered a first version and a living document. Our expectation is that there will be subsequent versions, based on new information and outcomes of other studies (including the technical feasibility study, the memorandum RND and the environmental impact assessment). In addition, opting for a 1.0 version means that it also identifies which topics require further research, once additional information becomes available (see Chapter 2).

1.6 Reading guide

In the next Chapter, we describe our recommendations and answer the second main question of our study: *"What (additional) measures can be taken to safeguard and strengthen the broad welfare in Zeeland during the construction and operation phase of the new nuclear power plants?"* This Chapter contains our advice for (mitigating) measures to be taken to reduce the negative impact of the construction of the nuclear power plants, our recommendations for strengthening the positive impact for the region, and in this Chapter we name some topics that require further research.

In Chapter 3, we outline the starting situation of the impact study. We describe the guiding choices by the Central Government, explain the phases of the construction process in more detail and explore the surroundings of the preferred Borssele site. In doing so, we set out some starting points that determine how we examine the impact of the nuclear power plants in the Chapters that follow.

This is followed by three Chapters on the impact of the possible arrival of two new nuclear power plants at Borssele. These Chapters answer the first main question of this study. Chapter 4 maps out the economic impact, Chapter 5 describes the social impact and Chapter 6 the impact on the living environment.

We start Chapters 4, 5 and 6 with an introduction summarising the actions to be taken and the recommendations (from Chapter 2). These are ordered according to their impact on the various topics. In these Chapters, we then first outline the current in each case. We then discuss the possible consequences, the expected effects and the impact of the construction and operation of the nuclear power plants.

Chapters 3, 4, 5 and 6 contain some boxes with quotes from our interviews. These quotes are meant to illustrate our findings.

We conclude this report with Chapter 7, in which we describe the ingredients for a monitoring programme. The monitoring programme describes the purpose of monitoring and consists of an overview of effects to be monitored, the indicators linked to them, the methodology of research, the frequency of the research, the role of various parties and the method of publishing the monitoring data. We give an example of the elaboration of an effect in Chapter 7 and outline what the monitoring process may look like.

2. Advice: Burdens and benefits in balance

2.1 Introduction

Based on our research findings, as detailed below in Chapters 4, 5 and 6, we formulate our recommendations in this Chapter. In doing so, we answer the second main question of our study: *"What (additional) measures can be taken to safeguard and strengthen the broad welfare in Zeeland during the construction and operation phase of the new nuclear power plants?"*

In our interviews, the importance of timely preparations was stressed. There is therefore appreciation for the timely preparations that have been taken, such as the early establishment of the Borsele Conditions Group, the drafting of the Provincial Conditions, the regular coordination between the authorities involved and the commissioning of this impact report. It is important to continue this involvement in the coming period.

The importance of timely preparations is also confirmed in our analysis of impact studies of reference projects. As explained below in this report, the preparation phase will take several years. Our research has highlighted that it will take some time before anything is visible from the construction of the nuclear power plants, and that it is important to start local investments as soon as possible. With the recommendations in this Chapter, we aim to provide guidance on how to make the right further preparations and measures in the coming period and balance the burdens and benefits for the residents of Zeeland.

In general, our research shows that the positive impacts and opportunities to realise added value relate mainly to the economic domain, at the regional scale level, while the impacts on the social domain and the living environment are more detrimental and relate to the local scale level.

Given the importance of balancing the burdens and benefits for the residents of Zeeland as much as possible, it is important in policy to consider the physical and social consequences of this choice in the region.

The proposed measures and recommendations presented in this Chapter have been developed based on a combination of different sources and research methods. For instance, we drew on insights from reference projects and studied similar initiatives and developments elsewhere to identify relevant lessons and best practices. We also drew on input from stakeholders, whom we consulted during individual interviews and group meetings. In analysing this input, particular attention was paid to the issues mentioned by multiple stakeholders. This means that our recommendations are not based on occasional or individual comments, but on 'expectations, concerns and opportunities' that are more widely shared and repeatedly raised (see also Annex 2 for our research justification).

A more comprehensive list of suggestions for measures is included as Annex 3. This Annex is based on our analysis of reference projects, the results of interviews with experts and experts by experience and the meetings we organised for the residents directly involved, the relevant authorities, businesses, educational and knowledge institutions and civil society organisations.

In section 2.2, we describe our advice for (mitigating) measures to be taken to reduce the negative impact of the nuclear power plant construction. Section 2.3 contains our recommendations for strengthening the positive impact for the region. In section 2.4, we elaborate on organising implementation power and the long-term cooperation needed to follow up on the advice in this report. In section 2.5, we name some topics that require further investigation.

2.2 Measures to reduce negative impact

Generously accommodate residents who experience the most burdens

Residents in the immediate vicinity of the construction site will be most affected by the construction work in their immediate living and housing environment. This requires measures to prevent and limit nuisance as much as possible (see below). We recommend generously accommodating those living in the immediate vicinity by relieving them of concerns about the sustainability of their homes, with homes being fitted with noise and thermal insulation. In addition, we recommend that the residents who experience the greatest burden during the construction period be expressly allowed to benefit from developments in the region (e.g. by realising a heat network). Our advice is also to remain in dialogue with direct neighbours in the coming period - despite the schedule running out - about their concerns and needs.

Discuss desired measures and possible incentives with North Sea Port and companies in the Sloe area

Besides the residents in the immediate vicinity of the construction site, the possible construction of the nuclear power plants directly affects the surroundings of Nort Sea Port and the companies in the port and industrial area 'Sloe area' (see figure 3.1 in Chapter 3). The outcome of our study is that the expected impact on North Sea Port (NSP) and the companies in the Sloe area is twofold.

A possible negative impact is that there is less physical space for expansion, while the development could also have a positive impact given North Sea Port's ambition to further develop as an 'Energy Port'.

We recommend that - in addition to regular consultations with NSP - discussions should also be held with individual companies, or with representatives of companies in the Sloe area, about desired measures in relation to the possible nuisance and negative impact of the construction of the nuclear power plants. This should also include the broader context of developments in the field of sustainable energy in Zeeland, as well as the economic opportunities these developments bring along for the companies in the Sloe area, also in relation to the ambition of 'Energy Port'.

Take measures to limit construction traffic nuisance

One of the consequences of the construction of the nuclear power plants is that commuting will increase (temporarily). Where this increase will take place depends on the agreements with the builder and the choices made.

To reduce the inconvenience of construction traffic and road safety, we make the following recommendations:

- If necessary, do further research on traffic conditions and logistical movements (depending on the selected builder's modus operandi).
- Concentrate workers' housing in a few places and organise traffic to the construction site with (electric) buses. This could include one or a few campuses, near the construction site and the creation of 'Park and Ride' (P&R) sites.
- Reduce transport movements and traffic congestion in villages as much as possible. For this, align with the new regional mobility strategy. This involves a flexible system that responds to transport demand. Ensure that the new mobility strategy takes into account the expected increase in transport movements, including the increase of passenger transport (commuting) due to the arrival of additional workers.
- Explore opportunities to make best use of waterborne transport and port facilities.
- Organise part of the work near where the workers are housed. This can reduce traffic movements. Not all work needs to be carried out on the construction site.
- Keep in mind that additional roads, bridges or rail links may need to be built. Dike reinforcement is also necessary. The planning issues and lead times are an important consideration during the preparation phase.

Develop a programme for the housing issue and organise regional coordination

The arrival of new/temporary (foreign) workers will lead to an increased demand for housing and facilities in the region. Increased demand for (rental) housing and (tourist) accommodation may lead to displacement in the housing market, rising rents and the possible staying away of some of the residential tourists.

The housing issue requires a programmatic approach and regional coordination. We recommend combining the issue of workers' housing with the province's housing task and with the residential recreation sector. In doing so, answers should be formulated on questions like: What is needed temporarily? What housing will remain available after the completion of the construction of the NPPs, and which housing can then be given a new function, for example as a campus for students, so that this development can also bring long-term added value to the region?

This issue should also be linked to the Facilities Plan of the Municipality of Borsele.

Create facilities for care and education

The large number of new/temporary workers also brings with it the need for a (separate) care facility. It is recommended that this facility be established near the construction site. This will also require interpreters. In this context, the ambulance care dispersal plan should also be re-examined, including the relationship with Bergen op Zoom and Roosendaal. Antwerp and Ghent can also be included in this. What is really needed, what is available, and what can be used, are topics that require further investigation. This will require further information on how the builder(s) operate, the numbers of workers per phase and the locations where workers are housed.

As explained below in Chapter 5, demand for education and childcare may also increase, but this depends on the number of workers who move with their families. We recommend further investigation on this too, once more information is available on what is needed.

Identify which topics require agreements in tender conditions and licensing

Several experts emphasise that in preparation for the tender, careful consideration should be given to the arrangements to be made with the builder(s). In doing so, it is important that the Environment Agency and other parties involved are brought into position in good time and have sufficient capacity and knowledge.

Subjects on which agreements must be made (such as technical specifications, performance requirements, a safety plan and emission control during construction) have been laid down in regular legislation in the Netherlands. From our research (especially the analysis of impact studies of reference projects), some further suggestions relevant to nuclear power plant construction emerged:

- Planning and control of delays, how delays are anticipated and mechanisms to progress, including a liability clause in case of any delays, defects or cost overruns. The reference projects show that this is relevant, and is the rule rather than the exception.
- Commitment to local employment (agreements on certain percentage of regional employees), training programmes, cooperation with local parties (regional knowledge parties, educational institutions and companies) and knowledge transfer to Dutch parties, so that expertise is built and retained locally.
- A proposal for how construction and operation can add social value, for example by integrating sustainable technologies or making waste heat available to the region.
- A sound communication and participation strategy to involve the surrounding area in the construction progress (e.g. provide advance information on the number of workers per phase, measures to minimise disruption, supply routes of equipment and workers). Informing the surrounding area in advance about the construction process and any walk-outs and changes in approach. Including a description of how the company deals with the interests of local residents and other stakeholders.

In doing so, it is important that the negotiations that the Central Government conducts with the builders involve local influence from Borsele and Zeeland, because of local knowledge of the area, activity, environment, labour market and facilities.

Use the structure of the Security Region to identify security issues

Our research has explicitly called for effective action when something goes wrong. This especially applies in relation to nuclear power and increasing crime. Our advice in this context is to put together a crisis team to be able to respond quickly and adequately and to warrant safety. Evacuation options and routes should be mapped out now.

For this, it is logical to link up with existing structures in the region and cooperate with the Zeeland Safety Region. Points of attention that the Safety Region believes should be taken into account are: the context of several different energy projects in and around the Sloe area and the integral approach required for them; the possible cumulative effects during the construction phase; the necessary improvement of evacuation routes and the required capacity. We recommend further discussions with the Safety Region in the short term about the concerns they identify.

Anticipate planning uncertainties

The construction of the nuclear power plants is a large and complex project. It is important to take into account the possibility of execution taking longer than originally planned. This is also evident from the study of reference projects, which have a lead time of 10 to 15 years (see Annex 1). In such a period, the environment and context may change, for instance in terms of technology, regulations and/or social developments.

We therefore recommend thinking ahead about the potential impact of delays at the planning stage. This includes identifying risk factors that could lead to delays, and developing strategies to anticipate them. Besides being an important issue to agree on with the builder(s), it is important to explore what delays mean for different stakeholders and involved parties (local residents, affected businesses and community partners), and how any negative impacts can be mitigated in a timely manner.

Pay constant attention to information sharing and participation

The construction of the nuclear power plants is a long-term process, which will be affected by new developments and changes in context. This requires ensuring continuous communication and participation, and managing expectations, to avoid surprises for immediate neighbours and other stakeholders. This also applies to North Sea Port and the companies currently located in the Sloe area.

The Sloe area is a secure area. The companies have no or limited access to local residents. There are obviously good reasons for this from a security point of view. It was noted in our research that it may help to make the companies accessible for the public at some times, so that people can see and hear what is going on.

Organise structural partnership and ensure sustainable investments

This is an unprecedented megaproject. The impact of building two nuclear power plants is of un-Dutch proportions. It involves thousands of workers and a possible construction time of 10 to 15 years. Our research has shown that local residents are very worried. Some do not sleep well because of the plans. To reduce the negative impact of the construction of the nuclear power plants, balance the burdens and the benefits for the residents of Zeeland and strengthen the positive impact for the region (see below), it is very important to take the concerns of local residents seriously.

This calls for a reliable Central Government that sees Borsele and Zeeland as partners (and not as a colony). From our discussions, it was emphatically clear that it should not be about ‘compensation’. This implies that buying off damages suffered is not an option. That is not the picture that the parties together are striving for, in our estimation. However, the trajectory of compensation agreements, before the scrapping of the plan to build new marine barracks in Vlissingen, is still fresh in our memory. One of the agreements in this compensation package is a better rail link between Zeeland

and the Randstad. The current intention to test a new railway safety system, which will prevent trains from running between Goes and Vlissingen for four months, then causes unrest and discontent.

An opportunity arises to regain the trust of residents of Zeeland and residents of Borsele by communicating carefully as authorities and taking residents' concerns seriously. The stakes must be a structural partnership and a reliable government that is also there for the people of Zeeland. The need for partnership is not just about coordination between relevant authorities, but also relates to cooperation with civil society organisations, education, business, builders and other relevant parties in the value chain. Trust in democracy and government organisation cannot be expressed in compensatory means; it can be created through commitment and keeping promises.

2.3 Recommendations for strengthening positive impact

Realise a positive legacy for Borssele and Zeeland

We recommend that investments in quality of life, infrastructure, the economy and education create a positive legacy for Borssele and its surroundings. Our study makes suggestions on how to profile Zeeland as a green, sustainable and healthy province and use this image to increase its appeal.

Invest in (technical) education based on a shared education agenda

Given the tight labour market in Zeeland, it is very important to start investing in (technical) education in the short term. As explained in this impact report, during the construction phase, technical staff specialised in (dis)construction, assembly, metal, civil and electrical engineering, among others, are particularly needed. There is also a need for support staff, e.g. for catering, cleaning and security.

This offers growth and development opportunities for Zeeland employees. Managers, supervisors and administrative staff will also be in demand. The staff needed for operation will be mainly responsible for the proper functioning of the nuclear power plant, such as maintenance staff, security and quality assurance. Financial, administrative and managerial staff will also be needed. The operation phase thus requires different expertise from the construction phase. Besides personnel for the construction and operation of the nuclear power plants, there will also be more demand for skilled personnel in healthcare and education.

The tight labour market and increasing demand for staff provide opportunities for Zeeland's educational institutions, which can train young people for both construction and operation of the nuclear power plants. They can also help retrain staff in other professional sectors. The new training demand is likely to cover various directions and levels, as also outlined in Chapter 4.

The increasing need (nationally) for technical students, the link with Campus Zeeland and Bèta Campus Zeeland, and the deepening of a nuclear knowledge cluster offer opportunities for the region to apply accumulated knowledge and innovation to Delta issues. It is important to make a timely start here, to involve all forms of education (from PO onwards) in time, and to jointly develop an educational agenda. Cooperation between educational institutions is essential here, including ensuring that new knowledge institutions are close to the business community. This increases the chances of synergy.

This requires the authorities involved to create the right preconditions and invest in education in line with labour demand. The importance of investing in (technical) education is clear to the Province of Zeeland, the Municipality of Borsele and the educational institutions involved.

The education agenda is already in the making. The implementation of this agenda requires substantial investments. We advise the parties involved to intensify and accelerate the efforts made to invest in (technical) education and implement the education agenda.

Ensure local businesses can prepare in time

Our advice is to start a timely support programme for local, Dutch companies to help them get involved in the construction of the nuclear power plants. In doing so, it is important that local companies get clarity on the required certification in good time, and that they are enabled to get involved in construction. This includes, for instance, support in complex contracts and quality assurance in nuclear construction processes. Interested companies should be well informed about opportunities and risks. It must be prevented that they underestimate the complexity of this construction process, that the document management and contracting prove (too) complex, and that companies run high risks as a result.

Strengthen the business climate and image

The arrival of the nuclear power plants offers opportunities to strengthen the business climate by building infrastructure connected to the main road and rail networks. The condition for this is that this infrastructure is retained after the construction of the nuclear power plants and is not temporary in nature. This will require substantial investments that need to be identified further.

Improved accessibility to the region will make it more attractive for companies to settle in the region. The availability of sufficient power could also make it attractive for companies to locate in the region. For energy-intensive companies in particular, it may be attractive to be closer to energy producers, for instance in Zeeland. Being close to the supplying party basically means (a more) stable supply of energy.

Develop an overarching comprehensive strategy for transition to renewable energy

We recommend considering the arrival of the nuclear power plants in the broader context of the energy transition, the associated tasks and the people and skills needed (also after the completion of the construction of the nuclear power plants). An overarching (integral) strategy is an important prerequisite for this, including consideration of a revolving fund[8] for local companies, whereby environmental gains are paramount. Connect this to the Energy Vision Zeeland, which is currently under development.

Develop an integral landscape vision and investment programme

High-voltage connections and substations have an impact on the Zeeland landscape, nature and residents' living environment. We recommend that in the short term - before construction work starts - an integral landscape vision be developed, with the area's qualities as a starting point, paying attention to the area's cultural history and making use of previously developed visions for subareas. This should also formulate principles on how to deal with future developments, for instance on the openness of the landscape.

8) A revolving fund is a construction where financial resources are made available in such a way that the resources must be repaid and interest must be paid on the resources. Possible constructions are loans, guarantees and venture capital investments. Through repayment, the resources return to the revolving fund and can be used again and thus several times (revolving).

The green buffer between the Sloe area and the surrounding cores deserves special attention in this context. Part of the green buffer has been affected by the construction of new high-voltage power lines. Our research has shown that stakeholders have perceived the space for public participation as insufficient, that this has led to frustration and does not contribute to trust. Our recommendation is to invest in a robust buffer between the Sloe area and the Sloe villages in the short term. Accessible nature is now relatively limited in scope. This therefore calls for a firm ambition to free up space for nature and invest in the development of high-quality nature. Our advice is to start working on this - ahead of the construction of the new nuclear power plants. This creates confidence.

The Municipality of Borsele started drafting a new vision for the Sloerand in November 2024. This takes the so-called linking areas as an example. Linking areas have been developed on the Belgian side of NSP as a buffer between the port and residential areas. Linking areas have different functions, such as nature, agriculture, landscape elements, recreation and tourism. At the same time, linking areas provide space for underground and overhead pipelines. This new vision for the Sloerand should be used as one of the partial visions for the integrated landscape vision to be developed.

The issue of water safety is also an issue when it comes to design. Given the various large-scale energy projects in the vicinity of Borsele, it is important to approach the development of a landscape vision integrally, from a collective responsibility, with commitment from the Central Government. We recommend involving the Board of Central Government Advisors in the development of the landscape vision. A programme for investments in the area should then be linked to this integral landscape vision.

2.4 Organising execution power

Following on from our recommendations on structural partnership between the relevant authorities and sustainable investments, in this section we elaborate on the long-term cooperation needed to follow up on the advice in this report.

An important condition for success is the continuation of the cooperation between the Province of Zeeland and the Municipality of Borsele, both at administrative and civil service level. We advise the Province of Zeeland, the Municipality of Borsele and the region to set up a joint programme organisation, to which the Central Government is suitably attached, in which the implementation power is organised and which the programme organisation can operate with a mandate from the ‘parent organisations’.

In doing so, we assume that the to-be-agreed State-Region Package provides a good basis for a joint programme to be worked out in more detail. It will then be up to the programme organisation to be set up to coordinate the implementation of this programme, engage the relevant parties and organise connections. The perspective of broad prosperity offers good starting points for determining which parties are relevant to involve in the implementation of the programme.

As explained later in this report in section 3.4, in and around Borsele, several, different energy projects are under discussion or upcoming. We recommend to set up the programme organisation in the short term so that experience can be gained in the coming period with developments that are less extensive and complex than the construction of the nuclear power plants. Lessons can undoubtedly be drawn from these experiences that can be used in the run-up to and during the construction of the nuclear power plants.

2.5 Follow-up study

Coherence and alignment between studies

Several studies, including technical feasibility studies and an environmental impact assessment (EIA), are being carried out before starting the construction of the nuclear power plants. More studies will follow in the near future. To ensure that the results of these studies contribute to decision-making and follow-up steps, it is important that these studies do not take place completely in parallel. We therefore recommend a coherent approach where the results of various studies can influence and support each other.

Impact study update

As we indicated earlier in this impact report, more information will become available in the near future that will affect determining the impact of the arrival of the nuclear power plants.

Once more clarity on the choice of builder, choice of location, specific technical and operational features of the power plant emerges, a review/depth of the impact study will be necessary. In addition, other developments, such as changes in regulations, technology or the social context, may also prompt an update of the impact study.

Various aspects of the impact, such as the effects on water quality, the need to modify infrastructure, including dykes, and other environmental and safety aspects, require specialist research. This can be carried out when there is more clarity on the exact plans and location of the nuclear power plants.

Assessment of cumulative risk and safety impact

Several energy projects are converging in the Sloe area. Each individual project affects its surroundings and specific risks. At the same time, the Sloe area is also a location with existing intensive industry. To our knowledge, the cumulative impact of the various energy projects combined with the arrival of the nuclear power plants on risks and safety in this area has not yet been investigated. Ensuring safety is a joint responsibility of the Central Government, the Province, municipalities/safety region and companies. We recommend carrying out specific research into risks, with explicit involvement of the Zeeland Safety Region.

3. Starting situation and context of the impact study

3.1 Introduction

In this Chapter, we outline the starting situation of the impact study. We consider directional choices already made by the Central Government, the phases of the construction process and we explore the surroundings of preferred Borssele site. In doing so, we list some starting points that determine how we assess the impact of the nuclear power plants in the following Chapters.

Reflecting on various starting points by the Central Government, we refer several times to the construction of the nuclear power plants elsewhere in Europe. We mainly refer to three reference projects: Hinkley Point C (UK), Sizewell C (UK) and Olkiluoto 3 (Finland). Annex 1 contains some further information on these reference projects.

3.2 Choice of construction process determines impact

In late 2022, the then-Rutte IV cabinet expressed its intention to build new nuclear power plants in the Netherlands. Since then, a number of guiding decisions have been taken on the type of nuclear reactor, the timeframe, which contractors are preferred and the completion of some preconditions.

Reactor Generation III+

The Central Government is opting to build two Generation III+ reactors. These reactors are expected to have a capacity of 1,000 to 1,650 megawatts (MW) each. The reactors should produce about 24 Terawatt hours (TWh) of electricity. This corresponds to 9 to 13% of the Netherlands' expected total energy supply in 2035.[9] By comparison, the existing EPZ Borssele nuclear power plant has a net capacity of 485 MW.[10]

9) See: Parliamentary Papers II 2022/23, 32645, no 116.

10) EPZ is short for N.V. Elektriciteits Produktiemaatschappij Zuid-Nederland.

A number of Generation III+ reactors have been commissioned worldwide since 2016. The Central Government is deliberately opting for existing technology to reduce risks of run-out and cost overruns. When weighing up the options, thorium reactors and Small Modular Reactors (SMRs) were also considered, but these technologies have not yet proven themselves sufficiently to opt for these options. The Central Government considers the choice of Generation III+ reactors to be the fastest and safest route to increasing nuclear energy's contribution to a stable, CO2-neutral and diverse energy system.[11]

The Central Government has three companies in mind to build the nuclear power plants: Westinghouse (US), Électricité de France (EDF, France) and Korea Hydro & Nuclear Power (KHNP, South Korea). These companies have proven experience in building Generation III+ reactors with a minimum capacity of 1,000 MW. The Central Government is in talks with these parties and is conducting technical feasibility studies in cooperation with them in preparation for putting together a building contract.[12]

Duration of impact

The Central Government is committed to setting the pace. According to the timetable outlined, construction of the plants will start in 2028 and then be ready to generate nuclear power in 2035. The construction period will then be seven years. An ambitious target, as a look at the construction of this type of the nuclear power plant elsewhere shows that the construction period so far takes at least eight years.[13] In Europe, mainly recent examples can be found of construction trajectories that have stretched towards 15 years and longer.[14]

The starting point is to establish two nuclear power plants at a preferred site and build there simultaneously. Based on reference trajectories, our expectation is that the construction of the second nuclear power plant will be about a year behind the first. The assumption is that this construction method produces learning effects and hence productivity gains. This means that the nuclear power plants will not be ready for commissioning at the same time, but that there will be some time in between, thus having a (prolonging) effect on the overall duration of construction.

Looking at the complex stacking of energy projects in and around Borsele (see section 3.4), experiences from reference areas and a relatively high population density[15], we consider it realistic to assume a construction period of 10 to 15 years with impact on the surrounding area. Incidentally, we do not consider a longer construction period entirely impossible on the basis of experience from the reference projects.

11) See: Parliamentary Papers II 2022/23, 32645, no 116.

12) See: Parliamentary Papers II 2022/23, 32 645, no 121.

13) Nuclear power plants type Generation III+ in a time frame of 8-9 years: Vogtle 3 & 4 (US) and Barakah (UAE).

14) An example of construction time overruns is Flamanville 3 in France. Construction began in 2007 with the aim of commissioning the nuclear power plant in 2012. Due to various reasons, construction was delayed. The reactor was recently commissioned after a 17-year construction period. Another example is Hinkley Point C in the United Kingdom. Construction started in 2016 with 2025 as the expected completion year. The current expectation is that the nuclear power plant will be ready in 2032.

15) Relatively high population density compared to areas where nuclear power plants have (recently) been built in Europe.

Areas of operation

Building a nuclear power plant requires space. The preferred site is suitable for accommodating two nuclear power plants. The Central Government is also looking at possibilities - during the construction process - to set up work sites on or in the (wide) surroundings of the preferred site. The work sites are needed for carrying out preparatory work and storing materials, vehicles, machinery, installations, equipment and maintenance. When looking for suitable sites, good transport connections (road, rail and/or water) to and from the construction site in Borssele are important. Currently, there is no concrete idea yet of where work sites might be located.

Working with one or more work sites means that there may be multiple impact locations. This can be both beneficial and detrimental to the immediate area. For example, working with segregated building sites can prevent nuisance around the intended building site, but it can equally result in a reduced economic spin-off for the area. Until more is known about where potential work sites will be located, we will assume the preferred site as the epicentre for local impact.

3.3 How does one build a nuclear power plant?

Building a nuclear power plant is complex, costly and takes years. There are always unique circumstances that make it tailor-made. Therefore, the exact costs and duration of construction are also difficult to estimate at this stage, and also depend on choices yet to be made.[16] Despite these uncertainties, contractors typically go through a construction process in which the phasing is essentially the same. The interviews and document studies reveal that the construction of the nuclear power plants usually has five phases. The first phase starts as soon as a political decision has been taken to build the nuclear power plant.[17]

Below, we give a brief description of the different construction phases.

Phase 1: Preparation

Before the first spadework is started, a phase of preparations takes place. This is the first phase. Applying for an operating licence from the Nuclear Safety and Radiation Protection Authority (AMVS) requires investigations and analyses to be carried out. These include conducting (or having conducted) safety and risk analyses, an environmental impact report and an explanation of technical safety safeguards. At the same time, preparatory work for construction is taking place by recruiting personnel, working out work plans and making arrangements with subcontractors.

Preparatory activities are also taking place in the living environment. These include setting up work sites, traffic hubs and organising housing, if possible by creating temporary housing units. Infrastructure must also be put in place for construction. This includes building or reinforcing roads, waterways and train tracks to accommodate the increase in commuter traffic and also to enable (heavy) transport. Depending on what needs to be done, the preparatory work may cause inconvenience to the surrounding area.

16) See: BNR - Article: 'Building a nuclear power plant costs much more than cabinet thought, always ' (25 September 2024).

17) See: TVO - Environmental Impact Assessment Report: Extension of the Olkiluoto Nuclear Power Plant by a Fourth Unit (2008).

A lot is set in motion in the first phase, but relatively little is happening on the intended construction site at that time. Precisely because little is happening on the construction site at that time, this is a good time to set up baseline measurements and work on expectation management.

> *"There are various environmental permits and planning permissions and so on, which have to be obtained from regulatory agencies, from the Central Government, from provincial authorities [...]. So there is a lot of paperwork involved before anything changes in the landscape."*

Phase 2: Earthworks

This phase starts the moment people actually start work on the designated construction site. This phase focuses on excavating and moving soil. The soil can be dumped elsewhere on the construction site and form a noise barrier, or it can be removed. In that case, a large number of transport movements will have to take place.

The depth of the excavation goes beyond the depth of an excavation of non-nuclear construction. The foundation must be very stable and reliable. The depth of foundations for nuclear power plants varies, but in any case they must meet strict international safety standards and requirements. Excavation work is also needed to lay pipes for the supply and discharge of cooling water. In addition, (site-specific) geological conditions and design requirements may affect how deep the foundations of the plants to be built can and should be. One of the Borsele Conditions is about exploring the possibilities of building the nuclear power plants at a deeper depth.

> *"The start of construction is usually characterised by a lot of digging and earthwork. So it involves digging deep holes [...] in preparation for pouring the foundations. There is usually a couple of years, or at least a year [...] between the start of construction work and the pouring of what is called 'first concrete'."*

Phase 3: Civil construction

Once enough soil has been excavated, concrete is poured, after which the buildings rise from the ground. As in the previous phase, the pouring of concrete for the nuclear buildings must meet strict safety requirements so that the base of the reactor can withstand earthquakes and other (natural) disasters. The construction of supply and drainage routes for electricity is also done in this construction phase.

> *"The first thing you will probably see are cranes. [...] So it will look as much like a 'crane farm' as a construction site."*

In this second phase, the number of workers on site increases. As an illustration, at Hinkley Point C in the United Kingdom, 10,500 people were simultaneously involved in construction at the nuclear power plant site at some point. And that is not even the expected peak number yet. Construction activities at this stage result in visible and audible activities on and around the construction site with impact on the surrounding area.

Phase 4: Mechanics and engineering

During the mechanics and engineering phase, work moves indoors where equipment is installed. Cranes that were needed for construction can be (partly) removed, while inside the buildings a lot of activity takes place. All electricity, mechanics and engineering in the nuclear buildings is being laid and connected. Although the focus shifts to the internal activities, there will still be external construction activities for the non-nuclear buildings, such as offices, which are often built at a later date than the nuclear buildings.

Phase 5: Test phase

The test phase is characterised by extensive testing of equipment and technology. Testing is an important phase and is carried out to nuclear construction standards. In the interviews we had, it was indicated that this phase of Commissioning takes about 1 to 2 years.

> *"Then you test all the systems to make sure they do what they are supposed to do. And you have to have approval on that as well. So the regulator is also involved in that. And only after that are you allowed to actually start up the nuclear power plant."*

Construction phase completed, operations can start

In the implementation phase, construction has been completed and all tests have been carried out. The nuclear power plant is active and producing electricity. There are no more construction activities and the size of the personnel has decreased as construction personnel are no longer working at the site.

3.4 Situation sketch preferred site Borssele

Preferred site

One of the first steps for building new nuclear power plants is choosing a suitable site. To keep suitable sites free, in the 1980s the Central Government identified some safeguard sites in the Netherlands to keep free for the possible construction of new nuclear power plants in the future. These sites must meet a number of conditions, such as availability of cooling water and good accessibility. No developments may take place at these locations that would make any construction of the nuclear power plants impossible or seriously hamper them.[18] The Sloe area in Borssele/ Vlissingen is such a safeguard site and has been designated by the Central Government as preferred site for the construction of two new nuclear power plants. Another safeguard site is Maasvlakte I. In the parliamentary letter of 22 November 2024, Minister Hermans indicated that the cabinet is investigating whether it is possible, and if so on what grounds, to leave Eemshaven out of the procedure without this leading to unacceptable (legal) risks surrounding the preference decision and the project decision. In the earlier parliamentary letter of 11 September 2024, it was announced to investigate suitable sites for nuclear power plants in Maasvlakte II and the Municipality of Terneuzen (in addition to the Borssele/Vlissingen (Sloe area) and Maasvlakte I areas). These developments mean that the Sloe area initially was the Central Government's (politically) preferred site. Meanwhile, the Sloe area Borssele/Vlissingen is mentioned as one of the possible sites.

18) See: The current safeguard policy is laid down in Quality of Living Environment Decree, Art. 5.158.

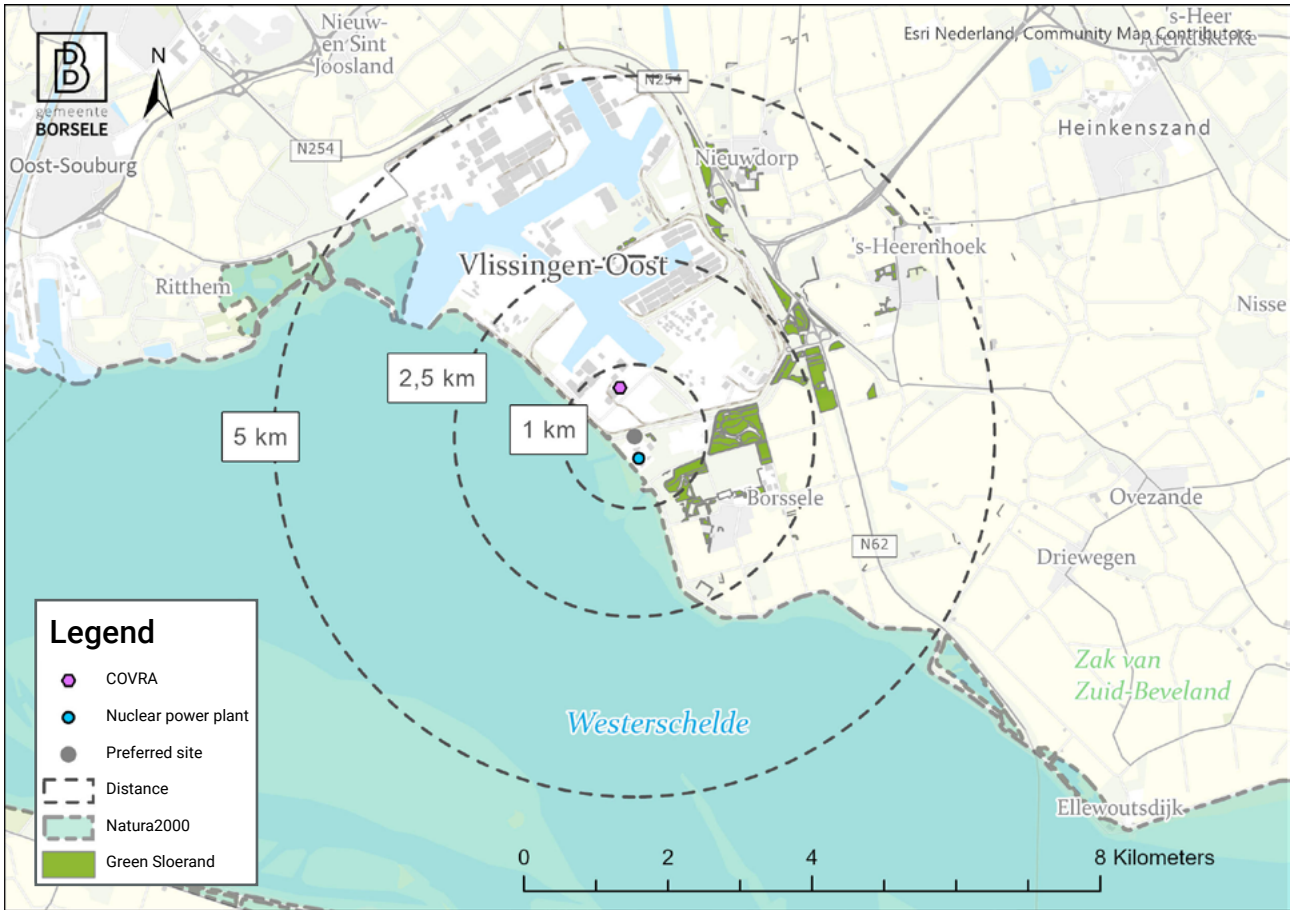
Environment sketch

The preferred site is within the municipal boundaries of Borsele, on the banks of the Western Scheldt. The site is home to the Borssele nuclear power plant, which has been in operation since 1973. The plant has a capacity of 485 megawatts and is operated by EPZ. The Central Government wants to keep this nuclear power plant open longer, provided it can be done safely. The idea is for the new plants to be built alongside the existing plant.

The preferred site is close to some villages within the Municipality of Borsele. The Municipality of Borsele has about 23,000 residents divided into 15 villages and a number of hamlets. The closest village is Borssele, which has 1,500 residents. Because of its distinctive building and street pattern and cultural-historical value, a large part of the village has had the status of a protected townscape in Zeeland since 1983. Borssele is just over 1 kilometre from the preferred site. Other nearby villages are 's-Heerenhoek (about 1,900 residents, 4 km away) and Nieuwdorp (about 1,200 residents, 4 km away).

Between the village of Borssele and the proposed site for the two new nuclear power plants lies the nature reserve 't Sloe. As of 2003, 't Sloe forms a green buffer between the built-up residential area, the adjacent port and industrial area (Sloe area), roads and the Zak van Zuid-Beveland (an area with valuable nature and landscape elements). To the south lies the Western Scheldt, a Natura 2000 area covered by the Birds and Habitats Directives.

Figure 3.1: Preferred site Borssele



The proposed construction site for the new nuclear power plants is partly inside the dike, behind a highly protective dike that meets the highest safety standards, and partly outside the dike (the site where solar panels are now located).

Northwest of the preferred site is the port and industrial area the Sloe area. This area lies outside the dykes. The Sloe area is part of the port area of the North Sea Port, one of the largest seaports in Europe. Activities such as offshore industry, oil refining, and storage and transhipment of fruit, metal, wood and ores, among others, take place here.

The Sloe area fulfils a hub function for importing and exporting goods via an open connection to the North Sea and inland navigation towards Belgium and the European hinterland. The Sloe area is home to companies focusing on heavy industry, chemicals, logistics, energy production and storage. Just a stone's throw away from the existing COVRA plant. This organisation deals with the temporary storage of nuclear waste.

Incidentally, the location of COVRA does not affect the choice of location for new nuclear power plants to be built. This is because the radioactive waste from the Borssele nuclear power plant first goes to a reprocessing plant in France. There, the usable components are recycled and the rest of the waste is processed in such a way that it can be safely transported to COVRA. So there is no need for the new nuclear power plants to be realised near COVRA.

Sloe area important for energy transition

In 2019, the Netherlands made agreements in the Climate Agreement: 50% less CO2 emissions by 2030 and virtually climate-neutral by 2050. This means a major transformation of the energy infrastructure in the Netherlands. Zeeland has been designated as an Energy Cluster. Besides the possible construction of two new nuclear power plants, several large-scale energy projects are planned in and near the Sloe area, namely:

1. Operating life extension of existing Borssele nuclear power plant.
2. Just at sea - IJmuiden Ver Alpha.
3. Just at sea - Nederwiek 1.
4. Offshore wind landfall connections programme (VAWOZ) 2031-2040.
5. New high-voltage substation near Sloe area.
6. New 380 kV Zeeuws-Vlaanderen high-voltage connection.
7. Hydrogen network South-West Netherlands (including hydrogen plant).
8. LNG Terminal Zeeland.

This study deals with the possible arrival of two new nuclear power plants in Borssele and the impact this will have locally and regionally. We can imagine that the large-scale projects mentioned above will influence choices yet to be made in the construction process and may also trigger stacking effects. However, the plans for and realisation of other large-scale energy projects are beyond the scope of this study. As noted in Chapter 1, this impact study has been conducted with a good understanding of this wider context.

Inclusion of construction activities in reference area Sizewell C (UK)

To give an impression of the spatial impact of the construction work, we look at the (temporary) site layout of Sizewell C, where the nuclear power plant and turbine buildings will be realised. It is expected that the intended contractors for Borssele will assume a similar layout, as it has been determined as most appropriate, safe and workable after years of research. Adjustments to it will have to be investigated before they can be applied (personal communication, 27 November 2024). In the area surrounding the Sizewell C site, temporary work sites ('plots') have been designated (including the marine area) for supplying goods (including by water), coastal defence, housing workers, storing goods and carrying out preparatory work. Sizewell C involves a vast area several times larger than the site of the new nuclear power plant. A comprehensive visual representation of the spatial integration of the construction work is available at this link, starting on page 71.

4. Economic impact

4.1 Introduction

In this Chapter, we map the economic impact of the possible arrival of two new nuclear power plants in Borssele. First, we set out the characteristics of the regional economy. Then we link these to knowledge from literature and from interviews and discussions with experts, experts by experience and stakeholders, both local and from Somerset (United Kingdom).

4.2 Summary advice for economic stimulus

The construction of new nuclear power plants could provide an economic boost for Zeeland. We expect new jobs to be created, the business climate to improve, material prosperity to increase on average and opportunities to create a more diverse and attractive educational offer. In terms of the economy, we see the most opportunities for realising positive impact.

Based on this Chapter, we formulated the following recommendations in Chapter 2.

Measures to reduce negative impact

- Generously accommodate the residents in the immediate vicinity of the construction site, who will be most inconvenienced by the construction work in their immediate living and housing environment, by relieving them of the burden of making their homes more sustainable and by explicitly allowing them to benefit from developments in the region (e.g. by realising a heat network).
- Discuss desired measures and possible incentives with North Sea Port and individual companies in the Sloe area. Conversation themes are use of space and the development of the Sloe area into an 'Energy Port'.

Recommendations for strengthening positive impact

- Realise a positive legacy for Borssele and Zeeland by investing in the quality of life, infrastructure, economy and education. Branding Zeeland as a green, sustainable and healthy province increases the region's attractiveness.
- Ensure that local companies can prepare in time by starting a support programme for local Dutch companies, clarity on required certification and support on complex contracting and quality assurance in nuclear construction processes.
- Strengthen the business location climate by investing in infrastructure, improving accessibility and ensuring the availability of sufficient power.
- Develop an overarching comprehensive strategy for the transition to sustainable energy and consider the arrival of the nuclear power plants in the broader context of energy transition. Align this with the Energy Vision Zeeland, which is currently under development.

4.3 Characteristics of the regional economy

Scope of impact

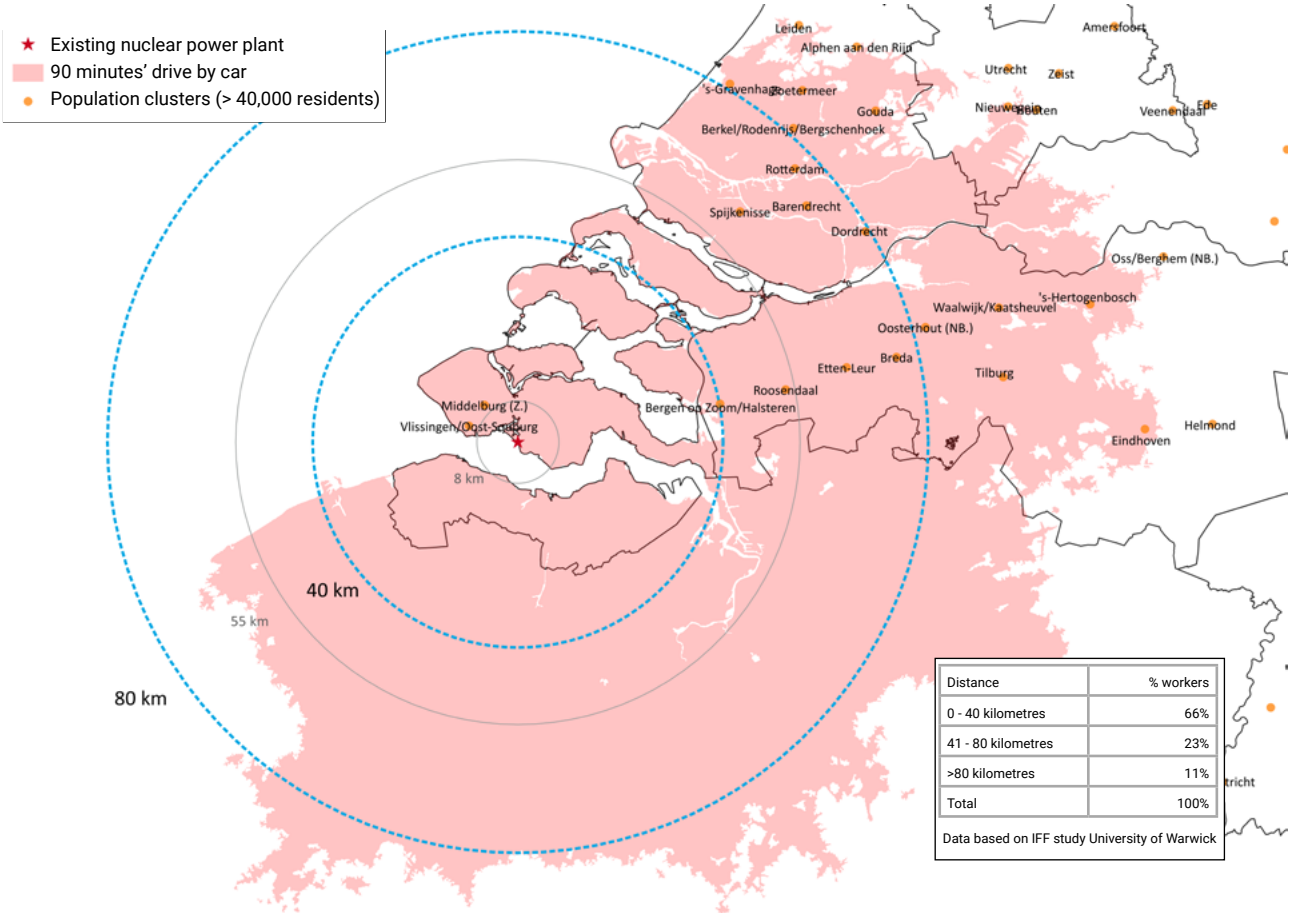
The economic impact of the nuclear power plants extends across the whole Province of Zeeland, not just around Borssele. An important factor is the employment created by the power plants, both for regional workers and newcomers, such as migrant workers. This Chapter focuses mainly on employment for regional workers, while newcomers are covered in the next Chapter.

Research shows that regional workers for the construction and operation of a nuclear power plant can be recruited within a 90-minute radius of the site (this has also been the assumption at Hinkley Point C and Sizewell C, see e.g. HJA, 2018 and EDF, 2011). These workers will continue to live at their current address and commute to the construction site, e.g. by car, public transport, walking and/or cycling.

Given the location of the proposed site in Borssele, workers can travel furthest by car within 90 minutes. This corresponds to a zone of about 80 kilometres around the site[19]. Experience from the United Kingdom shows that probably two thirds of regional workers will live within 40 kilometres of the project, and one third further away (EDF, 2011), see Figure 4.1.

19) Distance and travel time are expected maximums based on the reference routes. Many regional workers will live closer to the site, as they also have to take into account, for example, car parking and security checks.

Figure 4.1: Estimated travel distance of regional workers during nuclear power plant construction



Source: TravelTime (2024). Calculation in TravelTime is based on travel time by car on a weekday at 8 am with the intended site as starting point. We choose travel time by car here, as motorists will get the furthest from the Borssele site in 90 minutes.

For the recruitment of workers and the landing of financial investments (such as wages, expenses and regional tax revenues), we look at the whole of Zeeland. However, we realise that part of the economic impact extends beyond the provincial borders, for instance due to construction workers living outside Zeeland or the arrival of labour migrants. From 2025, the Western Scheldt Tunnel will be toll-free for passenger traffic, potentially making the connection to Zeeuws-Vlaanderen and Belgium more accessible and facilitating recruitment from the south.

Relevant economic indicators

Looking first at some economic indicators from the CBS Regional Monitor of Broad Prosperity, the following stands out (CBS, 2024)[20]:

- Zeeland's economy is smaller than average in the Netherlands. The Gross Domestic Product (GDP) in Zeeland is €41,400 per person. For the Netherlands as a whole, it is €52,400 per person.
- The median disposable income, or the most common disposable income, in Zeeland is €33,800 (in the Netherlands €34,000). For the Municipality of Borsele, this is higher, namely: €35,700.

20) These are indicators belonging to the broad welfare themes of 'material welfare' and 'labour and leisure'.

- The unemployment rate in Zeeland is the lowest of all provinces in the Netherlands (2.9% of the working population in Zeeland is unemployed); while Zeeland also has many vacancies per thousand jobs. This indicates a (very) tight labour market.
- The share of residents (15 to 75 years) with a starting qualification for the labour market is lower in Zeeland than in the rest of the Netherlands. This makes Zeeland one of the provinces, together with Limburg, with the lowest percentage of residents with a diploma at MBO 2, 3 or 4, HAVO, VWO, HBO or WO level.

Complementing these figures, we see that:

- The sectors agriculture and fisheries, tourism and industry as well as healthcare and welfare are relatively large in Zeeland. In addition, construction is a relatively large business sector in the region (LISA, 2023).
- The port and industrial areas in the Sloe area and the Channel zone in Zeeuws-Vlaanderen between Ghent and Terneuzen are important for the Zeeland economy. Major industrial players include companies such as Dow, Yara and Cargill.
- Zeeland scores well at European level in terms of innovativeness, but within the Netherlands it lags behind in this. Thus, Zeeland is characterised as a strong innovator, while the Netherlands as a whole is characterised as an innovation leader (Eurostat, 2023).
- The labour market opportunities for graduates in Zeeland are 'fair' and similar to the national picture. For technical programmes, prospects are predominantly favourable, especially for graduates at MBO 2, MNO 4 and bachelor levels (ROA, 2024).

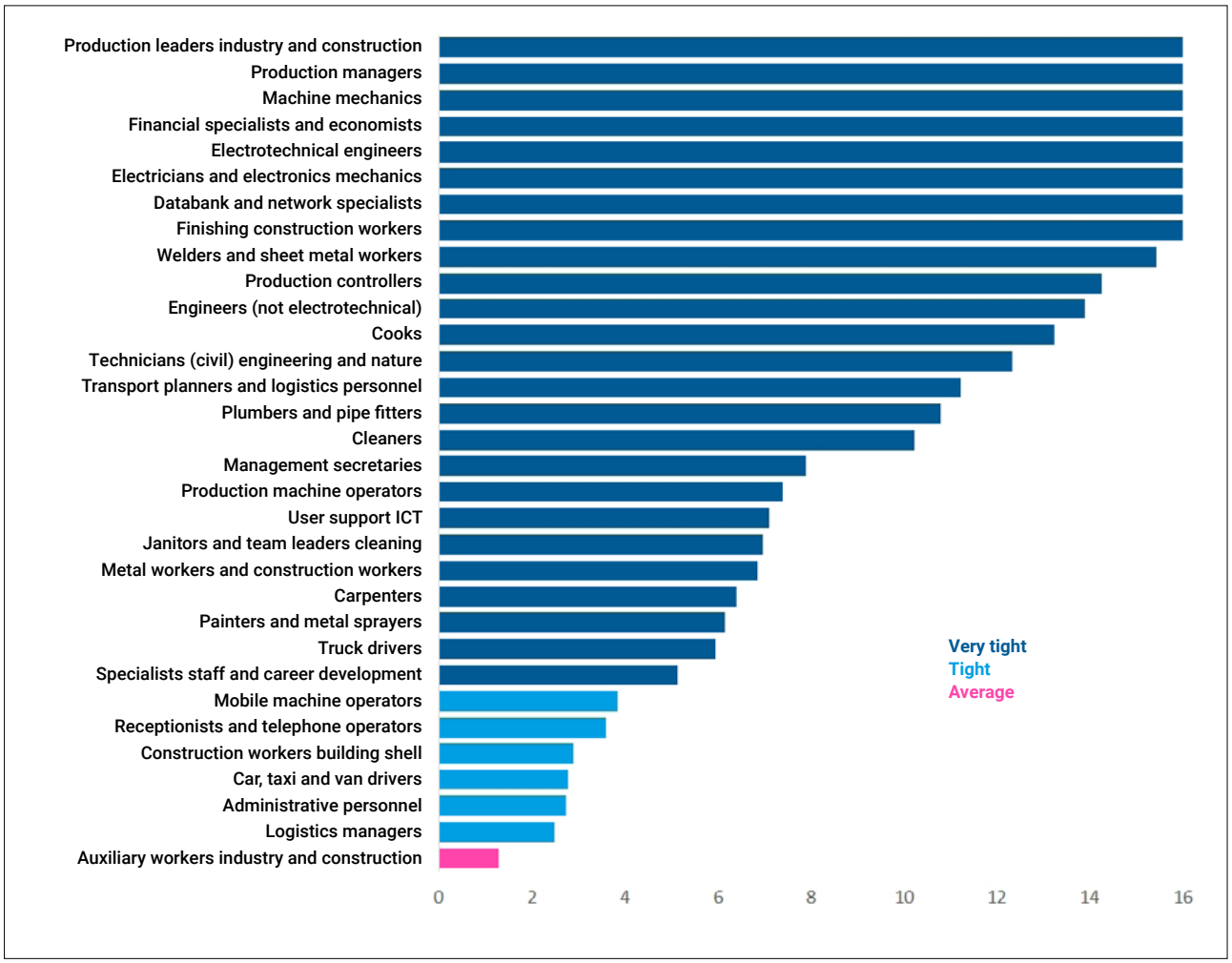
Outline of the labour market in Zeeland

In the context of the employment provided by a nuclear power plant, the fact of a tight labour market is relevant. A tight labour market means that employers find it difficult to find suitable staff. We see labour market tightness in Zeeland for occupational sectors in general, but for the technical occupational sector in particular. Occupations in the technical sector are particularly needed for the construction of the nuclear power plants (see the next section).

Looking at technical occupations, we see that in the second quarter of this year, 2,000 vacancies in the technical occupational class were open in Zeeland (out of a total of 9,200 vacancies; UWV, 2024). These include vacancies for carpenters, construction workers and welders. Looking at unemployment, the number of people on unemployment benefit in Zeeland with a technical occupational background was 506 in December 2024 (UWV, 2024).

The Municipality of Borsele had a total of 25 unemployed people in this occupational class in that month. If we further break down the technical occupational class into specific occupational groups, we see that almost all technical occupations (as well as for other occupations required for nuclear power plant construction) are in short supply. See figure 4.2.

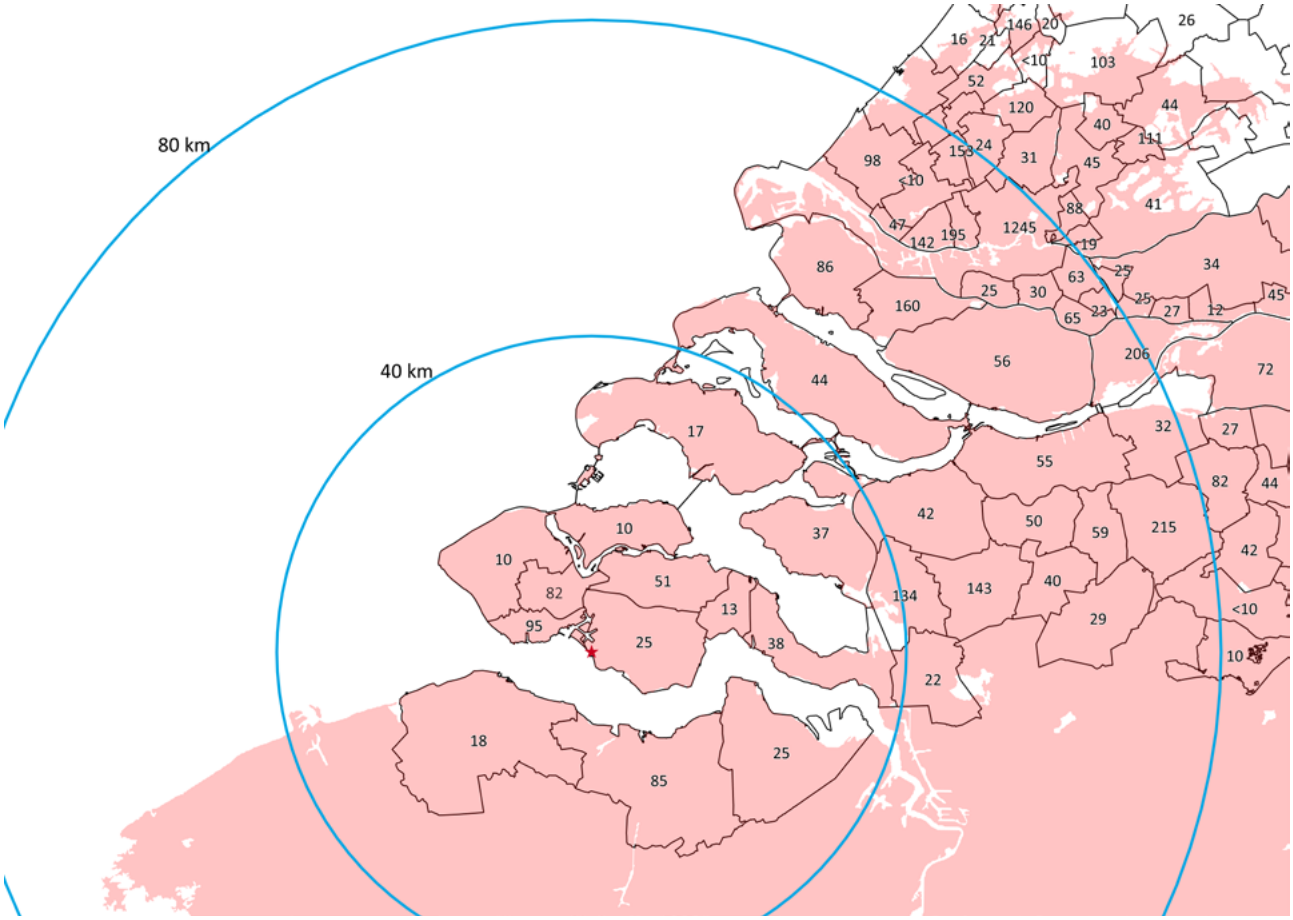
Figure 4.2: Tightness figures by occupational group in Zeeland for the second quarter of 2024. A value greater than 1.5 means a 'tight' labour market situation and a value greater than 4 means a 'very tight' labour market situation (with a maximum value of 16)



Source: UWV (Q2 2024)

It is expected that with the ageing population - which is going on nationwide, but is playing out to an even greater extent in Zeeland - the tightness in the regional labour market will increase further. The tightness around the technical professional classes is not only seen in Zeeland. Local companies in Zeeland municipalities are also finding it difficult to find technical staff. Besides the number of open vacancies, the low number of unemployed people with a former technical profession per municipality illustrates this tightness, see figure 4.3.

Figure 4.3: Number of unemployment benefits paid to former employees with technical occupations



Source: Own editing based on UWV (December 2024) figures

Economic activities in the Sloe area

The proposed site for the two new nuclear power plants in the Municipality of Borsele is located in the Sloe area. The Sloe area is a port and industrial area of about 1,800 hectares of land (CBS Statline, 2024) and is managed by North Sea Port. The area is characterised by many economic activities such as basic and offshore industry, oil refining, storage and transhipment of fruit, metal, wood, ores and other products (Municipality of Borsele, 2024). The area also plays an important role in the developing energy cluster. The current active nuclear power plant occupies around 30 hectares.

4.4 What would be the consequences of the arrival of two new nuclear power plants?

To describe how the possible arrival of two new nuclear power plants will affect the economy of Zeeland, we distinguish between (direct) consequences, effects and impacts. Explanations of the terminology used can be found in Table 4.1 below.

Table 4.1: Explanation of terminology used.

Terms	Notes
Consequence	A consequence that can be said with some certainty to occur (usually in the short term after the start of construction).
Effect	An effect flows from a (direct) consequence. To what extent the effect will actually take place in the region is more uncertain.
Impact	Impacts usually take place over the long term and are therefore surrounded by the most uncertainty. Here, we distinguish between impact during construction and impact during the operation phase.

Implications for Zeeland

From the literature, several consequences of the construction and operation of the nuclear power plants in Borssele can be expected on the Zeeland economy. Figures on the financial investment for construction and associated employment are important to identify the economic impact of the possible arrival of two new nuclear power plants (Glasson, 2009[21]). The following direct consequences are expected:

- The construction and operation of the nuclear power plants boost the region's economy by using local goods, services and personnel. Investment and spending in the chain contribute to this.
- During the peak construction phase, 7,900 jobs could be created. During the operating period, the two nuclear power plants are likely to offer around 1,000 permanent jobs.
- Part of the Sloe area is planned as a site for the construction and operation of the power plants. Although the use of this land limits the space for rental in North Sea Port's port and industrial cluster, the construction of the power plants offers opportunities for companies in and outside the Sloe area to participate in the project.

Financial investment and local spending

When it comes to financial investments, it is known that the Central Government has currently set aside €14.1 billion for nuclear power in the Netherlands (Central Government, 2024). The previous cabinet had pledged €5 billion in the climate fund for keeping the existing nuclear power plant in Borssele open and building two new plants (Central Government, 2023).

21) Source: In Methods of Environmental Impact Assessment, Third edition. Edited by Peter Morris and Riki Therivel.

The new cabinet has increased this amount where the ambition is to build not two, but four new nuclear power plants. Part of the €14.1 billion is thus earmarked for the possible arrival of two new nuclear power plants at Borssele.[22]

Part of the investment for the construction of two new nuclear power plants comes to the region. Indeed, the financial investment generates, directly and indirectly, economic activity around the nuclear power plants. For example, the construction of the nuclear power plants can generate additional income for selected (local) construction and supplier companies. Also, local workers and suppliers spend part of their salaries and income locally. This process of financial investment and local spending in the chain is expected to provide an overall boost to the regional economy (Rodriquez- Bachiller & Glasson, 2004).[23]

Part of the financial investment will 'leak away' by, for instance, investing work at companies elsewhere in the Netherlands, in other countries or by importing non-local goods and services. It is also possible for (temporary) foreign workers to put their income, for instance, in a foreign savings account and/or share it with their family members left behind in country of origin (see also Glasson, 2009).

Jobs for the region

In addition, the possible arrival of two new nuclear power plants will bring jobs to the region. However, these are jobs particularly in occupational classes and groups in which there is already tightness in the region. Projections of the number of jobs needed during the construction and operation of two new nuclear power plants have been prepared for Sizewell C, see figure 4.4 (EDF & CGN, 2020).

In particular, the construction of the nuclear power plants creates many jobs. After construction, employment around nuclear power plants declines. The construction of a nuclear power plant, without project roll-out, takes an average of 10 to 15 years. During the peak construction period, often around the fifth year of construction, it is estimated that around 7,900 people work on construction at the same time (EDF & CGN, 2020). After this peak period, the number of jobs decreases, and in the final year of construction, about 1,000 to 2,000 people would be needed. The operation of two nuclear power plants employs nearly 1,000 people. The existing nuclear power plant in Borssele currently employs 391 people (EPZ, 2023).

The construction and operation of the nuclear power plants require specific knowledge and expertise (see also Sizewell C Prospectus, 2023). In particular, during the construction phase, technical staff specialised in (dis)construction, assembly, metal, civil and electrical engineering, among others, are needed.

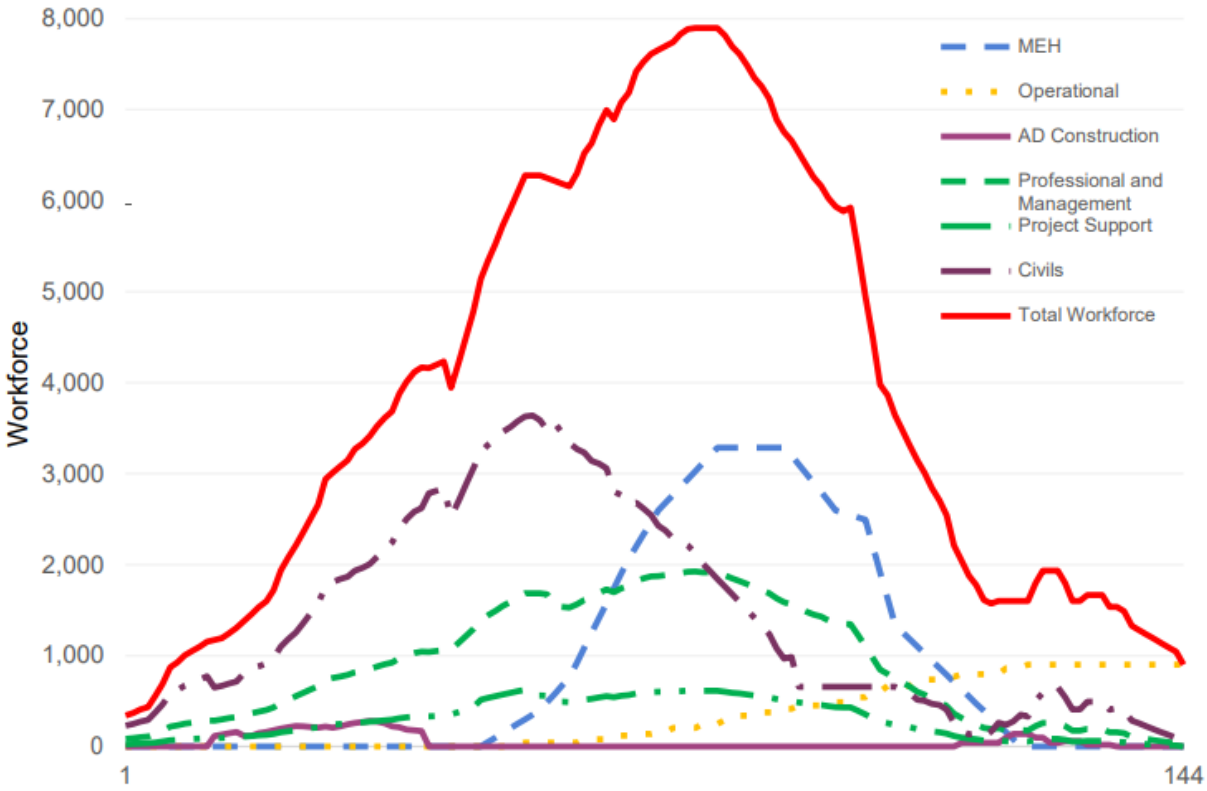
22) Some experts have been critical of the amount of money set aside for nuclear power (see BNR, 2024 and Een Vandaag, 2024, among others). According to these experts, the earmarked amount is insufficient for realising the construction. They base this on reference projects in Somerset and Olkiluoto, for example. About €21 billion was budgeted for the construction of Hinkley Point C, two new nuclear power plants; meanwhile, in the United Kingdom, investment of over €50 billion is assumed (Een Vandaag, 2024). In Olkiluoto, the cost of building one new nuclear power plant was previously estimated at €3 billion. Meanwhile, the total cost would be around €11 billion (Een Vandaag, 2024). The corona pandemic may have helped cause the amounts to be exceeded. In addition, at Hinkley, Brexit may also have played a role in the high costs.

23) Source: Expert systems and GIS for impact assessment. Furthermore, EDF and China General Nuclear Power Corporation (CGN) this year reported on the local and regional socio-economic added value of the Hinkley Point C project (EDF, GGN, 2024).

There will also be a need for support staff, for example for catering, cleaning and security. Managers, supervisors and administrative staff will also be in demand. Employees may progress to other positions or take on different roles within the NPP over time.

In particular, the personnel needed for operation will be responsible for the proper operation of the power plant, such as maintenance personnel, security and quality assurance. There will also be a need for financial and administrative staff as well as managers and executives. The operation phase thus requires different areas of expertise than the construction phase.

Figure 4.4: Number of workers needed during construction phase by month; the x-axis shows the months



Source: EDF & CGN (2020)

Space for construction

In this impact report, we assume - in line with the established conditions - that the construction of the two nuclear power plants will take place within the Sloe area. This will affect both economic activities and North Sea Port's rental opportunities for companies in the port and industrial cluster. It is not yet clear how much space the builder will need for the work, both on the construction site and for temporary work sites. Experts around Hinkley Point C indicate that the total construction site is likely to be 3-5 times larger than the space needed for operations. However, the actual space taken up by construction also depends on how much work takes place off-site. Think for instance of activities carried out elsewhere and then transported to the construction site by water, road or rail.

On the other hand, demand for goods and services can lead to orders for companies inside and outside the Sloe area. For example, companies in the port of Bristol are involved in the construction of Hinkley Point C, including for component manufacturing, on-site assembly and transhipment of high-value components. This involvement offers local entrepreneurs the opportunity to position themselves more strongly in the (inter)national market for similar energy projects.

4.5 Expectations regarding the effects and impact for Zeeland

In addition to the consequences described above, other effects can be expected on the local economy, which may both positive and negative. These expectations are presented in figure 4.5 and are based on the local impact studies of the reference projects, interviews with experts and experts by experience in Somerset, and meetings with Zeeland stakeholders.

As earlier, Zeeland has a smaller economy, low unemployment, but also a tight labour market and a lower percentage of highly educated people. Key sectors are agriculture, industry and tourism, and although Zeeland is innovative, it lags behind in terms of innovation within the Netherlands. Against this background, we describe below the impact expectations for the regional economy, distinguishing between 'working and learning' and 'material welfare' (in line with the broad welfare model).

Working and learning

- The construction of the nuclear power plants may boost regional education and research, especially through the opportunity the project offers to train suitable personnel. Some local stakeholders expect standards and culture of education and research to go up because of the demands on staff involved in a nuclear power plant.
- Labour demand is increasing not only in technical sectors but also in related occupations. This can create more employment opportunities for workers, but also greater staffing problems for employers due to labour market tightness.

Material prosperity

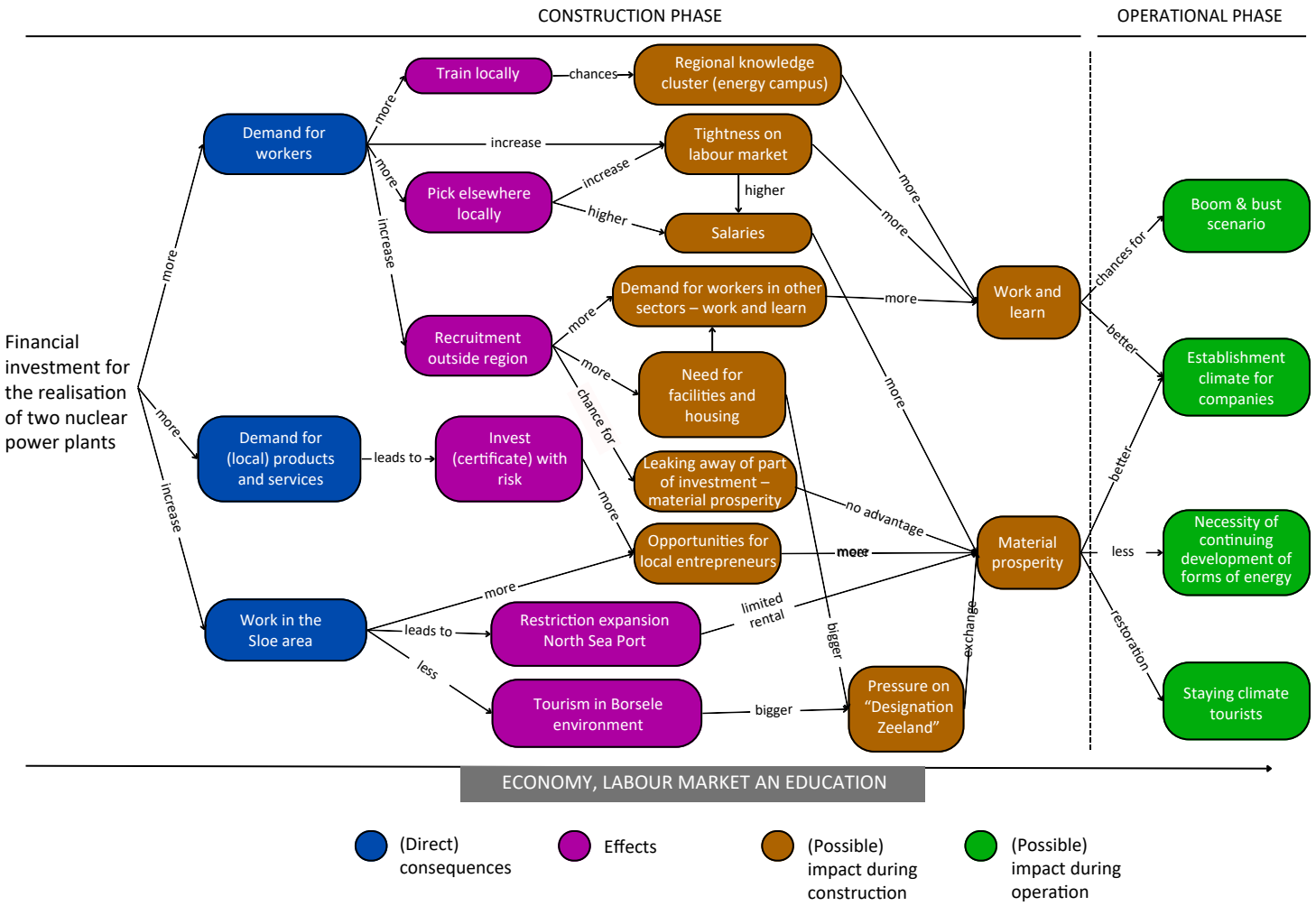
- Purchasing power may increase due to higher salaries, while at the same time rising operating costs can cause financial problems for local companies.
- Companies involved in construction will have new opportunities. They can apply their knowledge and experience to similar projects inside and outside the Netherlands. Companies not involved are at risk due to necessary investments in certifications.
- Some of the financial investment will not benefit the region and will 'leak away'.
- After the construction of the nuclear power plants, there is the possibility of a 'boom and bust' scenario, with unemployment rising due to the decline in employment.
- The business location climate may improve after construction due to improved infrastructure, which may attract companies.

We explain these forms of impact on the regional economy below. We name these expectations separately here, as there is more uncertainty around the further knock-on effects and impacts in the region. The Borsele Conditions that touch on the expectations are shown in table 4.2.

Table 4.2: Borsele Conditions touching on (possible) changes in the economic field.

No.	Condition
3.3	Realisation of (energy) projects should not be at the expense of sustainable energy developments and realisations
8.6	Getting local entrepreneurs to benefit from energy projects
9.1	Supporting local educational institutions
9.2	Sustainable energy campus Zeeland
10.2	Money flowing back to the region

Figure 4.5: Concerns and expectations expressed in the impact studies of reference projects and/or by local stakeholders and experts



Reading-guide for the figure: The concerns and expectations in the figure come from local impact studies of reference projects, interviews with experts and experts by experience from Somerset and conversations with regional stakeholders from Zeeland. The figure reads from left to right and shows the chain of possible changes that occur with the arrival of two nuclear power plants at Borssele. On the left are the direct consequences of the planned project. These consequences can both cause follow-on effects and have impact on the broad welfare of the region. We distinguish between impacts in the construction phase and in the operation phase. The figure does not take into account measures that can alleviate or enhance the changes.

Effects

The construction of the nuclear power plants will result in a high demand for workers, both from the region itself and from outside. The builder has several options to attract staff. For instance, it could train or retrain local staff, for instance in cooperation with local companies or educational institutions. It is also possible to attract workers from other local companies. Experience from the United Kingdom shows that the builder is often able to offer higher salaries than local firms. In addition, the builder could recruit temporary workers from other parts of the Netherlands or abroad.

Local entrepreneurs, for example in the Sloe area, may have the opportunity to compete for construction contracts, provided they meet the strict requirements for nuclear construction. However, this will require them to invest in certifications, audits and administrative processes. This could be financially risky, because participation in construction is not guaranteed.

Furthermore, construction is expected to affect available space in the Sloe area. As a result, the seaport and industrial cluster may temporarily offer less space for new businesses. Landscape changes, such as adjustments to the visible landscape, are also expected, potentially affecting local tourism and recreation. However, local experts expect that the impact on tourism appeal will be limited, as current tourism in the immediate vicinity of the construction site is currently relatively low.

Impact of construction

The tight labour market and growing demand for personnel provide opportunities for Zeeland educational institutions such as Scalda, HZ | University of Applied Sciences (HZ) and University College Roosevelt (UCR). They can train staff for the construction and operation of the nuclear power plant, and help retrain workers from other sectors. However, there are concerns that the education system may not be adequately prepared for the increasing demand, as mentioned in the Borsele Conditions.

The demand for staff may increase labour market tightness in the region, possibly leading to higher wages in specific occupational groups in order to retain staff. This would benefit workers but increase operating costs for local firms.

In addition, attracting staff from outside the region can have an impact on the regional economy. New workers can increase demand for staff in sectors such as healthcare, welfare and retail. Moreover, the arrival of temporary foreign workers may lead to salary expenditures in and remittances to countries abroad, causing some of the financial investment to ‘leak’. Furthermore, the demand for housing, public transport and amenities in the region may increase due to the arrival of newcomers.

There are concerns about the impact of construction on Zeeland as a tourist destination. The number of temporary workers may increase the demand for tourist accommodation, potentially leading to higher rental prices and deterring staycation tourists. This effect would be on top of the decrease in scenic value near the construction site, which could discourage tourists from visiting the area.

Local entrepreneurs inside and outside the Sloe area may be able to better position themselves in the (inter)national market through their involvement in construction. With the right experience and certification, they might be able to contribute to other large-scale (core) energy projects, both nationally and internationally.

Impact during operation

After the construction of the nuclear power plants, there is the possibility of a 'boom and bust' scenario, where unemployment increases due to declining employment. This scenario emerges in impact studies of reference projects. In Zeeland, some stakeholders doubt this scenario. They expect the tight labour market and other planned energy projects in the region to provide sufficient employment, provided the region takes timely action.

In addition, the business location climate is expected to improve with better infrastructure, such as connections to the main road and rail network. If this infrastructure is maintained after construction, this could attract companies. The availability of sufficient power could also be a reason for energy-intensive companies to locate in the area. According to a local expert, there currently is enough space on the power grid in Zeeland. Nevertheless, at the national level there is congestion. This needs to be solved. It may therefore be attractive for energy-intensive companies to locate closer to power producers, for instance in Zeeland.

Furthermore, the presence of two nuclear power plants is expected to delay the development of other low-carbon energy sources. Due to the long lifetime and stable energy supply of nuclear plants, investment in new forms of energy may be considered less urgent.

Finally, the accommodation climate for tourists is expected to recover after construction, as the nuisance decreases and the landscape image recovers. However, recovery of tourism in the region may take several years.

Box 4.1: Experiences from Somerset

At Hinkley Point C, EDF has set up several training programmes and centres to staff for the construction and operation of the nuclear power plant. Three of these centres focus on trades such as electrical, welding, steel and installation work (EDF, 2024). EDF is also working with the National College for Nuclear to the training offer during the different construction phases. One respondent explains: *"So EDF would have a very close link with the national college training facility in [...] Bridgwater. Bridgwater College is part of the National College for Nuclear, so a lot of that is developing the skills and the workforce to deliver on Hinkley Point."*

Salaries at EDF are 78% above the average in the Somerset region, an area experiencing relatively high unemployment and low salaries, according to the local impact report. However, this has advantages and disadvantages. One respondent says: *"So they worked for four years with us in their last year, they would have got an increase of salary to maybe, I don't know, £23,000 or something like that, when they finish their apprenticeship, but because we were putting them to work on Hinkley Point B, working alongside other people that were technically the same level, even if they were older and had more experience, we had to increase their salaries to about 30,000. [...] But then they got offered...They got poached to do the exact same job, but working directly for Hinkley Point B, and they were offered 45,000."*

Another company is struggling to attract skilled staff. *"We've then found it difficult to grow ourselves because it's taken us over four years to recruit one senior CNI engineer. [...] A lot of the skilled people in our area have given up permanent jobs because they can earn so much more by contracting."*

Although salaries at Hinkley Point C appear high in some cases, it is not clear whether this applies to all employees. There are also reports of abuses at other sites, such as in Finland. During the construction of Olkiluoto 3, Polish workers were allegedly temporarily underpaid (Helsinki Times, 2013).

Furthermore, businesses in Somerset face the challenge of adapting to the requirements of the nuclear power plant. A local entrepreneur shares his experiences of demonstrating knowledge, skills and quality of work: *"The certifications we have do not explicitly relate to us being qualified to build for nuclear. But we have various certifications typically expected, i.e. ISO9001 (Quality), ISO 14001 (Environmental) and ISO 45001 (Health & Safety). We had all these before we started bidding for HPC jobs but it wouldn't have necessarily precluded us from bidding if we hadn't already had so. It's just that these certifications are usually 'qualifiers' for many jobs (not just nuclear new build jobs) so not having them would likely lead to early elimination from competitive tendering opportunities if there were plenty of other companies bidding that had them."*

The entrepreneur also notes that the contracts companies have to enter into to get involved in construction are complex. This requires significant investment in expertise and administrative processes. *"If I was advising any company looking to get into this, I would say: find out what contract types are going to be used on the project [...] and start getting educated on it early. [...] If you're faced with a contract type that you're not familiar with, I think it's probably worth the money, although it's difficult for small companies, sometimes to stump up 10,000 or 20,000 pounds for advice. [...] It's probably a sensible investment."*

Besides opportunities for local construction companies, Hinkley Point C also offers opportunities for entrepreneurs in the leisure sector. For example, holiday parks are being used to provide housing for some of the workers. *"They [EDF] have a mix of campus accommodation and so they've got 1000 bed spaces in Bridgwater in a big campus. They've got 500 bed spaces in a campus that's on site. [...] They've taken over a holiday park [...]. So, it's a holiday part, but it's not caravans. It's actually little chalets and EDF have taken that over, so there's no tourists there anymore. It's all HPC workers and there's 900 there."*

4.6 Economic policy analysis

Zeeland governments are working on economic development, growth and renewal of Zeeland. The various visions for this have been translated into ambitions and policies. The possible arrival of two new nuclear power plants affects their realisation. In this section, we explore which policy ambitions the possible arrival of the nuclear power plants can contribute to (+), which ambitions will be compromised (-) and what this means for Zeeland. We thereby link the previous findings from this Chapter to existing policy. For the sake of readability, the sources consulted for this section are listed separately in the bibliography (see Annex 4).

Attracting and retaining talent

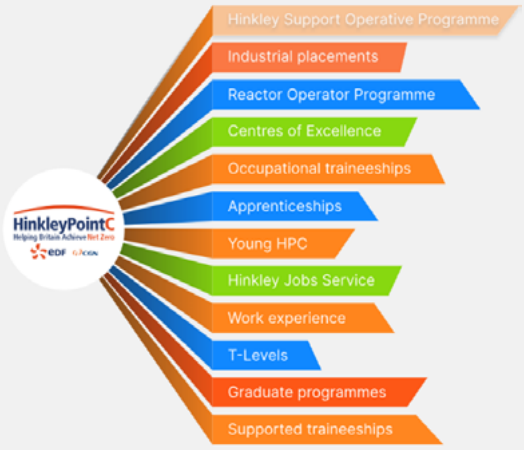
As explained earlier in this Chapter, the labour market in Zeeland is long-term tightness. Companies are struggling to attract qualified staff, especially in the healthcare, education, ICT and engineering sectors. Major causes of the tightness are ageing and de-greening of the labour force.

Zeeland is struggling to retain young talent, partly due to a limited supply of higher education and research. As a result, companies struggle to grow and innovate. The tightness in the labour market thus puts a brake on Zeeland's economic development.

To attract and retain talent, Zeeland governments are pulling together. Under the brand strategy Shaping the Future Delta, efforts are being made to position Zeeland as an attractive region in which to live, work, study, do business and relax. The underlying idea is that as long as the image of Zeeland remains unchanged, it will remain difficult to attract new target groups. In parallel, initiatives such as Human Capital Agendas, Labour Market Attack Plan, Talent Service, Expat Centre Zeeland, labour market campaigns and support centres are working to improve the labour market infrastructure.

In terms of knowledge and research, the development of Campus Zeeland should improve the connection between business and educational institutions. This initiative focuses on talent development, innovation and cooperation with a focus on three core sectors, of which sustainable energy is one. A key pillar of the initiative is strengthening STEM education at both MBO, HBO and WO levels. Another relevant initiative is the formation of the Delta Climate Center in Vlissingen.

Table 4.3: Ambitions for attracting and retaining talent, to which the possible arrival of NPPs can contribute (+) and ambitions that may be compromised (-).

+	The construction of two nuclear power plants will create new jobs for Zeeland. These are both temporary employment (construction activities) and an expansion of structural employment (operation). Zeeland's labour market cannot (fully) provide for this. The pressure to attract and retain technically skilled personnel will increase, which will improve the labour market perspective. This will give young talent reasons to stay. The arrival of the nuclear power plants can thereby give concrete meaning to the positioning strategy Shaping the Future Delta that Zeeland is pursuing to attract and retain (technically skilled) talent for the region.	
+	Contractors have an interest in making the best use of the regional labour market and to existing infrastructures. This means opportunities for knowledge institutions. The realisation of the nuclear power plant requires technically skilled personnel who can contribute to the construction activities. There will also be a need to deploy security guards, cooks and HR professionals. The image on the right shows the 'pathways to employment at Hinkley Point C'. Along these pathways, the contractor works with educational institutions, governments and industry in various ways to recruit and train staff.	 *Source: EDF & CGN: Pathways of Employment*
+	There will be a demand for knowledge and expertise in nuclear technology and radiation protection. To keep nuclear power plants running, strengthening this knowledge infrastructure is a requirement. Therefore, €65 million from the Climate Fund has been reserved for nuclear knowledge development and innovation in the coming years. For knowledge institutions in Zeeland, this means new opportunities to develop a suitable educational offering in cooperation with the business community.	

Strengthen development and innovation capacity

In a vital economic ecosystem, healthy competition between companies exists, and companies, educational institutions and civil society organisations work together out of shared self-interest. In Zeeland, this also happens. However, due to a lack of mass, this is not a given in Zeeland. In European terms, although Zeeland scores well on the European Innovation Index, within the Netherlands, Zeeland, together with the provinces of Drenthe and Friesland, is among the provinces with the lowest score. So Zeeland can still take steps to strengthen its economic innovation and development strength.

The Province sees that strengthening its innovation capacity requires investing in technological infrastructure. It supports the objective of Sustainable Ports Ambition and Smart Delta Resources. These are strategic partnerships of large companies from chemical, steel, energy, food and port sectors with the aim of making operations more sustainable. The port and industry cluster is important for the regional economy and a job engine for Zeeland. In addition, the Province is committed to strengthening the competitive position of broad-based SMEs, with a focus on family businesses. The Municipality of Borsele wants to expand existing business parks or look to establish new ones.

Table 4.4: Ambitions for strengthening development and innovation strength, to which the possible arrival of the nuclear power plants could contribute (+) and ambitions that could be compromised (-).

+	Where efficient and possible, contractors will want to use local entrepreneurs for construction work and low-tech services. This means a boost for the regional economy and can create new business activity, and also creates more 'mass'. In the long run, this can increase regional competitiveness and at the same time be a reason for companies to seek cooperation. For instance, in order to meet high quality and safety standards that apply for subcontractors.

Transition to a sustainable and climate-neutral economy

Zeeland's economy needs to transition to be climate neutral by 2050. For a number of sectors in which Zeeland is strong, such as process industry, port and logistics, energy, agriculture and agro & food, this is a tough challenge, but it also creates opportunities for Zeeland. Switching to a sustainable and circular economy bring along changes for the energy system, infrastructure, the layout of business parks and the use of raw materials. One concrete challenge is grid congestion. It hinders existing companies from further electrifying and new companies from establishing themselves in the region. It also shows the limitations: not everything can be done everywhere, nor all at once.

The Sloe area is a place where several major energy transition projects converge (see section 3.4). The provincial government says: *"Zeeland can become the green socket of the Netherlands. The area at the forefront of the energy transition."* This statement is accompanied by the desire to make agreements with the Central Government to attract labour and maintain facilities. The Municipality of Borsele wants to ensure that - in good consultation with residents - the national tasks for energy transition lead to a strengthening of the quality of life in the Municipality of Borsele. These words express a positive basic attitude when it comes to realising ambitions for switching to a sustainable and circular economy.

North Sea Port aims to develop further as an 'Energy Port'. The main tracks on which the port authority is working are sustainable hydrogen, CC(U)S (capture, storage and/or reuse of CO2), electrification and heat exchange. The availability of infrastructure and sustainable energy and raw materials are very important in this respect. North Sea Port wants to distinguish itself by helping companies in the port areas to realise sustainability ambitions. Growth and sustainability must go hand in hand.

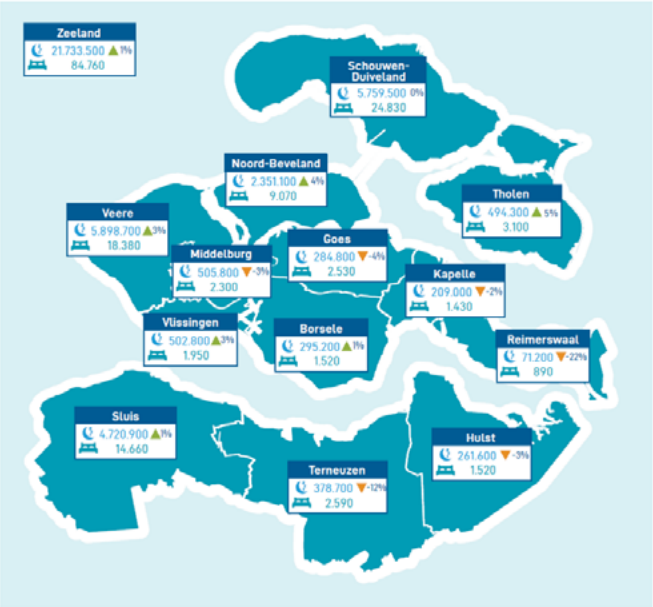
Table 4.5: Ambitions for transition to a sustainable and climate-neutral economy, to which the possible arrival of the nuclear power plants could contribute (+) and ambitions that could be compromised (-).

+	Besides building nuclear power plants, more major energy transition projects are planned in and near the Sloe area. Zeeland can play a pioneering role and thus strengthen its economic business climate by focusing its scope on sustainable businesses and clean industry.

Balancing tourism with habitat and landscape

Zeeland and tourism are inextricably linked. In 2023, €3.4 billion was spent on the leisure economy in Zeeland and 21.7 million overnight stays were booked. This makes the leisure sector one of Zeeland's most important economic sectors, accounting for 11% of employment. Tourist pressure in the area around the proposed construction site is relatively low compared to hotspots such as Veere, Sluis and Schouwen-Duiveland.

In the coming years, the leisure sector faces the challenge of finding the right balance with the living environment and landscape. In Bestemming Zeeland 2030, a future perspective has been developed in which the ambition is expressed to better serve visitors by focusing on sustainability, diverse supply, support among residents and optimal distribution, among other things.



The figure on the right shows the number of overnight stays and accommodations booked by municipality in 2023.

Source: Key figures leisure sector Zeeland 2023.

Table 4.6: Ambitions in the area of tourism, to which the possible arrival of the nuclear power plants can contribute (+) and ambitions that could be compromised (-).

+	A positive economic impact occurs when temporary workers use tourist accommodation that would otherwise remain empty.
-	Tourists will stay away if they are inconvenienced by construction work or when temporary workers occupy available accommodation. Tourist hotspots are mostly at some distance from the proposed construction site. We therefore consider the economic impact on the leisure sector to be quite small. However, for entrepreneurs located near Borssele, we expect the construction work to significantly reduce the tourist attraction. At the same time, near Borssele, the supply of leisure accommodation is less than around the tourist hotspots.

5. Social impact

5.1 Introduction

In this Chapter, we describe the social impact of the possible arrival of two new nuclear power plants in Borssele. In doing so, we focus on the themes of housing and facilities, social cohesion and social safety. We first describe the settlement area of (temporary) newcomers and the social characteristics of the region. We then explain the consequences, and possible effects and impacts of the construction and operation of the nuclear power plants.

5.2 Summary advice for social impact

The arrival of new nuclear power plants will create a temporary influx of (international) workers who need to find a place in local society. This will lead to an increased demand for housing and create more traffic movements, mainly in the area around the construction site. New residents can give a boost to maintaining facilities, but at the same time mean an extra burden on the healthcare sector.

Based on this Chapter, we formulated the following recommendations in Chapter 2.

Measures to reduce negative impact

- Develop a programme for the housing issue and organise regional coordination to anticipate the increasing temporary need for housing to accommodate international workers. For the issue of housing workers, make a connection with the province's housing task and with the residential recreation sector.
- Create facilities for care and education, where possible on or near the construction site.
- Anticipate uncertainties in the planning of the construction process and take into account the possibility of execution taking longer than originally planned. Consider the potential impact of delays and how negative consequences can be mitigated in time.
- Pay constant attention to information exchange and participation of direct residents and other stakeholders, including North Sea Port and the Sloe area companies.
- Establish a structural partnership, in which all relevant authorities participate and cooperation is also organised with civil society organisations, education, business, builders and other relevant parties in the value chain. Part of this structural partnership concerns sustainable investment in the region.

5.3 Social characteristics of the region

Scope of impact

The previous Chapter indicated that research shows that regional workers for the construction and operation of a nuclear power plant are within 90 minutes' travel distance from the construction site.

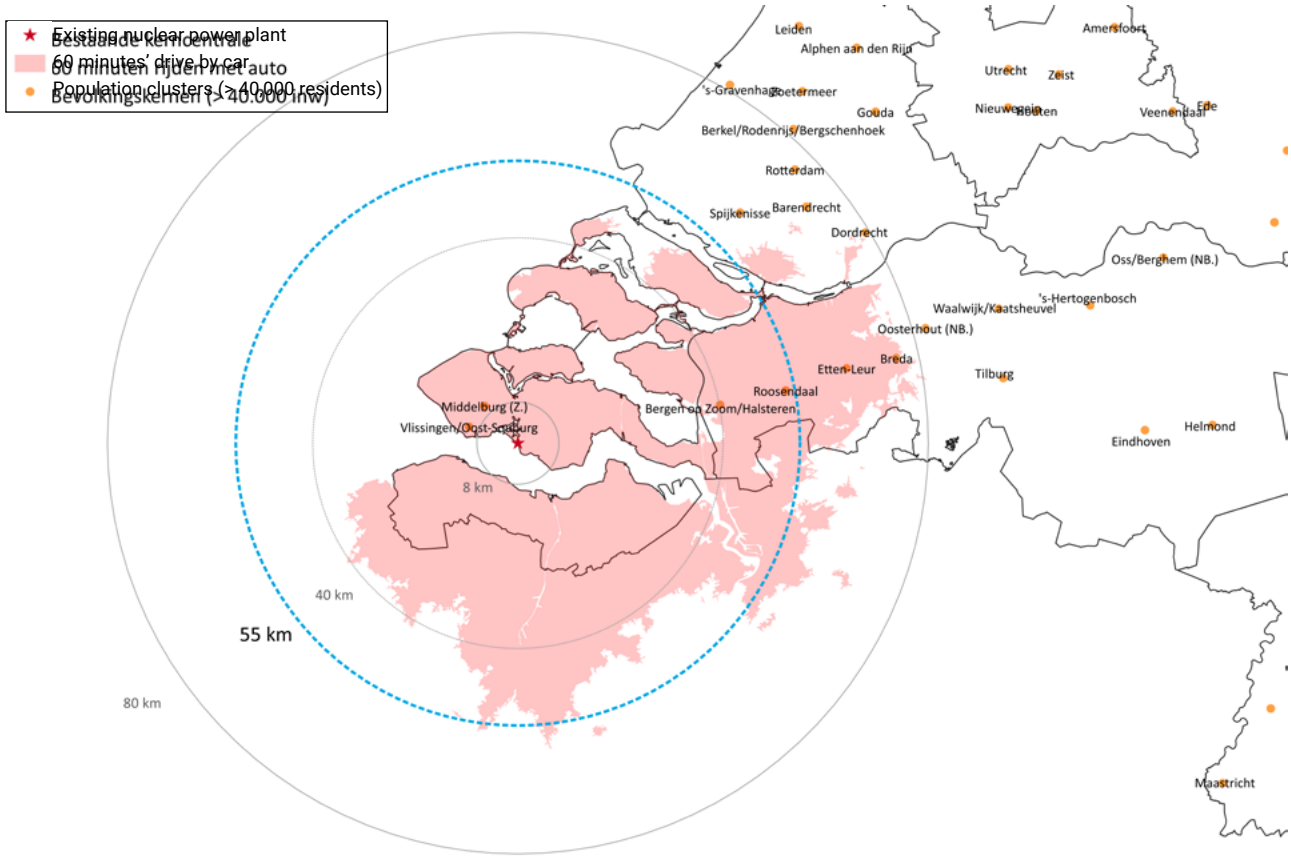
In addition to regional workers, people will also move to the region to help work on the NPPs, such as migrant workers. These newcomers are needed because of the large number of workers that construction requires, as well as the specialist skills and experience that may not be available locally.

For projects such as Hinkley Point C and Sizewell C, it is assumed that these newcomers will live near the construction site and want to travel a maximum of 60 minutes for work (see HJA, 2018 and EDF, 2011, among others).

The settlement area of these newcomers is important for assessing the social impact of the NPPs. For example, their arrival may affect the housing market, as well as the use of local facilities. Neighbourhood connectedness or feelings of (un)safety among residents may also change due to the increase and diversity of residents.

Although this is based on assumptions, we assume that the social impact of the two nuclear power plants will be felt within a 60-minute travel distance from the construction site. This amounts to a zone of about 55 kilometres around Borssele. Figure 5.1 shows that Zeeland, part of western Brabant and part of Belgium fall within this zone.

Figure 5.1: The estimated settlement area of (temporary) newcomers during the construction of the nuclear power plants



Source: TravelTime (2024). Calculation in TravelTime is based on travel time by car on a weekday at 8 am with the intended site as starting point. We choose travel time by car here, as motorists will get furthest from the Borssele site in 60 minutes.

Relevant social indicators

If we look at CBS's regional broad prosperity monitor, we see the following for the social aspects of Zeeland (CBS, 2024)[24]:

- Nine in ten residents in Zeeland say they are satisfied with their homes and their living environment.[25] The Province scores better than most other provinces in the Netherlands in this area.
- Zeeland is a relatively safe province. The majority of residents of Zeeland feel safe in their own neighbourhood (1.8 percent of residents often feel unsafe) and the number of registered crimes is low (34 per 1,000 residents) compared to the Dutch average.
- Residents of Zeeland generally have to travel further for their amenities than residents in many other provinces. For example, the average travel distance to a (primary) school, a GP practice and hospital is 0.9, 1.5 and 10.7 kilometres, respectively.
- Residents' satisfaction with social cohesion in their neighbourhood is around the Dutch average. This includes, for example, residents' satisfaction with contact with other local residents, satisfaction with the composition of the population in the neighbourhood and the extent to which people address each other on behaviour.
- The proportion of residents in Zeeland who have (a lot of) confidence in others and in existing institutions (such as the House of Representatives, police and judges) is lower than in many other provinces.

Looking beyond the data from the Regional Broad Prosperity Monitor, and looking at figures on demographics and the housing market, a few more things stand out. The Province of Zeeland had a population of 391,634 on 1 January 2024 (CBS, 2024). Compared to the Dutch average, Zeeland has a relatively high proportion of elderly people, many residents with a western migration background (13 percent) and a high proportion of owner-occupied houses. One in four residents in Zeeland is aged 65 or older; for the Netherlands as a whole, this is one in five. The high proportion of residents with a western migration background is mainly due to the number of Belgians living in Zeeland. In 2024, there were 9,757 residents in Zeeland with Belgian nationality.

In contrast to the relatively high number of residents with a western migration background[26], the proportion of residents with a non-western migration background[27] in Zeeland is low compared to many other provinces. In Zeeland, 7 percent of residents have a non-western migration background. In the Netherlands, the average is 14 percent. Furthermore, the Province has a low population density, there are relatively few rental houses and the average WOZ [Real Estate Valuation Act] value of housing is lower than in many other parts of the Netherlands.

24) These are indicators belonging to the broad welfare themes of 'housing', 'security' and 'society'.

25) There is no quantitative data on the extent to which residents expect residential satisfaction to change due to the possible arrival of the two new nuclear power plants. Local concerns and expectations that may affect residential satisfaction are listed in the Borsele Conditions.

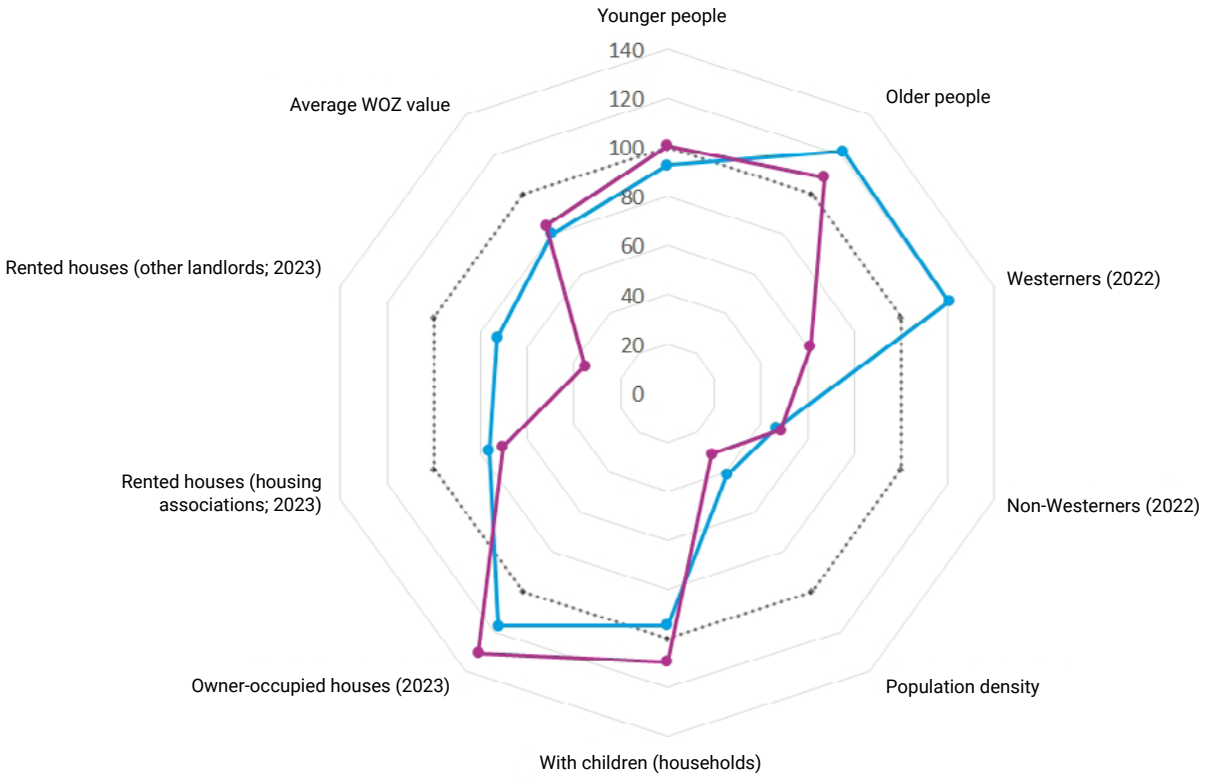
26) Person whose migration background is one of the countries in Europe (excluding Turkey), North America and Oceania, and Indonesia and Japan.

27) Person whose migration background is one of the countries in Africa, Latin America and Asia (excluding Indonesia and Japan) or Turkey.

Of all Zeeland residents, 6 percent live in the Municipality of Borsele (a total of 23,121 residents). The background characteristics of residents in the Municipality of Borsele are similar to those of residents in Zeeland as a whole. Nevertheless, the proportion of young people and the proportion of families with young children are somewhat higher in the municipality.

There are also few residents with a migration background: 7 percent have a Western migration background and 3 percent have a non-Western migration background. The proportion of owner-occupied houses in the municipality is higher than in many other Zeeland municipalities. This means that the municipality has relatively few rental properties.

Figure 5.2: General population and housing data for Zeeland and the Municipality of Borsele (indices; Dutch average=100)



Source: CBS (2024). Unless otherwise stated, figures are for the year 2024.

When it comes to the housing market in Zeeland, analyses by ABF Research show that the Province currently has a shortage of 3,000 homes (2024 figures). This expresses itself in a housing shortage rate of 1.6 percent. Despite this shortage, Zeeland is the only province that meets the national government's ambition to reduce the housing shortage in the Netherlands to two percent by 2030. The Central Government argues that a two percent shortage is appropriate for a 'healthy' housing market (not all house seekers will find a home immediately and they will have to search and wait for a suitable home for some time). ABF expects that around 9,400 houses will have to be added in Zeeland until 2030 to meet the housing demand and stay below the two percent standard.

Last year, the Province and municipalities in Zeeland concluded the Zeeland Housing Deal (2023), supplementing ABF's forecasts. The Zeeland parties expect more households in the future than the national government and therefore set the ambition to build 16,500 new homes from 2022 to 2030. Of these, 13,720 should be affordable, including social housing, affordable housing for sale up to the NHG limit and flex housing.

Besides the regular housing market with owner-occupied and rented houses, Zeeland has many (tourist) accommodation facilities. In 2022, Zeeland had about 85,000 accommodation units with a total size of almost 350,000 beds (HZ KCKT, 2022). The number of beds thus stood at 890 per 1,000 residents. In the Municipality of Borsele, the number of accommodations and beds is 1,518 and 7,201 respectively. This amounts to 311 beds per 1,000 residents. Tourist accommodation is not occupied throughout the year. However, it is assumed that almost all accommodation is occupied during the high season, although figures to test this are lacking.[28] Accommodation in Zeeland includes lodging with hotel services (such as hotels, B&Bs and flats with hotel services), residential recreation (including cottage sites with central rentals and camping sites) and water recreation (permanent and transient moorings).

5.4 What would be the consequences of the arrival of two new nuclear power plants?

Two new nuclear power plants in Borssele lead to social changes in Zeeland. We first discuss the (direct) consequences of the possible arrival of two nuclear power plants. Then we describe the possible effects and impact on the region.

Implications for Zeeland

When it comes to the possible arrival of two new nuclear power plants, a number of direct consequences can be expected. These direct consequences are:

- The arrival of newcomers increases the population of Zeeland and changes its composition. The number depends on agreements with the builder and local policies. At Hinkley Point C and Sizewell C, 64 percent of the workforce is made up of newcomers; which is about 5,000 people during the peak construction phase.
- Demand for housing in Zeeland will increase, with a temporary need for rental housing and accommodation during construction, and an increase in demand for owner-occupied housing in the operating phase. At Hinkley Point C and Sizewell C, the pressure on the housing market is reduced by campuses for construction workers (two out of three newcomers involved in Sizewell C live on a campus).
- Traffic around the construction site will increase due to the arrival of new workers. The increase depends on local choices and agreements with the builder. At Hinkley Point C and Sizewell C, traffic is limited by P&R sites, buses and campuses adjacent to the construction site.
- In general, the social impact of NPP construction will be greater than that of operation, as many newcomers stay in the region temporarily during construction. During the operation phase, new workers settle longer or permanently.

28) CBS publishes occupancy figures, but it calculates these figures based on the number of sleeping places in Zeeland. A disadvantage of this method of calculation is that, for example, a holiday home with five beds let to a married couple has an occupancy rate of 40 percent. In fact, the remaining three beds within the accommodation can then no longer be rented out to other holidaymakers. The occupancy rate figures therefore do not give a picture of the proportion of accommodation that is in the region.

Increase in population, with more variety

The arrival of newcomers increases and changes the population of Zeeland. The number of newcomers depends on the agreements with the builder, such as the construction method, and the policy around the involvement of regional workers.

During the construction phase, most will be staff aged between 30 and 55, the typical profile of construction workers at nuclear power plants (Glasson & Durning 2019; ECITB, 2021). They are also mostly foreign workers who will stay in the region for several months or years (Housing Vision West Somerset, 2013; EDF, 2011).

For the construction of Hinkley Point C, four scenarios were examined to estimate the number of newcomers (see table 5.1). The 80 percent newcomer scenario assumed the highest number of newcomers, while the 50 percent scenario assumed an equal distribution between newcomers and regional workers. The actual figures currently lie between the two middle scenarios: 64 percent of the construction workforce is newcomer, and 36 percent is from the region (personal communication, 2024). Sizewell C also estimates that 64 percent of the construction workforce consists of newcomers (HJA, 2018).

Table 5.1: Elaborated scenarios for Hinkley Point C for the percentage of new arrivals during the construction phase.

Scenario newcomers	Description
50 procent	This scenario assumes a deliberate programme focusing on local recruitment and training of workers, strong partnerships and ambitious planning. There is little competition for labour from other major (construction) projects.
60 procent	This scenario assumes targeted projects and government interventions, with agreement among stakeholders on what the socio-economic goals are for the local community. Collaboration and planning are needed to achieve this scenario, but the scenario assumes limited government funding. There is some competition for labour from other large (construction) projects.
70 procent	This scenario assumes limited government and project funding for programmes around, among other things, training workers locally and achieving socio-economic goals. There is collaboration, stakeholders manage their own resources. There is some competition for labour from other large (construction) projects.
80 procent	This scenario assumes minimal government support, limited cooperation between stakeholders and competition for labour from other (construction) projects. The scenario is considered possible but unlikely, as the project can take measures to this scenario.

Source: Own adaptation on table in EDF (2010)

Increase in demand in housing market

A second consequence is that the arrival of newcomers increases demand in the housing market. During the construction phase, which offers mainly temporary work, demand is mainly for rental housing and (tourist) accommodation. During the operation phase, when work is more structural, demand for owner-occupied housing will increase. The need for rental housing and accommodation depends on the agreements with the builder. For example, temporary campuses for construction workers have been set up at Hinkley Point C with a capacity of 2,400 beds.

Figures from Hinkley Point C show that many newcomers stay on campuses or in tourist accommodation (36 and 37 percent, respectively; 2024 data)[29]. In addition, 28 percent rent a house near the construction site, while only 1 percent buy a house at this stage (Glasson & Durning 2019).

Increase in commuting

A third consequence is that commuting will (temporarily) increase in Zeeland. Research shows that newcomers tend to choose more urban areas and places of residence close to the construction site (Chadwick, 2009). This picture is supported by findings from the reference areas studied. For Zeeland, this could mean that newcomers would prefer a house or flat in Vlissingen, Oost-Souburg, Middelburg, Terneuzen and Goes. Larger villages close to the construction site, such as Heinkenszand, Arnemuiden and 's Gravenpolder may also be popular. We therefore think that commuting to the new NPPs will increase especially from these areas. Again, this fact too depends very much on the agreements with the builder and the choices made.

In the vicinity of Hinkley Point C, the increase in commuting has been limited, partly by building a campus next to the construction site and by constructing four 'Park and Ride' (P&R) sites about 10 to 15 kilometres away from the NPPs (Somerset Transport Review, 2024).[30] This ensures that 9 percent of workers currently come on foot, 87 percent are transported by EDF bus and 4 percent travel to the construction site by car. The large number of bus users is mainly explained by the transferium driving from the P&R sites to the construction site. Indeed, if we look at the main means of transport to the P&R sites, the car is used the most: over 90 percent of P&R users drive here by car. Thus, it is mainly the immediate vicinity of Hinkley Point C that is relieved of cars (Somerset Transport Review, 2024).

5.5 Expectations regarding the effects and impact for Zeeland

In addition to the previously mentioned consequences, other changes are expected in the social area. These expectations, shown in figure 5.3, are based on local impact studies of the reference projects, and interviews with both Zeeland and Somerset stakeholders. It is important to stress that the expected consequences are surrounded by uncertainty, as they lie in the future and depend heavily on decisions yet to be taken.

As indicated earlier, Zeeland scores well on social safety and residents are generally very satisfied with their living situation, while social cohesion is average. However, the Province is struggling with impoverished facilities, greater distances to these facilities, an ageing population, and relatively few young people. In addition, there are relatively many owner-occupied houses and tourist accommodation in the region. Against this background, the following changes in the social aspects of society are expected where we distinguish between 'housing', 'society', 'safety' and 'health' (in line with the model of broad prosperity).

29) These might include a hotel, holiday home, bed and breakfast or camping site. In Somerset, EDF also rents off a holiday park for employees; Pontins Holiday Park. This holiday park has 900 beds.

30) Three P&R sites are located around the town of Bridgwater, southeast of Hinkley Point C. Two examples: Williton, west of Hinkley Point C, and Junction 25.

Living

- The construction project may cause longer travel times (due to increased traffic congestion) and loss of rural features that may worsen the residential experience of residents in the region.
- More new residents in the region can help maintain facilities in small villages.
- Following the construction of the nuclear power plants, a 'boom and bust' scenario may occur in the housing market, with temporary staff leaving, causing vacancies, loss of amenities and falling house prices.
- Investments in infrastructure can make the region more accessible and potentially make Zeeland a more attractive place to live and work.

Society

- The arrival of many newcomers can put pressure on social cohesion in small villages, through displacement in the housing market and cultural clashes.
- After construction, social cohesion can improve, especially when newcomers become permanent residents and local life stabilises.

Safety

- The arrival of newcomers may lead to more (petty) crimes and crowding on the roads, which may affect actual safety, and may possibly increase feelings of insecurity.

Health

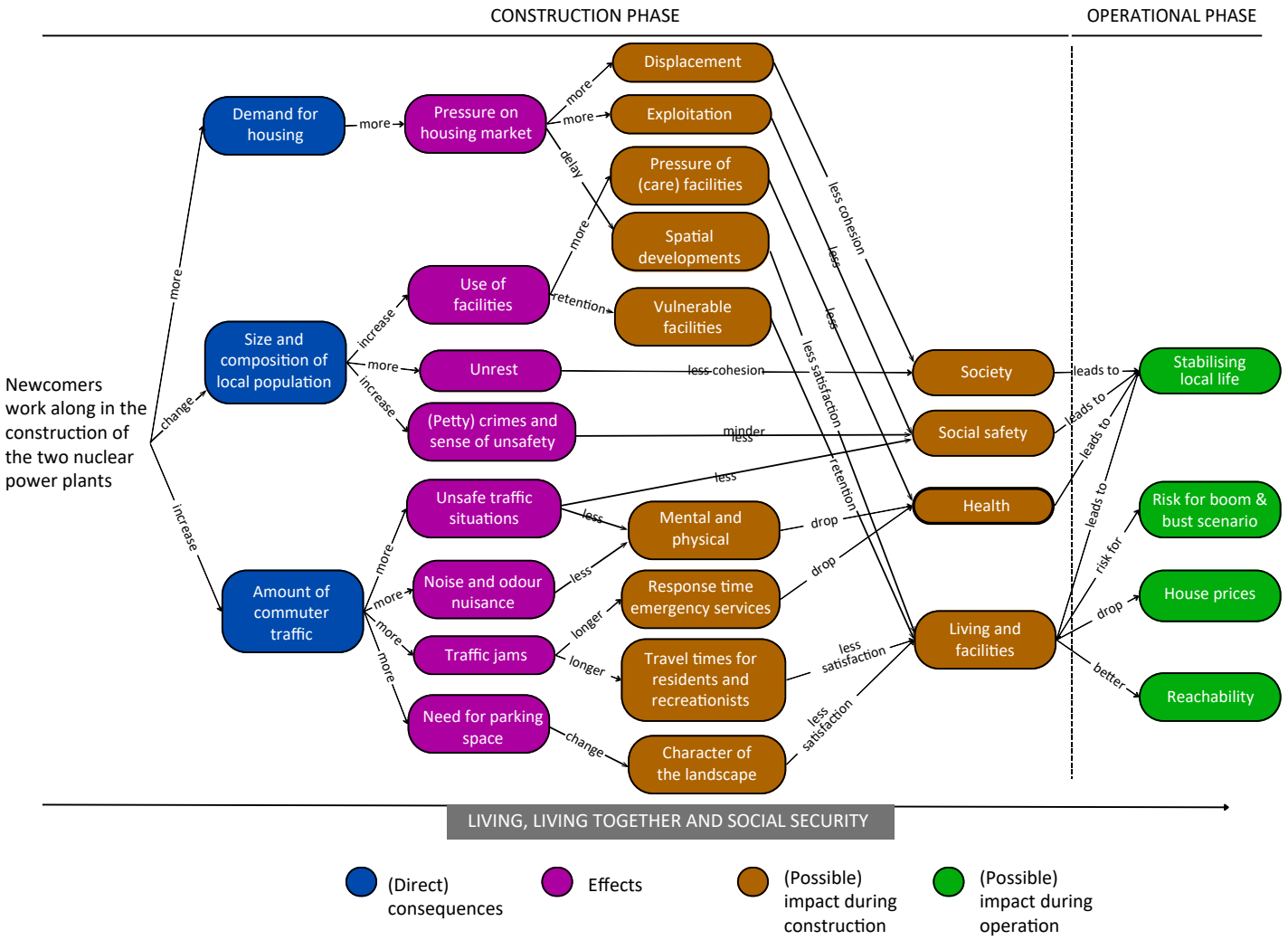
- The increasing demand for care may lead to a decline in quality of care, due to a shortage of healthcare professionals, longer waiting times and delayed ambulances.
- More traffic increases the risk of traffic injuries and can harm the health of residents along busy roads.

We show the potential effects and impacts in more detail below. The Borsele Conditions that touch on expectations are shown below in table 5.2.

Table 5.2: Borsele Conditions touching on (possible) changes in the social field.

No.	Condition
2.1	Ensuring social safety
2.4	Monitoring the physical health of residents of the Municipality of Borsele
2.5	Care facilities for employees guaranteed
8.1	Maintain and expand public transport
8.2	Don't overburden villages: housing for workers
8.3	Municipal policy aimed at workers' housing
8.4	Impact construction: locals not the brunt!
8.5	Provisions for the benefit of employees
9.1	Supporting local educational institutions

Figure 5.3: Concerns and expectations expressed in the impact studies of reference projects and/or by local stakeholders and experts



Reading guide for the figure: The concerns and expectations in the figure come from local impact studies of reference projects, interviews with experts and experts by experience from Somerset and conversations with regional stakeholders from Zeeland. The figure reads from left to right and shows the chain of possible changes that occur with the arrival of two nuclear power plants at Borssele. On the left are the direct consequences of the planned project. These consequences can both cause follow-on effects and impact on the broad welfare of the region. We distinguish between consequences in the construction phase and in the operation phase. The figure does not take into account measures that can alleviate or enhance the changes.

Effects

The arrival of new construction workers may increase pressure on the housing market, especially for rental housing and temporary accommodation. Many of them are likely to stay temporarily, as was the case at Hinkley Point C, which means they are not likely to buy property at this stage.

In addition, newcomers are expected to use local facilities such as supermarkets, restaurants, healthcare and public transport. Depending on the number of workers who move with their families, this may lead to an increasing demand for education and childcare. Research shows that during the construction phase of large projects, about 10% of newcomers take their families with them, while this percentage can reach 90% during the operation phase (Rodriquez- Bachiller & Glasson, 2004).

The arrival of many newcomers may also cause unrest, especially in small communities. This could lead to an increased perception of insecurity and an increase in (petty) crimes. In addition, increased traffic movements could cause congestion, noise and odour nuisance, and create greater demand for parking spaces, which could put pressure on local parking facilities (we will return to this in the physical impact section).

Impact of construction

Increased demand for housing may bring along risks. Displacement in the housing market is possible, especially in the rental sector, as many newcomers seek temporary housing. This could particularly affect local residents with lower incomes, first-time buyers and single earners. Demand for housing could also increase the risk of exploitation, with landlords offering poor housing under unfavourable conditions.

Furthermore, the increasing demand for housing may lead to delays in housing construction, due to a greater need for contractors and handymen, affecting not only new residents but also other residents with building plans. On the other hand, the use of local facilities by newcomers may increase the viability of facilities in smaller centres. Facilities that are under pressure could be maintained more easily by the additional demand. This applies, for example, to smaller (neighbourhood) supermarkets, schools and childcare. However, increasing demand for care could lead to longer waiting times and a possible reduction in the quality of care, especially given the shortage of care staff in Zeeland.

Finally, a negative impact of increased traffic is expected, such as unsafe situations, nuisance and health complaints due to emissions. More traffic could lead to traffic jams and longer travel times, as well as delays for local emergency services. An expressed concern is that the space needed for additional parking areas could come at the expense of other uses with landscape value, such as agricultural land and nature.

Impact during operation

A ‘boom and bust’ scenario for the housing market may occur after the construction of the nuclear power plants. Many temporary staff are likely to leave the region, which could affect local liveability. The departure of many people at the same time could lead to vacancies, loss of amenities and declining revenues for local retailers and other businesses.

The departure of workers could also lead to a fall in house prices. In addition, homes in the vicinity of the nuclear power plants would potentially become less attractive to buyers due to the presence of the new nuclear power plants.

Additional investment in the road network and rail during construction could make Zeeland more accessible after the construction phase, which could make the region more attractive as a place to live and work. After construction, social cohesion and safety are expected to recover. As most of the newcomers are likely to stay long-term or permanently during the operation phase, local life could return to normal.

Box 5.1: Experiences from Somerset

In the Hinkley area, holiday parks, campsites and (rental) houses are used house temporary workers. Many holiday parks have been converted with chalets for the Hinkley Point C workers, as one respondent explains, *"So it's a holiday park, but it's not caravans. It's actually little chalets [...] there's no tourists there anymore. It's all HPC [Hinkley Point C] workers and there's 900 there."* In addition, houses are being adapted into 'houses of multiple occupation' (HMOs), where multiple workers stay in one house. One respondent states: *"A normal family house [...] would get bought by a landlord. The landlord would change all of the bedrooms to be single bed sets [...] and you've got a shared bathroom and kitchen."*

To meet the care needs of the growing workforce, a care centre has been set up at the Hinkley Point C construction site, with doctors and nurses. In case of serious incidents, the National Health Service (NHS) is called in. *"Any call out by ambulance to site that the onsite Health Centre can't deal with [...] maybe there is an incident that needs an ambulance to come and fetch them and take them to hospital."* Some workers, especially from abroad, struggle with mental health issues. One respondent states: *"And there are non-home-based workers, this is the first time they've ever been away from home [...] mental health is quite a big thing as well. And so we have lots of mental health buddies."*

In Somerset, there has been investment in additional security personnel, mainly to prevent social nuisance from workers. The local community safety liaison officer plays a big role in this. One respondent says: *"She goes out to any complaints that local people have. She will liaise with EDF on some things [...] They have meetings with the owners of all of those pubs and clubs [...] because some of the anti-social behaviour that is experienced when Hinkley workers are off duty."*

Parking in Somerset's residential areas is sometimes seen as a problem. One respondent says: *"Some of them are really big old Victorian terraced houses and they've got 5 bedrooms and they've put a person in the lounge [...] There's five cars in that house, and these roads are just jammed with cars everywhere. And the locals are really, really unhappy about it."* In addition, increased traffic from construction workers and logistics creates additional traffic congestion and safety risks. A respondent says: *"You'd see a lot of heavy lorries moving in and out through the community at regular intervals. [...] Either lorries going in with concrete and coming out with earth or coming in with materials and going out empty."*

Solutions are being sought for potential vacancies after the construction of Hinkley Point C, such as repurposing flats that were intended for the construction. One respondent says: *"With careful planning you can be looking at a building that serves one purpose during construction, but maybe serves a different purpose in sort of the permanent operation of the facility."*

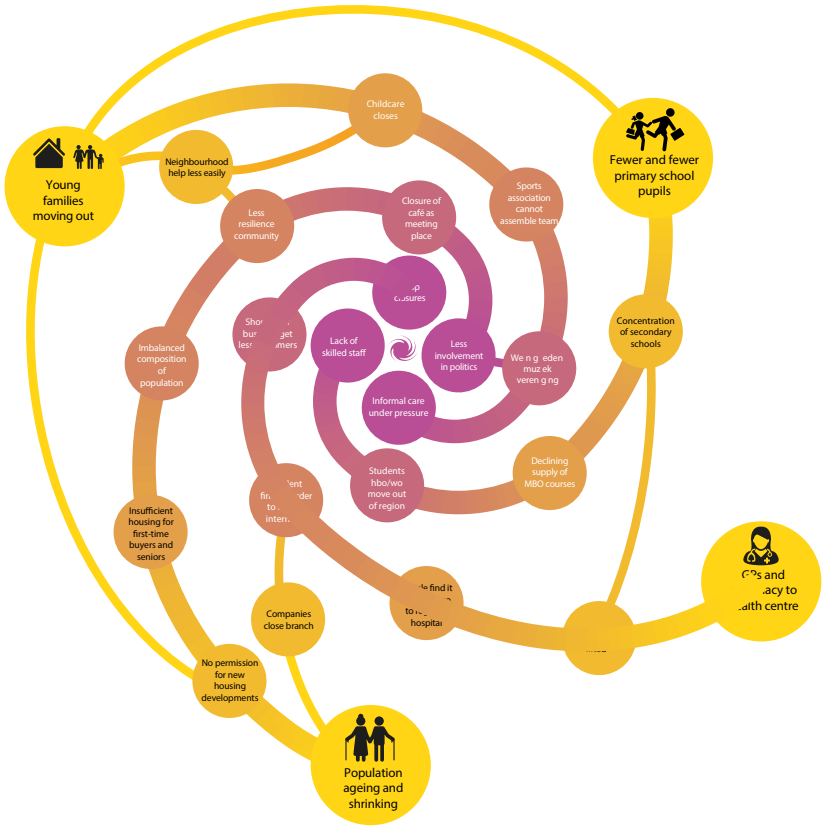
5.6 Social policy analysis

Zeeland governments want to contribute to a healthy, liveable and safe society, where enough housing is available. The various visions of this have been translated into ambitions and policies. The possible arrival of two new nuclear power plants affects their realisation. In this section, we explore which policy ambitions the possible arrival of the nuclear power plants can contribute to (+), which ambitions will be compromised (-) and what this means for Zeeland. We thereby link the previous findings from this Chapter to existing policy. For the sake of readability, the sources consulted for this section are listed separately in the bibliography (see Annex 4).

Breaking the spiral of impoverishment

The population within the Netherlands has grown in recent decades. At the same time, the population in Zeeland has remained almost the same. Some Zeeland areas even have a shrinking population. Due to relatively high population ageing and de-greening, it is proving increasingly difficult to keep facilities such as secondary education, nursing homes, outpatient clinics, emergency rooms, pharmacies and libraries up and running. As a result, Zeeland's local society is becoming unbalanced.

Figure 5.4: Spiral of impoverishment



Source: 'Every Region Counts!'

The broad prosperity monitor 'Living in Zeeland' shows that liveability is under pressure. There is loneliness, health problems and loss of social cohesion among residents of Zeeland. The need for care is increasing, while at the same time average travel time and transport poverty are increasing. This is particularly true for the Zeeuws-Vlaanderen region, but other parts of Zeeland are also increasingly affected.

The report Every Region Counts! shows the intertwining of various causes and consequences in a spiral of impoverishment (see image above) that Zeeland is increasingly facing. The Municipality of Borsele lists preserving the liveability and affordability of its facilities as one of its spearheads in the current governance programme.

Zeeland has long been calling attention to the challenges that come together in the spiral of impoverishment. Several Region Deals have set up programme lines with initiatives. The unifying ambition of these deals is to break the spiral of impoverishment. This autumn, Zeeuws Vlaanderen/ Zeeland focused its Region Deal application specifically on three themes:

- A vital living environment for vital people;
- New solutions for essential services in rural regions on the border;
- A vital labour market: young people, agility and resilience.

The Schoof administration sees revitalising areas where liveability is under pressure as a task to which the Central Government wants to contribute. In the Coalition Agreement, the ambition was formulated to draw up a long-term investment agenda for vulnerable areas along the lines of Every Region Counts! as a replacement for Region Deals aimed at giving a temporary boost.

Table 5.3: Ambitions for breaking the spiral of impoverishment, to which the possible arrival of the nuclear power plants could contribute (+) and ambitions that could be compromised (-).

+	Structural causes have led to a spiral of impoverishment. To break that spiral, Zeeland needs a larger and more diverse workforce that can maintain liveability and the level of amenities. The possible arrival of nuclear power plants sets in motion a discussion on the future and carrying capacity of Zeeland and opens up opportunities to make structural investments so that the future of Zeeland is no longer about what it lacks, but rather what it can offer in order to break the spiral.

Support for and trust in governments

Trust in the government has declined in recent years. The Atlas of Disengaged Holland shows that a part of the residents of Zeeland do not feel heard and understood. The waning trust is not so much in too few opportunities to speak up and participate, but rather about the question 'is the government there for me too?'

The Province of Zeeland is committed to increasing trust in governments by presenting itself as a reliable government, with decisiveness and an eye for the interests of residents, in cooperation with civil society organisations, the business community and interest groups. The Municipality of Borsele speaks words to a similar effect. This includes explicitly involving residents in necessary changes and transitions. A concrete example is the establishment of the Borsele Conditions Group and the way it is composed. The cabinet wants to regain citizens' trust. The government should be there for the citizens, and not the other way around.

The designation of Borssele as a preferred site for building new nuclear power plants evokes emotions among local residents and other stakeholders. This emerged clearly during working sessions with local experts, strategic advisers and policymakers. Those involved perceive that Zeeland is seen as a remote corner and the term 'colony' was frequently mentioned. The perception that the Central Government does not sufficiently recognise Zeeland's interests is coloured by examples, such as the cancellation of the marines' barracks in Vlissingen and the testing of a new railway safety system that prevented trains from running between Goes and Vlissingen for four months.

Table 5.4: Ambitions for strengthening trust in the government, to which the possible arrival of the nuclear power plants could contribute (+) and ambitions that could be compromised (-).

+/-	An opportunity arises to regain the trust of Zeelanders and residents of Borsele by communicating carefully as authorities and by taking residents' concerns seriously. This requires good cooperation and coordination between the various authorities and the relevant ministries. After all, with trust, it can also work the other way. If stakeholders feel inadequately heard, and a sentiment such as 'Zeeland is the new Groningen' is reinforced, more Zeelanders will drop out.

A (residential) place for international workers

The task of Zeeland's labour market is not to create jobs, but to find enough people with the right education to fill open vacancies. To meet this, it is necessary to attract (temporary) international workers. As the regional economy grows and the labour force shrinks, more and more international workers will eventually be needed. The number of international workers in Zeeland is currently around 15,000. Per year, this number is increasing by about 17 percent. One in fourteen workers in Zeeland comes from abroad. In Zeeland, the distribution is: 20 percent higher-educated international workers (expats) and 80 percent lower-educated international workers (labour migrants). The presence of international workers thus creates additional pressure on the housing market.

To accommodate, inform, coordinate and coach international workers, Expat Centre Zeeland has been established. Where possible, the Province allows entrepreneurs to house international workers on their own premises. Zeeland municipalities have made regional agreements on housing labour migrants. The Schoof administration has named limiting labour migration as one of its priorities.

Table 5.5: Ambitions for utilising and housing international workers, to which the possible arrival of the nuclear power plants could contribute (+) and ambitions that may be compromised (-).

-	The regional labour market is tight and cannot provide sufficient staff to build and operate new nuclear power plants. It will be necessary to rely on international temporary workers, as is happening with the construction of Hinkley Point C and earlier with Olkiluoto 3. However, the cabinet wants to limit labour migration, but at the same time it wants to build new nuclear power plants. These policy positions require balancing priorities. We also see a bottleneck emerging in terms of housing.

A well-functioning housing market

The number of residents of Zeeland is expected to rise slightly in the coming years due to an ageing population, more international workers and a growth in single- and double-income households. This will require new houses. Currently, Zeeland has a shortfall of 3,000 homes. As explained earlier in this Chapter, with this shortage, Zeeland is the only province that meets the Central Government' ambition to reduce the housing shortage in the Netherlands to two percent by 2030. ABF expects that around 9,400 houses will have to be added in Zeeland until 2030 to meet the housing task. There is also a task to make part of the existing housing stock future-proof.

Last year, the Zeeland municipalities and the Province concluded a Housing Deal with the Central Government. The aim is to build a total of 16,500 new homes in the period up to 2030. In addition, the region is committed to providing 3,070 homes for migrant workers. To meet acute housing shortages, the region will build 795 flex homes.

Table 5.6: Ambitions for a well-functioning housing market, to which the possible arrival of the nuclear power plants could contribute (+) and ambitions that may be compromised (-).

-	During the construction phase, several thousand (international) workers will need to find housing within an acceptable travel distance from the nuclear power plant. The current housing market cannot provide this, as there is a housing shortage. Also, the number of additional homes earmarked for migrant workers as part of the Zeeland Housing Deal is likely to be insufficient and, moreover, intended to meet existing demand. Housing policy ambitions are therefore in jeopardy.

6. Impact on physical living environment

6.1 Introduction

This Chapter describes the physical impact of the possible arrival of two new nuclear power plants at Borssele. We focus on the themes of nuisance, physical safety (including traffic and water safety), health and environment. We discuss the environment theme in this Chapter as part of the region's broader welfare. This theme will be discussed in more detail in an environmental impact assessment (EIA) (MER) commissioned by the Central Government at a later stage. Below, we first outline the spatial environment around the proposed construction site in Borssele. We then discuss the consequences, and potential effects and impacts of the construction and operation of the nuclear power plants.

6.2 Summary advice for impact on physical living environment

Construction activities will result in localised nuisance for local residents and nature. Specifically, there will be an increase in traffic movements, nuisance from noise and (fine) dust and disruption of the landscape. There is also an increased safety risk. Realising several large-scale projects in an area requires careful coordination and an integral approach based on a future-oriented landscape vision.

Based on this Chapter, we formulated the following recommendations in Chapter 2.

Measures to reduce negative impact

- Take measures to reduce inconvenience from construction traffic and ensure road safety.
- Identify which topics require agreements in tender conditions and licensing. The Environment Agency and other involved parties should be put in position in good time and have sufficient capacity and knowledge. In addition, it is important that the negotiations that the Central Government conducts with the builders will involve local influence from Borsele and Zeeland,

because of the local knowledge of the area, industrial activities, environment, labour market and facilities.

- Use the structure of the Security Region to identify safety issues, set up a crisis team to act quickly and appropriately when something goes wrong, map out evacuation options and routes, and engage with the Security Region at short notice on any concerns they identify in relation to physical safety.
- Anticipate uncertainties in the planning of the construction process and take into account the possibility of execution taking longer than originally planned. Consider the potential impact of delays and how negative consequences can be mitigated in time.

Recommendation to strengthen positive impact

- Develop an integral landscape vision in which the area qualities serve as a starting point and attention is paid to the cultural history of the area. Use previously developed visions for subareas and consider the new vision for the Sloerand as one of the sub-visions for the integral landscape vision to be developed. Involve the Board of Central Government Advisors in developing the landscape vision and link an investment programme to this vision.

6.3 Characteristics of the environment

Scope of impact

When it comes to economic and social impact, the range of the impact area is 90 and 60 minutes travel time from the proposed site, respectively, taking into account the entire Province of Zeeland. When it comes to impact on the physical living environment, we consider the area with an 8-kilometre radius around the construction site as the impact area. This impact area includes in particular parts of the Municipality of Borsele and the Municipality of Vlissingen. See figure 6.1.

Figure 6.1: 8-kilometre area around the proposed site for the two new nuclear power plants

Sources: ProRail Base Map (2022), National Road File (2021) and CBS Land Use (2017)

There are a few reasons why we chose this range.

- The first and most important reason is that the furthest Sloe village, Lewedorp, is about 8 kilometres from the construction site (as the crow flies). Borssele, Nieuwdorp and 's-Heerenhoek are also in this area, as are Ritthem, Nieuw- en Sint Joosland, Hoofdplaat and some other villages.
- A second reason is that the (research) literature provides information on the area that may be particularly affected by nuisance and landscape changes due to the construction and operation of a nuclear power plant. For example, the literature speaks of a direct impact area of at least 500 metres to a maximum of 5 kilometres around the site (Rodriquez-Bachiller & Glasson, 2004).
- A third reason is that the 8-kilometre area around the Borssele site includes important infrastructure branches. The N-roads running from the A58 to the Western Scheldt Tunnel largely fall into the area. Also, the freight railway line running from the main railway line to the Sloe area falls into the area, as does a large part of the Western Scheldt with its ports and terminals.

We would like to note here that the physical impact may extend beyond 8 kilometres. Additional sites will possibly be identified for e.g. goods storage, parking and land disposal/supply. At present, the locations and size of these sites are not yet known. Also, the two new nuclear power plants are not the only proposed energy project in the area; there are also developments around offshore wind landfall, hydrogen and high-voltage connections (see section 3.4). Where relevant, we also mention the other energy projects in this Chapter.

Relevant physical indicators

Looking at CBS's Regional Broad Prosperity Monitor, we see the following for the physical aspects of Zeeland in general and the municipalities of Borsele and Vlissingen in particular (CBS, 2024)[31]:

- Zeeland has little land nature compared to other provinces. This includes Borsele and Vlissingen. In Zeeland, 8 percent of the total area is forest and open natural land. This percentage is 14 percent for the whole of the Netherlands. In Borsele and Vlissingen it is 2 and 4 percent, respectively. The Kaloot, located next to the existing nuclear power plant, is a larger natural terrain in the Municipality of Borsele. In Vlissingen, the area around Fort Rammekens forms a larger natural area.
- In Zeeland, emissions of greenhouse gases and particulate matter are higher than in many other provinces. Vlissingen and Borsele in particular are municipalities with high emissions. In Zeeland, greenhouse gas emissions average 32 tonnes of CO2 equivalent per resident; in the Municipality of Vlissingen it is 33.9 tonnes and in Borsele it is 82.5 tonnes.[32]
- The perceived health of residents in Zeeland is similar to that of residents in the rest of the Netherlands. Vlissingen scores below average in terms of the Netherlands, while Borsele scores above average in this area. To illustrate, the proportion of residents in Zeeland with one or more long-term illnesses or conditions is 34 percent. In Borsele this is 31 percent and in Vlissingen it is 40 percent.

31) The following broad welfare themes belong to this description 'environment', 'safety' and 'health'.

32) Greenhouse gas emissions in the other provinces are as follows (in tonnes of C02 equivalent per capita; ranked from highest to lowest): Groningen 24.5; South Holland 11.0; Limburg 10.8; Drenthe 9.7; Friesland 9.4; North Brabant 9.4; North Holland 9.4; Flevoland 8.7; Gelderland 7.3; Overijssel 7.1; Utrecht 4.9.

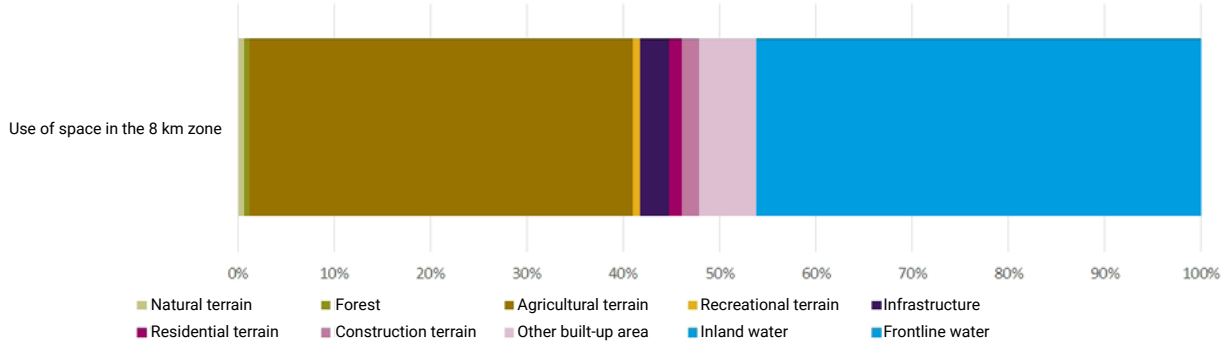
In addition to these indicators from the Regional Broad Prosperity Monitor, we also see that:

- Relatively many residents in the municipalities of Borsele and Vlissingen experience nuisance by noise, stench, dust and/or soot from the environment (e.g. from traffic, industry, businesses and agriculture). Especially residents from the Sloe villages say they are bothered by this. The proportion of residents of Nieuw- en Sint Joosland who experience nuisance is also higher than the average for Zeeland. In Vlissingen, it is mainly residents of the inner city who experience this nuisance rather than those of Ritthem and its surroundings (Living in Zeeland, 2021).
- Residents of the Sloe villages are about as satisfied with the outskirts as most other residents of Zeeland. In Ritthem and the surrounding area, residents are more satisfied with the outlying area. In Nieuw- en Sint Joosland, residents are less satisfied with this (Living in Zeeland, 2021).

The 8-kilometre area around the nuclear power plant is mainly characterised by outer waters (this comprises 46% of the total area; see also figure 6.2). The outer waters of the Western Scheldt are Natura 2000 sites and are protected to preserve biodiversity in Europe.

Furthermore, the 8-kilometre area consists of agricultural land (this comprises 40 percent of the total area) and other built-up land (this is mainly industrial land and comprises 6 percent of the total area). A relatively small part of the area is used for housing and recreation; 2 percent of the total area is used for these purposes.

Figure 6.2: Land use in the 8-kilometre area around the proposed site



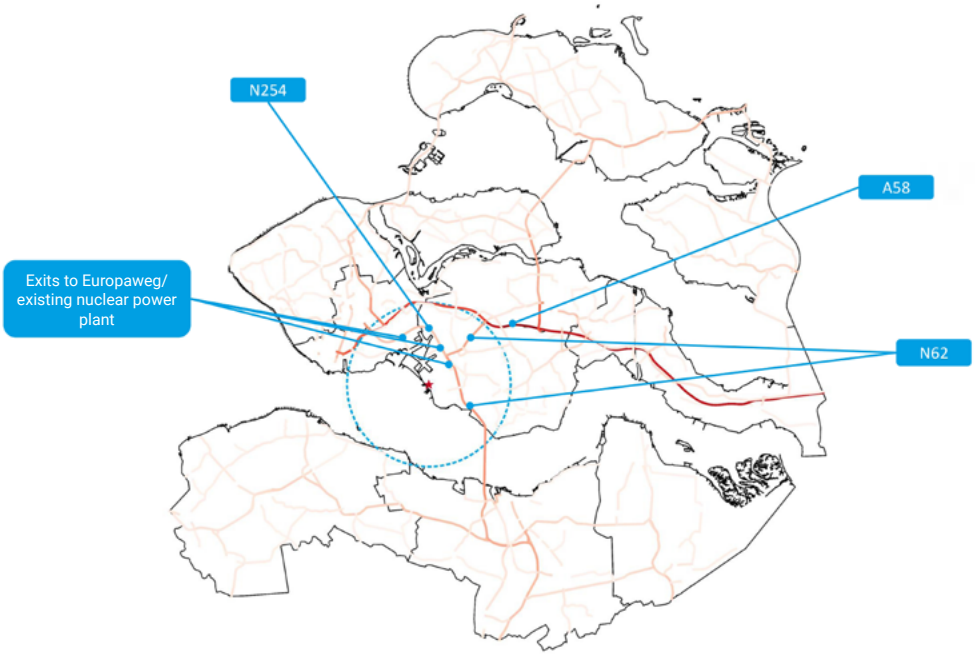
Bron: CBS bodemgebruik (2017)

Infrastructure via water, road and rail is plentiful in the immediate vicinity of the proposed site of the nuclear power plants. The Sloe area has several port areas and terminals for loading and unloading ships. In addition, a freight railway line runs from Lewedorp across the Mallard viaduct to the Sloe area. The main roads are the N254 running from the Middelburg exit and the N62 running from the Heinkenszand exit to the Western Scheldt Tunnel. Figure 6.3 shows the amount of traffic measured on these and other roads in Zeeland between 2004 and 2019[33].

33) Although traffic intensity data are also available for the period 2020 - 2022 and for the year 2024, we present the data for the period 2004 - 2019. Traffic intensity was measured on more roads between 2004 - 2019 than in subsequent years. Moreover, with data for 2020 - 2022 and 2024, we reach similar conclusions about traffic intensity on N roads around the proposed site.

The figure shows that the N254 and N62 are among the busier roads in Zeeland.

Figure 6.3: Traffic intensity on Zeeland's roads measured on weekdays between 2004 and 2019; the darker/redder the line, the more traffic was measured



Source: [Province of Zeeland (2019)]

Important 'recipients' of any nuisance caused by construction work and construction traffic are residents in the 8-kilometre area. In total, about 13,500 people live in the 8-kilometre area around the nuclear power plant. That is 3 percent of Zeeland's total population. Most residents live in the villages of 's-Heerenhoek (1,780), Lewedorp (1,380) and Borssele (1,265). The 8-kilometre area has about 6,500 buildings with a residential function. These houses are located at different distances from the proposed site for the new nuclear power plants. For instance, the house closest to the site is less than 500 metres away. This house is located south of the construction site and northwest of the village of Borssele. Figure 6.4 shows the distance to the nearest houses in the different wind directions. The houses in the Municipality of Vlissingen and in the Municipality of Terneuzen are furthest from the construction site (in all cases more than 5 kilometres).

Figure 6.4: Nearest houses to proposed site within an 8-kilometre area

Sources: own edit on BAG residence object (2024) and CBS Land Use (2017)

The village of Borssele was formed at the beginning of the 17th century and is located in a polder that was diked in the years 1615-1616 (see e.g. Municipality of Borsele, 2024). The village has the status of a 'protected townscape'. This status was obtained partly because of the village's unique location and street plan. For instance, the village has a completely rectangular street plan, with the straight streets in relation to the direction of allotment of surrounding polder (both unusual for the time when the village was built).

6.4 What would be the consequences of the arrival of two new nuclear power plants?

Having two new nuclear power plants could change the physical aspects of the region. We first discuss the (direct) impacts of the proposed project. Then we describe the possible effects and impacts on the region.

Impact on the region

The possible arrival of two new nuclear power plants has direct consequences for the physical living environment. Although the exact extent of these impacts cannot be estimated yet, as no builder has been chosen yet and the construction method is unknown, some impacts can be expected. These will arise from site-specific work, such as the construction of the plants, any necessary ancillary sites and infrastructure modifications.

- The construction of the new nuclear power plants changes the landscape in the immediate vicinity due to the size of the buildings, infrastructural modifications and the cumulative effects of other energy projects. The open, flat area, while already containing visible industry, quickly makes changes visible.

- With the arrival of the nuclear power plants in Borssele, the available space in the area will be used differently and more intensively. The increasing number of traffic movements, including freight and commuter traffic, will further strain the existing infrastructure.
- The construction and operation of the nuclear power plants may disturb the natural environment, for example by the disappearance or crossing of plant and animal habitats and emissions.

Change in landscape appearance

A first consequence is that the landscape will look different due to the construction and presence of the nuclear power plants. This change will be caused by the size, height, colours and materials of the buildings and structures, which will join the already visible industry in the Sloe area. As with the construction of Sizewell C and Hinkley Point C, the plants will consist of large buildings with two nuclear reactors at their centre, surrounded by turbines and office spaces, where the office spaces may be modified later. Moreover, the necessary infrastructure modifications, such as new viaducts, bridges, (rail) roads and intersections, will further alter the landscape.

In addition to the possible construction of two new nuclear power plants, there are more energy projects in the Municipality of Borsele in the pipeline, including the landing of offshore wind power and recent high-voltage connections. This combination of projects creates a cumulative effect on the landscape, which will be clearly visible in the open, flat and agricultural area.

Different layout of physical space

Another consequence is that the physical space around the Borssele site will be used differently or more intensively due to the possible arrival of the nuclear power plants. This involves, for example, the widening of existing roads, the construction of temporary roads and/or ancillary sites. The site of the current nuclear power plant forms the intended main site, so the industrial use of the space will not change. The functions of the space will mainly change at the locations where additional parking will soon be created, material storage will take place, temporary accommodation will be built and infrastructural adjustments will be made.

In addition, the space around the proposed site must also be adapted for the extension and reinforcement of the Western Scheldt dike. This dyke, managed by Water Board Scheldestromen, is a primary flood defence and needs to be extended and reinforced to maintain water safety. The exact amount of space required to extend and strengthen the dyke needs further investigation. Large amounts of soil will also be excavated during construction to create space for the structure. To keep the construction pit dry, large amounts of water will have to be withdrawn from the soil. This may (temporarily) affect groundwater levels in the vicinity of the construction site.

The area around the Borssele site already has several infrastructure facilities, such as terminals, ports, a freight railway and two main road links to the A58. Per day, there are about 23,000 passages through the Western Scheldt Tunnel (N62; Western Scheldt Tunnel, 2023) and about 55,000 through the Vlake Tunnel[34] (A58; Directorate General for Public Works and Water Management (Rijkswaterstaat), 2024). The two nearest slip roads from the N62 and N256 towards the proposed site are each used by about 4,000 to 5,000 vehicles daily (Province of Zeeland, 2024).

34) It is not clear whether this refers to single direction or both directions.

With the arrival of the new nuclear power plants, existing infrastructure will be used more intensively. For example, the construction of Hinkley Point C increased freight traffic by an additional 500 to 600 trucks per day, mainly during the morning rush hour (Glasson & Durning 2019). In Borssele, where more access roads are available than in Somerset, traffic will increase due to both construction traffic and additional commuter traffic. Given the current traffic movements on the roads around the proposed site, this increase will be particularly noticeable on the access roads to the new NPPs.

Disturbance of ecology

A third consequence is that the construction and operation of the nuclear power plants may disturb the natural environment, including the Natura 2000 site of the Western Scheldt. This disturbance is caused by construction and related activities, such as the construction of car parks, temporary roads and storage areas. Freeing up space for the logistics surrounding construction and operation could result in the disappearance or fragmentation of plant and animal habitats.

In addition to the use of space, traffic movements both on land and via water create emissions of substances via air, water and soil. Moreover, during operation, heated cooling water is discharged into the Western Scheldt. These indirect impacts may also affect the ecology in the region.

Exactly how great the impacts will be will have to be revealed in the detailed environmental impact assessment that is yet to be prepared. According to Morris and Emberton (2009)[35] the estimation of these impacts should be carried out by experts with knowledge of impact factors and local ecosystems. The literature emphasises that during the construction phase, where spatial adjustments are often temporary, measures are mainly aimed at avoiding negative impacts on nature. In the operation phase, where the adaptations are permanent, measures focus on mitigating or compensating damage.

6.5 Expectations regarding the effects and impact for Zeeland

Besides these direct impacts of the project on the living environment, other changes are to be expected. These changes result from the impacts described above and are shown in figure 6.5. We would like to emphasise that these are concerns and expectations expressed during local meetings and/or arise from insights from the reference trajectories. The assumed impact is surrounded by the greatest uncertainty, as it lies further into the future and depends heavily on choices yet to be made.

As indicated earlier, the area around the proposed site of the nuclear power plants suffers from relatively high emissions of greenhouse gases and particulate matter, which affects the well-being and satisfaction of some residents. Infrastructure in the area is well developed and the surrounding space is mainly used for agriculture and industry.

Against this background, the following changes in the physical aspects of society are expected, where we distinguish between ‘environment’, ‘housing’, ‘health’ and ‘safety’ (in line with the broad welfare model):

35) Source: In Methods of Environmental Impact Assessment, Third edition. Edited by Peter Morris and Riki Therivel.

Environment

- The work may increase emissions of greenhouse gases and particulate matter. During construction, groundwater will also be extracted from the soil, which may have (temporary) effects on groundwater levels and salinisation levels. Furthermore, there are concerns that green elements will disappear from the landscape with possible negative consequences for biodiversity.

Living

- Satisfaction with the living environment may decrease around the proposed site due to perceived noise, dust, traffic congestion and disturbance of the landscape. However, it should be noted here that the maximum noise allowed in a construction is subject to legal requirements.
- The activities during construction may result in vibrations and hence damage to existing buildings and infrastructure.
- After construction, residential amenity could potentially be restored, provided investments are made in, for example, permanent infrastructure improvements and green spaces.

Health

- Construction can have negative health effects through perceived annoyance, nuisance and possible harmful emissions to water, air and soil.

Safety

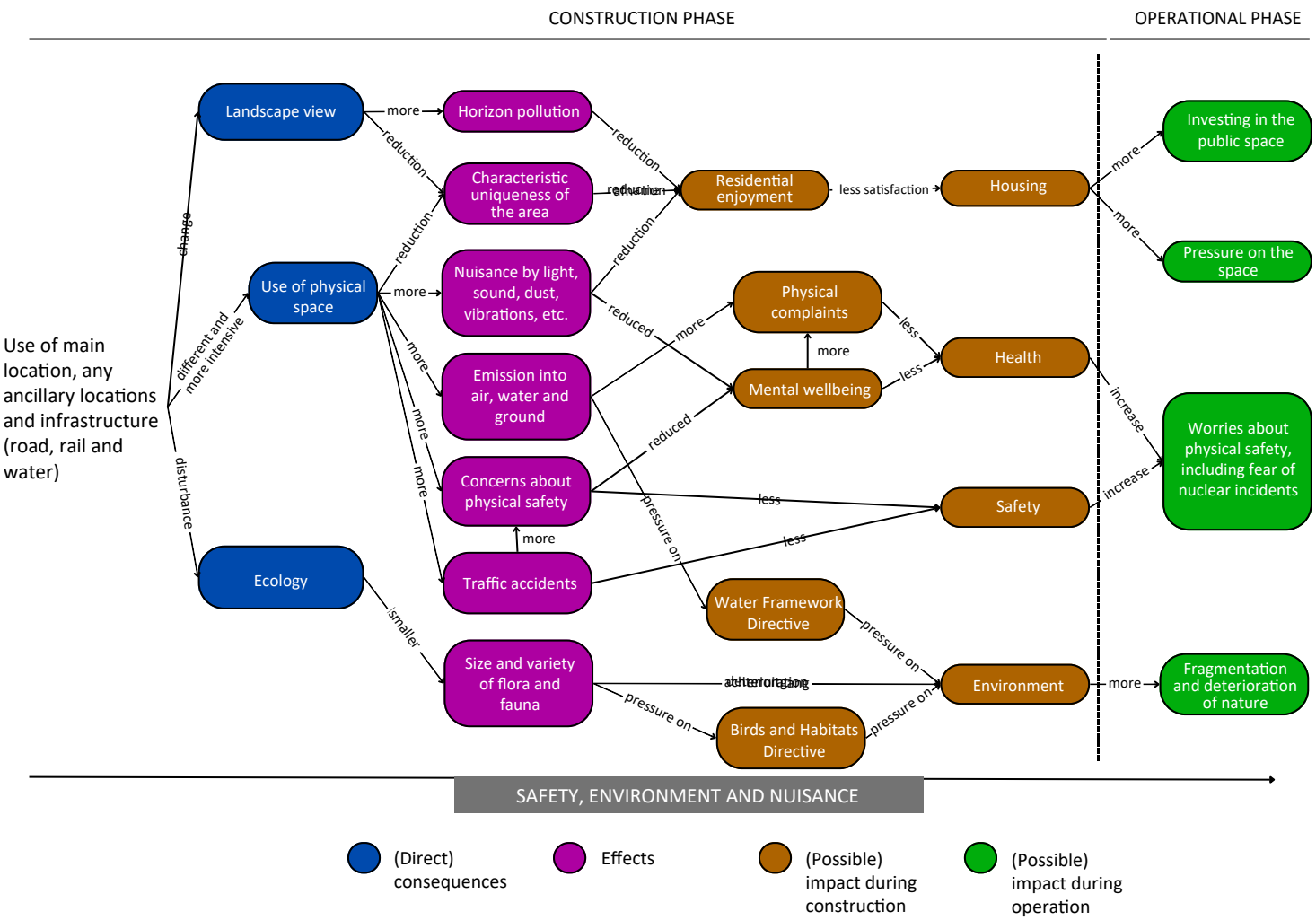
- Feelings of unsafety may increase due to concerns about the presence of the nuclear power plants in a high-risk area that includes companies processing petroleum and storing liquid gases. This feeling is reinforced by the expected increase in traffic movements, which increase the likelihood of accidents.

We discuss the possible effects and impacts below. Some changes touch on the wishes formulated by the Borsele Conditions Group (see table 6.1).

Table 6.1: Borsele Conditions touching on (possible) physical changes

No.	Condition
1.2	Construction traffic regulation
1.3	Separate construction traffic from bicycle traffic
1.4	Deeper building study: avoiding horizon pollution
2.2	Water safety and its financing
2.3	Protection in disaster and crisis situations
2.6	Safe disposal of nuclear waste and concrete prospect of final disposal
4.1	Conservation and enhancement of the Natura 2000 site Western Scheldt before, during and after the realisation of large-scale energy projects.
4.2	Contiguous green buffer between industry
4.3	No impact on current landscape: no high-voltage pylons and cooling towers
6.3	Respect Sunday rest
10.1	Extra-legal spatial compensation for all projects individually
10.4	Reduction of nuisance from other companies in Sloe area

Figure 6.5: Concerns and expectations expressed in the impact studies of reference projects and/or by local stakeholders and experts



Reading guide for this figure: The concerns and expectations in the figure come from local impact studies of reference projects, interviews with experts and experts by experience from Somerset, and conversations with regional stakeholders from Zeeland. The figure reads from left to right and shows the chain of possible changes that occur with the arrival of two nuclear power plants at Borssele. On the left are the direct consequences of the planned project. These consequences can both cause follow-on effects and have impact on the broad welfare of the region. We distinguish between impacts in the construction phase and those in the operation phase. The figure does not take into account measures that can alleviate or enhance the changes.

Effects

The construction of the nuclear power plants could potentially lead to lower appreciation of the environment by both residents and recreational users. The unique character of the region, characterised by open polder landscapes, may come under pressure from construction.

In addition, it is expected that construction activities may cause disturbance due to noise, dust, vibration and night lighting. There are concerns that increased traffic will lead to emissions of substances such as particulate matter, nitrogen and carbon monoxide. The additional traffic may also threaten road safety, especially for vulnerable groups such as children and the elderly.

Concerns about physical safety in the Sloe area are reinforced by the fear of larger incidents in the region due to the presence of other heavy industries in the Sloe area. It is also expected that the crossing and loss of natural elements could harm flora and fauna, both on land and in the Western Scheldt.

Impact of construction

Expected horizon pollution, loss of scenic character and possible nuisance from construction activities may reduce residents' enjoyment of their homes. Vibrations may also cause damage to existing buildings. It is additionally expected that the construction of the nuclear power plants could lead to stress and health complaints among local residents due to possible perceived nuisance and uncertainty surrounding construction.

Furthermore, the project may conflict with national and European nature directives, such as the Birds and Habitats Directives and the Water Framework Directive. The work may reduce important natural elements, reduce the habitat of protected plant and animal species and cause salination and subsidence of (ground) water. There is also a risk that emissions of harmful substances will negatively affect the quality of the environment and biodiversity.

Impact during operation

The expected impact during the operation phase has both similarities and differences with the construction phase. One expected improvement is that the public space around the NPPs may benefit from the construction of better infrastructure (including road and rail) and improved accessibility. At the same time, this area development is expected to cause other developments, such as residential development, to be hampered. For example, because construction is not allowed under high-voltage pylons[36].

The operation phase may further have lasting negative impacts on the landscape and nature. Physical safety concerns may also persist among residents, partly due to the proximity of the industrial cluster, increased traffic, but especially due to increased transport and storage of nuclear waste during the operation phase.

36) See: Living near high-voltage lines | Spatial planning and area development | Rijksoverheid.nl: As a precautionary measure, the Central Government advises against building new homes near high-voltage lines.

Box 6.1: Experiences from Somerset

In Somerset, several visual and practical changes to the landscape and the environment are noted. One respondent said the following about the visual impact of construction: *"It becomes a bit of a crane farm as much as it's a construction site. [...] So sometimes the earth that is dug out of the ground is repurposed into landscaping to make the visual impact of the reactors less noticeable for local communities. And again, if you've got a town there that has a line of sight to the site as it were [...], the people build mounds of earth and plant trees to make it sort of soak up some of visual barrier."* The photograph of the construction of Hinkley Point C in figure 6.6 gives an impression of the visible activities.

In addition to visible changes during the day, concerns are expressed about the impact of construction at night. A respondent from Hinkley commented, *"Especially if the community is quite close to the site, [...] you'd see lights at night from cranes and so on. But there's probably an element of that already on the existing reactor, but the cranes are probably higher than the existing reactor buildings. So you just see a different, a different landscape of lighted lights."* Another respondent says: *"Usually [...] there would be construction happening in the daytime. You might find at certain critical points, so pouring the concrete, for instance is a continuous thing and [...] through a sort of 36 hour period or something to lay the slab of the concrete base."*

To limit inconvenience to local residents, a number of pieces of advice are given. One suggestion is to introduce strict planning rules: *"Make sure you've got as many planning controls in place as you think you need. So we've got a cap on the number of heavy goods vehicles that can be on the highway at any one time. We've got a cap on the number of deliveries that are done by road."*

It further talks about heavy truck traffic increasing: *"Inevitably, you'd see a lot of heavy lorries moving in and out through the community at regular intervals and that happens for a long period of time."* To minimise the impact of this traffic, there are limits on the number of deliveries done by road and by water, with one respondent stating, *"We've got a cap on the number of deliveries that are done by road and how many are done by water to the jetty. Just trying to reduce the impact on our local people of not having great big aggregate lorries trundling along their roads."*

One respondent stressed the importance of maintaining the roads because the heavy vehicles involved in construction can cause damage: *"Make sure you've got adequate coverage for repairing your roads once they've finished because their vehicles are very, very heavy. And the pieces of equipment that they need to move and put into place, are thousands of tons. And your road has got to be able to cope with lots and lots of tons of equipment going up and down it."*

Figure 6.6: Photograph of the construction of Hinkley Point C

6.6 Living environment policy analysis

Zeeland governments are committed to high spatial quality with a green, diverse landscape, paying attention to coherence with economic activities and local society. The various visions of this have been translated into ambitions and policies. The possible arrival of two new nuclear power plants affects the realisation of these policy ambitions. In this section we explore to which policy ambitions the possible arrival of the nuclear power plants can contribute (+), which ambitions will be compromised (-) and what this means for Zeeland. We thereby link the previous findings from this Chapter to existing policy. For the sake of readability, the sources consulted for this section are listed separately in the bibliography (see Annex 4).

Environmental safety

After Rotterdam-Rijnmond, Zeeland is the Netherlands' largest risk area due to the presence of chemical industry, the existing nuclear power plant and the Western Scheldt estuary. In the coming years, new risk factors will be added by the storage and production of ammonia, the arrival of two hydrogen plants and the realisation of large-scale energy projects.

To create and maintain support for developments taking place in Zeeland, the provincial government does not want to make concessions on the safety of the living environment. The Municipality of Borsele also values safety and wants to strengthen its policy on permits, supervision and enforcement, and ensure disaster and crisis response. The island structure with a limited number of connections means that relatively many fire stations and firefighters are necessary for good coverage in relation to the number of residents.

Table 6.2: Ambitions in the field of environmental safety, to which the possible arrival of the nuclear power plants can contribute (+) and ambitions that may be compromised (-).

-	Building two nuclear power plants means new traffic flows, new housing locations will be set up and a further accumulation of safety risks by realising large-scale energy projects in a small area. Discussions and meetings raise concerns that Zeeland's implementing organisations are not equipped for this workload and complexity of safety risks.
-	The safety of the nuclear power plants has greatly improved in recent decades. At the same time, no one can rule out a (nuclear) incident. Operating new nuclear power plants means more safety risks for the surrounding area.

Infrastructure

Zeeland's accessibility is a regular topic of discussion at administrative tables. The proposed site will be connected via the N62 to the Midden-Zeeland Route (MZR), one of Zeeland's three supra-regional connections and located about 7 kilometres from the northern side of the Western Scheldt Tunnel. Administrative ambitions for the MZR focus on improving road safety, traffic flow and future-proofing the infrastructure. From 2025, the passage through the Western Scheldt Tunnel will be toll-free. This is expected to lead to an increase in traffic between Zeeuws-Vlaanderen and Zuid-Beveland, especially of freight traffic. At the same time, the volume of tourist-recreational traffic is expected to grow, in line with the increasing number of overnight stays in Zeeland. The MZR is also important as an evacuation route in case of a calamity. In case of larger calamities, several evacuation routes in each wind direction are desirable.

Table 6.3: Accessibility ambitions to which the possible arrival of the nuclear power plants can contribute (+) and ambitions that may be compromised (-).

+	Making the Western Scheldt Tunnel toll-free will improve access to Zeeuws-Vlaanderen and Belgium in terms of accessibility and proximity effects. This facilitates attracting labour from these areas for the construction of the nuclear power plants.
-	The construction of the nuclear power plants brings flows of construction and commuter traffic. Increased congestion on the MZR also causes congestion on the A58 and on the local road network. The increase in heavy traffic has a potentially negative impact on (perceived) road safety.

Big ambitions in a small area

Several ambitions converge in the Sloe area and the Sloerand zone. There are a number of spatial claims on the area to realise large-scale energy projects of national importance and to develop a number of green-blue linking areas between the port area and the Sloe villages. An area-based approach was therefore started in 2023 to accommodate various projects and initiatives. This is an ongoing process involving relevant stakeholders.

Table 6.4: Spatial integration ambitions to which the possible arrival of the nuclear power plants can contribute (+) and ambitions that may be compromised (-).

?	Realising two new nuclear power plants in the area does not simplify the spatial puzzle. In anticipation of ongoing studies into the integration and design of the nuclear power plants and the search for work locations, we do not consider it possible for the time being to make any meaningful statements on what impact the use of space (of the construction work) will have on the realisation of the large-scale energy projects in the Sloe area. Spatial integration is the subject of further research.

7. Monitoring and evaluation

7.1 Introduction

In this study, we have mapped the economic, social and physical impact of the possible arrival of two nuclear power plants in Borssele. Years of preparation and research precede the construction of the power plants, after which the actual construction process of a nuclear power plant, with no project roll-out, takes an average of 10 to 15 years.

To visualise the likely effects of the arrival of the nuclear power plants in Borssele, we used the Theory of Change (ToC) method. A continuous process of monitoring and evaluation is needed to track consequences, foreseeable effects, concerns and impacts, and to test whether they are actually taking place.

In this Chapter, we describe the ingredients for a monitoring programme. Monitoring is primarily intended to keep track of what is happening, to act and adjust - where necessary and possible - in the interim. For instance, are negative effects (during the construction period) sufficiently mitigated? And are opportunities for the region sufficiently realised? In addition, a monitor is also needed to check to what extent the builder is complying with agreements made. Moreover, no nuclear power plant has been built in the Netherlands for years, and monitoring research provides important information for future projects.

Chapters 4, 5 and 6 outline the likely effects of the arrival of the nuclear power plants. This chain of impacts thus forms the basic framework for determining what needs to be monitored and why. Impact monitoring involves various parties, each from their own role and with their own purpose. For instance, independent research institutes, the builder, the (local) government and the local community can play a role. We explain these roles in more detail in this Chapter.

7.2 Monitoring the impact

The various chains of effects, as elaborated in the previous Chapters, form the basis for a monitoring programme. The monitoring programme describes the goals of monitoring and consists of an overview of the effects to be monitored, the related indicators, the methodology of research, the frequency of the research, the role of different parties and the method of publishing the monitor data.

In this section, we explain how this programme is created, give an example of how an effect is developed and outline what the monitoring process might look like.

Indicators and methodology of research

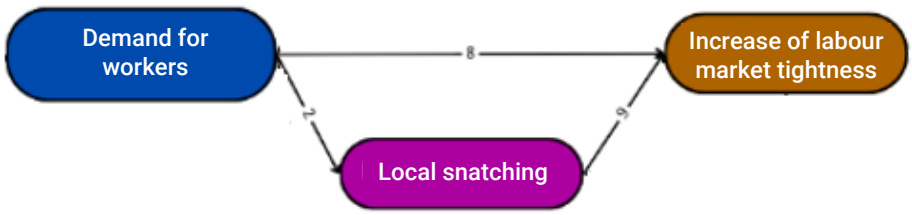
The first step is to prioritise **outputs** (short-term effects) and **outcomes** (medium-term effects): what will and will not be monitored? And which outputs and outcomes are most important to the client and stakeholders?

Concrete and measurable **indicators** are then defined for each impact category. Indicators indicate whether, and to what extent, results occur. For each intended effect, indicators are established to measure the effect. An indicator can be objective (facts) or subjective (measuring perception), and can focus on the micro level (direct change in the target group or for stakeholders) or macro level (change in society).

Once the indicators have been determined, the methodology of data collection appropriate to the chosen indicators is worked out. It is then determined which data will be collected, analysed and reported by whom and when. Cooperation with an independent research institute is an important guarantee for the reliability and credibility of monitoring.

Example: Labour market tightness

An example of a change path concerns the development in supply and demand in Zeeland's labour market. The construction of two new nuclear power plants will lead to a boost in labour demand, for a longer period with a certain peak. Partly, this labour demand will be met by the deployment of labour migrants (not shown in the diagram) and partly by workers from the region. This has an impact on the tightness of the Zeeland labour market. It is important to monitor closely what is happening here and ideally what the expectations are for the future (e.g. based on insights from reference trajectories). By monitoring this closely, we can anticipate the Zeeland labour market where necessary. This could include setting up pathways for training and (re)education so that supply and demand remain in balance or come into balance.



Importance of the baseline situation

Once the indicators have been named, it is important to determine the **baseline situation** through a baseline measurement. For some indicators, this will be existing and known data (e.g. available CBS data and broad welfare indicators). For other indicators, it is still necessary to bring them into focus. The latter applies in particular to the effects that lie in the field of perceived annoyance and burdening the environment with noise, odour and particulate matter and for which no data are currently available. These data must be collected in good time and before work starts. Both objective, factual data (e.g. air quality) and subjective data (residents' perceptions) are collected in a transparent manner.

In relation to this topic, we also note that in addition to the possible arrival of two new nuclear power plants, there are other (existing) activities in and around the Sloe area that are associated with odour, noise and particulate matter nuisance. The construction of the nuclear power plants in Borsele is not an isolated project. It requires cooperation from the companies involved and the environment service to collect the necessary data and to visualise and monitor the effects.

Who is involved in monitoring?

Ideally, there should be a **partnership** between the different stakeholders. The collection of relevant data could be done by the builder, the (local) government and the local community. It is important to determine who manages the monitoring system and the resulting information. The information collected should be stored, analysed and preferably shared openly among stakeholders. Independent analysis, verification and presentation of the information, contributes to the credibility of the monitoring process.

Role of the builder

The nuclear power plant builder plays an important role in monitoring impacts. In a large infrastructure project such as the construction of the nuclear power plants, it is common for the builder to be required to collect data related to the impact of the construction on the surrounding area in accordance with the licence. Examples are measurements of noise, vibrations, odour, emissions, particulate matter, etc. When drawing up a monitoring programme, it is important to also agree on the baseline assessment and which limit values will be used.

If, as part of monitoring, the client deems it desirable for the builder to monitor and report on other data as well, this should be stipulated in the permit and the contractor's contract before work begins. It starts with the client establishing with stakeholders which data are essential to monitor in the interest of the environment. Examples include the number of workers working in the various construction phases, the number of migrant workers deployed and the number of transport movements per day.

This requires determining the frequency of data collection and defining the accessibility of the data in the agreement with the builder.

Participatory monitoring

To increase involvement, a citizen-science programme can be facilitated and set up. In Borsele, residents have at an early stage been involved in the arrival of the nuclear power plants through the Borsele Conditions Group.

This has proved valuable, as residents have knowledge of the environment and offer insights that otherwise would not emerge. This is also relevant in the monitoring programme. Involving the local community also creates a shared sense of responsibility for monitoring. This makes monitoring more transparent and shows residents that their input matters. The citizen-science programme is part of the overall monitoring plan.[37]

Together with the local community, they decide what data to collect, in what way and at what time. Participants may need education or training. Agreements are also made with them on the presentation of the data. Discussing the measurement results together contributes to a better understanding of how to interpret the results of the monitoring programme.

In the Netherlands, several measurement initiatives are active in different places from which to learn, such as 'Measure your City', a citizen science initiative. The platform www.samenweten.nl is an initiative of the National Institute for Public Health and the Environment (RIVM) for citizen science about the living environment, and it supports and encourages citizens who want to measure their own living environment, such as substances in the air and noise levels.

7.3 Mitigating measures

As described in this study, the construction of the nuclear power plants involves environmental impacts. To reduce negative impacts, mitigating measures are taken. Suggestions for these are made in Chapter 2. The mitigating measures affect what is monitored as described in section 2.2. Therefore, it is important to include such measures in the interpretation and evaluation of measurement results. Incidentally, this does not mean that the effect of a particular measure can be measured.

We also recommend monitoring whether and which measures are implemented and, like the results in section 2.2, reporting on them regularly. This is important for stakeholders and offers authorities the opportunity to make timely adjustments and additional choices during the construction period.

7.4 Monitoring the cashing in on opportunities

Defining opportunities arising from the arrival of the nuclear power plants is explicitly part of this impact study. Translating opportunities into actual added-value projects will be part of the agreements between the Central Government and the region. These agreements eventually land in a State-Region Package. Monitoring the results of this package is important and requires a separate monitoring programme. Monitoring helps to evaluate whether the goals set are being achieved and the agreements made are being kept. Regular monitoring allows for timely adjustments and makes parties accountable to social stakeholders, including the residents of the Municipality of Borsele and the region.

Monitoring the agreements within the Central Government - Region Package requires a structured and systematic approach, similar to the development of the monitoring programme for the arrival of the nuclear power plants. This involves monitoring the progress of agreed targets and determining the wider impact of the cooperation between the Central Government and the region.

37) The Glasson et al. report also talks about involving stakeholders in the monitoring process, see this link.

Transparency plays a crucial role here. Clear communication about the results achieved, as well as the challenges and possible delays, is essential to maintain support and make adjustments where necessary.

7.5 Transparency and trust

The arrival of the nuclear power plants has a huge impact on the area and the region. A construction period averaging 10 to 15 years, as described in this study, affects the immediate environment of those affected and the region. The importance of a monitoring programme is obvious. Here, open data and independent monitoring are important. An open platform on which all measurement data are published with attention to privacy and security forms the basis for this. This is where the data from the various monitoring programmes come together. Through comprehensible reports, equipped with visual tools, the data and the monitoring processes are made accessible to citizens and stakeholders.

Annex 1: Reference Projects

In the study, we refer several times to the construction of nuclear power plants elsewhere in Europe. These include the Hinkley Point C, Sizewell C and Olkiluoto 3 plants. We use these reference projects to paint a realistic picture and substantiate expected impacts.

Although the Netherlands has a unique geographical, economic and social context, the construction process of a nuclear power plant remains essentially the same. We expect that the effects that occur elsewhere can also occur at and around the preferred site of Borssele. Based on practical experiences, reference projects provide insight into what is involved in building nuclear power plants and what the impact thereof is on the environment. The opportunity arises to learn from bottlenecks and successful solutions.

Below, we list the main features of the three reference projects side by side.

Table B1: the main characteristics of the 3 reference projects

	Hinkley Point C	**Sizewell C**	**Olkiluoto 3**
Location	Summerset, UK	Suffolk, UK	Olkiluoto, Finland
Reactor	ERP, Gen. III+	ERP, Gen. III+	ERP, Gen. III+
Capacity	3.260 MW (2x 1.630 MW)	3.260 MW (2x 1.630 MW)	1.600 MW
Contractor	EDF	EDF	Areva and Siemens
Status	Under construction	In preparation	In operation, since 2022
Duration of construction process	2016 – (2031)	Not yet started	17 years (2005 - 2022)

Choice of reference projects

From the late 1980s, the construction of new nuclear power plants in Europe virtually stopped. In recent years, some countries have again taken the initiative to build new plants. Currently, nine new nuclear power plants are under construction, and the initiative to build new nuclear power plants is underway in several places.

The arguments selecting the three reference trajectories as a focus within the literature review are as follows:

- The nuclear plants are of the same generation as the new nuclear power plants envisaged at Borssele.
- These reference routes are at different stages and offer a mix of a completed nuclear power plant, one that is under construction and one that is in the final stages of preparation (Sizewell C is under preparation, Hinkley Point C is under construction, Olkiluoto is in operation since 2023 and Sizewell B is in operation since 1995). In doing so, we are trying to present as balanced a picture as possible.

- The UK and Finland are democratic European countries where aspects such as safety standards, decision-making processes, processes to gain support among residents and working conditions are similar to the Netherlands. The contractor must comply with regulations and supervision within European frameworks, including the obligations and directives of the Euratom Treaty on which Dutch nuclear energy legislation is also based.[38]
- The reactors are/were built based on the same ERP Generation III+ technology.
- The reactors have similar capacities, and in the case of Hinkley Point C and Sizewell C, parallel construction of two reactors on one site has also been chosen. For both sites, EDF is the contracting party, one of the contractors that the Central Government is currently considering as a contractor.
- Detailed impact reports of these trajectories are available where expected economic, social and physical impacts are broadly discussed, and these studies have been made available.

Comments on the focus on the trajectories mentioned above can be as follows:

- In none of these trajectories are villages, the size of Borssele and with the economic prosperity of Borsele, located so close to the nuclear power plant.
- EDF is the builder of the reference trajectories Hinkley Point C and Sizewell C, while in the Netherlands the choice has yet to be made between three builders of which EDF is one. Each builder makes its own proposal for the construction process and this is likely to result in differences that may affect the degree of economic, social and physical impact.

38) ANVS: Explanation of international regulations, directives and treaties.

Annex 2: Research Justification

In this Annex, we further explain the choices made in the study carried out and provide a rationale for made. We also mention limitations and challenges. The text expands on the explanation of the research process as described in Chapter 1 of this report. For the sake of completeness, the research questions are reproduced below.

> What is the expected impact of the arrival of two new nuclear power plants on the broad welfare of Zeeland for residents in the immediate vicinity of the plants (the Sloe villages), for residents in the rest of Zeeland, and for other stakeholders?
>
> What (additional) measures can be taken to ensure and strengthen the broad welfare in Zeeland during the construction and operation phase of the new nuclear power plants?

Theory of Change

The research was shaped according to the Theory of Change (ToC) model. This is a conceptual model increasingly used to inform and shape strategic planning, monitoring and evaluation, focusing on the social and societal aspects of projects and programmes that generate impact (Belcher, Bonaiuti & Thiel, 2024[39]). The use of ToC in research is still evolving.

A ToC is a formative evaluation method that contributes to project planning and development (Frey, 2018[40]). It assumes a participatory model in which relevant stakeholders are actively involved throughout the entire process. A project, initiative or programme takes centre stage and joint consideration is given to its expected impact on the environment and within the existing context. Long-term goals being pursued are considered in the light of the impact.

For this study, this concretely means the following. The project at focus is the construction and start-up of two new nuclear power plants. The context and environment are Zeeland and, in particular, Borssele and the other Sloe villages. The impact study focuses primarily on the expected short-term (output), medium-term (outcome) and long-term (impact) effects of the project. It then provides advice on how to reduce the negative impact and strengthen the positive impact. Forward thinking from expected effects to expected impact is also known as 'forward mapping'. Secondly, ToC is used to reason back from desired impact to opportunities ('legacy') and what can already be done now to make the most of those opportunities. This way of applying ToC is also called 'backward mapping'.

39) Belcher, B.M., Bonaiuti, E. & Thiele, G. (2024). Applying Theory of Change in research programme planning: Lessons from CGIAR. Environmental Science and Policy, 160.

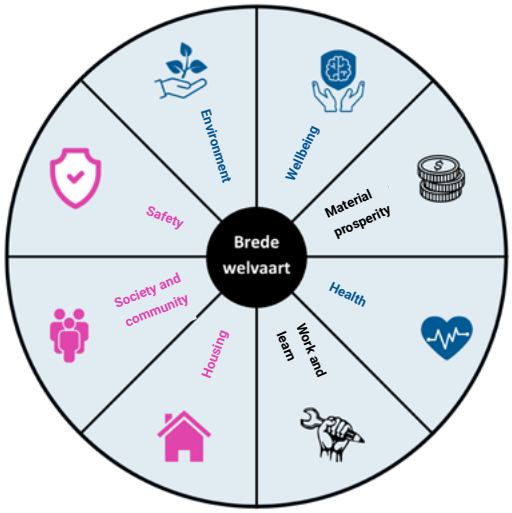
40) Frey, B. (2018). The SAGE encyclopedia of educational research, measurement, and evaluation (Vols. 1-4). Thousand Oaks, CA: SAGE Publications, Inc. doi: 10.4135/9781506326139.

Figure A: Schematic representation Theory of Change (ToC)

Broad prosperity

We combined ToC's model with the conceptual model of broad prosperity. The concept of broad prosperity helps to structure the substantive (expected) impact into different subdomains of quality of life of residents. Broadly speaking, this involves distinguishing between economic impact, social impact and impact on the physical living environment. The figure below shows the eight themes of broad prosperity.

Figure B: Themes of broad prosperity



We discuss some themes in several Chapters, but the eight themes of broad prosperity are mainly discussed in:

Chapter 4 (economic)
Chapter 5 (social)
Chapter 6 (physical living environment)

Mixed-method research

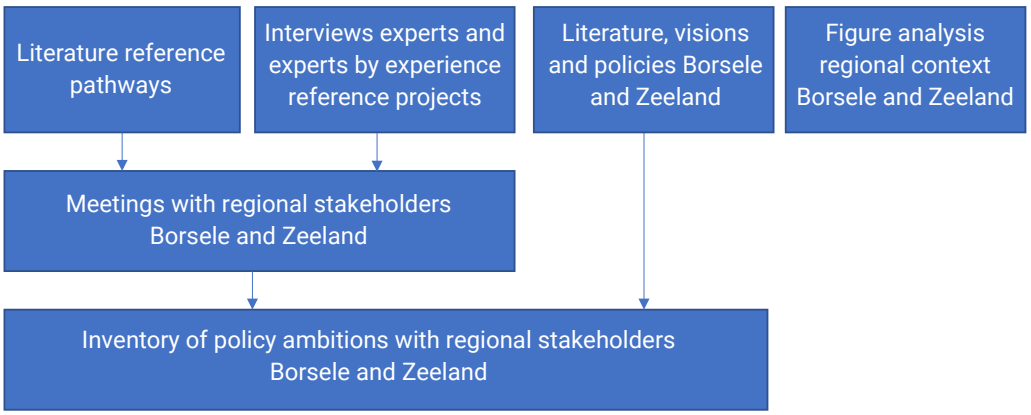
To fill in the ToC, (new) information was gathered from various relevant stakeholders and experts in several ways. Therefore, the research methodology chosen is a mixed-method methodology within which quantitative and qualitative data reinforce, support or complement each other (Poth, 2023[41]). In particular, the mixed methodology was chosen for this study because of the multidisciplinary nature of the main question and to properly place knowledge about experiences at other locations in the context of Borsele and Zeeland. Below we explain all data collection methods in more detail.

41) Poth, C.N. (Ed.). (2023). The Sage Handbook of Mixed Methods Research Design. Sage.

Data collection methods

To answer the research questions, both quantitative and qualitative research methods were used and both source and data triangulation were involved (Poth, 2023). These sources and methods complement each other, inform each other and support each other, see Figure B. Here, each form of data is a puzzle piece, contributing to the bigger picture.

Figure C: Schematic representation of data collection



In preparation for conducting this impact study, two members of the research team visited Hinkley Point C. They attended a series of lectures by EDF (builder Hinkley Point C), local authorities (Somerset), businesses and educational institutions. These lectures, informal discussions and the observations provided contacts for further data collection. Also, the visit itself provided exploratory information in the form of observations and presentations attended.

Literature reference pathways and local visions and policies

We started the study with literature review, studying several reference trajectories. Three reference trajectories were chosen for the literature review, namely Hinkley Point C (UK), Sizewell C (UK) and Olkiluoto (Finland) (see above in Annex 1).

In addition, Sizewell B (UK) impact studies were used. This is one of the few trajectories where in-depth and wide-ranging research into the actual social and economic impact has been carried out afterwards. The focus here is therefore not on expectations, but on experiences. Sizewell B is a Generation II reactor, but the impact with regard to social and economic aspects is less dependent on the type of reactor and more dependent on the type and scale of the project. The reference trajectories studied are shown in Annex 4 (document overview).

Glasson's body of knowledge has been used to shape the impact report in general (e.g. Rodriguez-Bachiller & Glasson, 2004[42]; Glasson, 2017[43]).

42) Rodriquez-Bachiller, A. & Glasson, J. (2003). Expert systems and geographic information systems for impact assessment. London: Routledge.

43) Glasson, J. (2017). Socio-economic impacts 1: Overview and economic impacts. In R. Therivel, G. Wood (Eds.), Methods of Environmental and Social Impact Assessment (fourth ed.), Routledge, New York/Oxon.

In addition, provincial, regional and local visions and policy documents were studied so that the envisaged future plans of Zeeland, and specifically Borssele and the Sloe villages, could be clarified. First, available plans in the region were inventoried. These include provincial and municipal executive programmes, environmental visions, the regional housing deal and the rural area programme. Next, these documents were analysed for the various themes of broad prosperity and the various contents were categorised by theme. The overview of consulted documents is included in Annex 4.

Interviews experts and experts by experience reference projects

Individuals and bodies were invited for the expert interviews, and in each case we considered the extent to which the expertise and knowledge matched the intended focus of the research questions.

The interview schedules and the topics that would be covered in the interviews were determined by the research team based on knowledge gaps in the literature or specific knowledge that was deemed valuable for Zeeland. Four experts and/or experts by experience were open for interview, three of whom were an existing contact from the visit to Hinkley and one person was a new contact. They all received an interview schedule prior to the interview. The interviews were conducted via video calls in Microsoft Teams (see Annex 5 for overview of experts and experts by experience consulted).

The interviews focused in particular on the experience at Hinkley Point C. They also discussed the construction of the Pallas Reactor in the Netherlands, plans for a nuclear power plant in Wales, and the Sizewell and Hinkley Point B nuclear power plants. Twice, additional questions were asked by email and these were also answered by email. Unfortunately, contacts towards Olkiluoto yielded no response.

Analysis regional context

Based on relevant statistics, the Knowledge Centre for Zeeland Society was able to provide a situation sketch on relevant topics, of the 'host region'. Here we refer to Zeeland with a specific focus on Borssele and the Sloe villages (see Annex 4 for consulted sources).

Conversation with regional stakeholders

Two meetings were held in which the possible (local and regional) impacts of the construction and operation of two new nuclear power plants in Borssele were considered with regional stakeholders. During these meetings, over 60 people with relevant knowledge were involved in the study. Attendees first received an update from the research team and were informed by the commissioners of the study (the Province of Zeeland and the Municipality of Borsele).

Using the literature and the interviews, we developed the flow diagrams describing the expected 'chain of changes' (ToC - 'forward mapping'). These ToC diagrams were discussed in subgroups, with a member of the research team being a discussion leader. Attendees were then asked to share their insights around the expected impacts (sharpening and complementing), and possible measures to mitigate negative impacts or, conversely, exploit opportunities. The subgroups were divided into clusters of (broad prosperity) themes: 1) Economy, labour and education, 2) Landscape, environment and health, 3) Housing, accessibility and facilities and 4) Security and society.

The outcomes of these sessions were recorded in writing by the moderators and discussed afterwards with the research team. A diverse representation was invited to the two forward-mapping sessions (quadruple helix); stakeholders and organisations with relevant insights around particular impact themes. A total of 66 people participated in the two meetings (see Annex 5).

Inventory of policy ambitions

Backward mapping is a method that uses long-term goals to reason backwards to what is needed to get there. On the basis of the literature study focused on vision and policy in Zeeland, the goals were identified and these formed the basis for three backward-mapping sessions. The first session took place with the strategic advisers of governments united in the OZO (Overleg Zeeuwse Overheden (Consultation Body Zeeland Governments). The second session took place with policy staff and the municipal secretary of the Municipality of Borsele. The last session involved discussions with policy staff of the Province of Zeeland. The participants work in different policy domains. During the backward-mapping meetings, 47 stakeholders provided input. The discussions focused on ambitions for the future of Zeeland and specifically on mitigation measures to enhance positive impacts for the region and reduce negative impacts for the region. The research team guided the sessions and recorded the outcomes in writing. The sessions brought together ambitions from different policy areas. This led to interesting conversations about working on broad prosperity themes from multiple perspectives.

Data analysis

The literature review resulted in overviews of potential impacts on the one hand and future visions and policies for Zeeland on the other. Reports were made of the interviews with experts and experts by experience. To list the possible impacts from the literature and the interviews, two working sessions were held with the researchers to organise and link the data from the various sources for each theme of broad prosperity. This arrangement was then incorporated into impact diagrams that were used during the backward-mapping meetings.

Advice

The recommendations formulated in the report build on all the steps taken in the study, as described in this Annex. From the different data collection methods, summaries and overviews were generated by the researchers. This included summaries from the literature and the interviews with experts and experts by experience, as well as summaries from the group discussions during the various meetings. Advice was then distilled from all these documents. This resulted in the advice as presented in the report.

Role distribution

This impact study was carried out by HZ | University of Applied Sciences and Lysias Advies, in close collaboration and with shared responsibility for the final result. HZ | University of Applied Sciences analysed the reference projects and interviewed the experts and experience experts from reference areas. Their findings are incorporated in Chapters 4, 5 and 6 of this report. HZ and Lysias jointly organised the meetings with stakeholders and interested parties from the region. Lysias Advies carried out the analysis of policy documents and formulated the recommendations described in Chapter 2.

Annex 3: Suggested measures from document study and interviews

Introduction

From the analysis of local impact studies of reference projects, interviews with experts and experts by experience and during various meetings we organised with local stakeholders in Zeeland, suggestions emerged for measures to be taken to balance the burdens and benefits for the residents of Zeeland as much as possible. These include proposals for (mitigating) measures to be taken to reduce the negative impact of the construction of the nuclear power plants, as well as possible opportunities to strengthen Zeeland sustainably and realise structural added value for (the immediate surroundings of) Borsele and the Province of Zeeland.

In this Annex, we have organised the suggestions offered for actions to be taken according to a number of topics and presented them point by point. This overview formed the basis for distilling our recommendations, as formulated in Chapter 2.

Profiling and positioning

- Being the leader in the Netherlands on the themes: green industry, healthy environment and happiness.
- Profile Zeeland as the 'first green province of the Netherlands'. With this image, also increase its appeal. This will require investing in the preconditions, such as accessibility of care and improving the business climate/image at a time when industry in Zeeland can become more sustainable.
- Ensure a positive legacy for the region. Invest in the region's quality of life, economy and education.
- Zeeland has shown with the Delta Works that a big task is not shunned. If we can pull this off around the complex task of sustainable energy (in a limited area - integrated area development), it will radiate positivity.
- Wish for building one or more flywheels in line of the example of Maastricht University. This will lift the whole region. Link such a flywheel to the removal of state legal services law - Extra Secure Facility (EBI). Strengthen everything/also court.
- Following the 'Every Region Counts' report, the Central Government is pushing for a better distribution of government functions. For Zeeland, this is not really progressing yet (see articles PZC and Domestic Governance).
- Future vision: Zeeland is a place for: 1) Leading institutions and State organisations,
- 2) International Secondary Education, 3) Technical University, 4) Coastal Tram, 5) A58/Tunnel next to Zeeland Bridge and 6) Extra Secure Facility (EBI) Vlissingen.
- Invest in more government services in Zeeland. This way more sustainability is given to the investment in Zeeland.
- Commit to structurally attracting new Zeeland residents (make sure new people stay).
- Consider also (investments in) agriculture and fisheries.
- Financial injections into the region, not necessarily linked to nuclear power, but focused on what is important for the region and valued by its residents.
- Positioning also means making choices: Make an integral consideration that includes the existing port and industrial cluster. At the end of the day, not everything is possible; you cannot be an energy hub and a tourism hub at the same time as a municipality. The region is in transition. Choices made today and tomorrow will determine the region's future.

Suggestions for concrete investments quality impulse Zeeland

- Free green energy for all residents of Zeeland.
- No grid congestion for Zeeland companies (give priority).
- Make existing homes more sustainable at State expense (sound and thermal insulation).
- Watershed the landscape (strengthen water safety): reactor should never be flooded.
- Provide available and accessible care for all residents of Zeeland.
- Provide attractive studying for high-educated and MBO students (now insufficient intake).
- State contribution to facilities.
- Public transport: 6 x hourly intercity service.
- Public transport: Western Scheldt - Ghent-Antwerp connection.
- Liveability investment fund.
- Number and quality of cultural facilities (museums, theatre) should go up.
- Housing plus (acceleration task).

Generation, availability and use of energy

- Is there enough energy available at all to build the nuclear power plants? What does this mean for other energy consumers? Are there or will there be waiting lists?
- Potential opportunity: connecting Zeeland's power grid with Belgium's so that power grid can be relieved.

Employment and workforce

- Demand will also increase in other sectors, such as education and healthcare (so not only technical professions sectors). Suggestion: as far as possible, place the issue of labour at the builder.
- If large-scale construction is required, this in itself may also lead to an influx of migrant workers.
- Deployment of interpreters.
- Try to use workers from the Netherlands as much as possible.
- Labour force growth (relative to non-working population).
- The 'bust' (of the 'boom and bust' scenario) could be less severe if the nuclear power plants are considered in the broader context of the energy transition and the related tasks and people and skills needed (also after the construction of the nuclear power plants). However, an overarching (comprehensive) strategy is an important prerequisite for this.

Local entrepreneurs

- The opportunities for certifying companies can contribute to the long-term 'legacy' for
- Zeeland.
- Is there any possibility of stipulating with the builder that local companies will also be hired in future projects (e.g. construction of other nuclear power plants), as part of the tender?
- Help local entrepreneurs to mitigate their risks. Given the scale of the project, working with local (groups of) companies can play an important role in this.
- Timely launch of a support programme for local/Dutch companies to help them link up with the construction of the NPP. Consider: Scope of cooperation; paperwork, including complex contracts and quality assurance in nuclear construction processes.
- Let local companies that invest also have a role in new (large) infrastructure projects (after the construction of the nuclear power plants).
- Establish a revolving fund for local companies for innovation where environmental gains are paramount.

- Risk: Zeeland entrepreneurs will actually leave if the tightness of the labour market in Zeeland intensifies during the construction period of the nuclear power plants.

Training, education and innovation

- Important in education: you have to start early; training takes time.
- Opportunities (and challenges) for education are broad: in addition to the more technical domain, there will be more demand for skilled staff in healthcare and education, for example.
- There is a wonderful opportunity for Zeeland to set up an International School. You do need to start this in good time (two years in advance). Involve all forms of education (from primary education onwards) in time.
- There may also be an opportunity for regional education provision in Bevelanden.
- To ensure the best possible connection with education, the tender should seek cooperation with Zeeland's educational institutions. Encourage cooperation with regional knowledge players so that the region also benefits.
- Opportunity for HZ as an extension of the Sustainable Energy Campus - part of a national network around the broad energy transition. Opportunity for 'legacy': applying accumulated knowledge and innovation in Delta issues.
- Opportunity: Technical University - Increased need (nationwide) for technical students, positive effects for the region, this is something that really benefits the region, link with Campus Zeeland and Beta Campus Zeeland. Deepening on nuclear knowledge cluster.
- Set conditions for cooperation with the regional education cluster. And not only in the energy knowledge cluster, but much broader (primary education to scientific education) and also for long-term safeguarding. This not only applies for education, but also for research facilities. A shrinkage region like Zeeland could use such an impulse par excellence.
- An education agenda is actually needed! Cooperation between educational institutions is essential here.
- The national development around international students is at odds with what will soon be needed in terms of knowledge/skills in the region if two new nuclear power plants are to be built.
- Opportunity: a technical university/full university in Zeeland, boost higher education and scientific education, also broader than just technology. Zeeland as innovation leader on green energy, and as innovative region in energy issues.
- Look at opportunities for an international school (e.g. secondary education). This could be positioned centrally (e.g. in Goes).
- Make sure new knowledge institutions are close to business activity to increase opportunities for synergy.
- Risk: can enough young people in Zeeland be 'warmed up' to work in the (nuclear) energy sector?
- The experience from Hinkley shows that for a career in construction, working on a nuclear power plant can be a nice stepping stone. Perhaps this could help get people excited about this.

Housing and facilities for construction staff

- Align housing regionally.
- Pay attention to the distribution of migrant workers. Involve Goes in this (there are facilities there). Set conditions for housing labour migrants (with a certain degree of clustering). Also consider facilities here.
- Temporary workers need not live in Zeeland; chances are they will also live in a city like Bergen op Zoom. A shuttle bus should then run to the power station.

- Housing at sea on a cruise ship: everyone and all facilities in one place. This idea has been/is already being explored. Berth is a major hurdle.
- Large-scale regional housing sites (de Bevelanden housing group).
- Agree in advance on destination and designated use of 'temporary buildings' for sustainable use in the region.
- Link to Project Groups AZC and COA of municipalities/Province.
- Suggestion: make a connection with the Municipality of Borsele's 'Facilities Plan'.
- Capacity for maintaining housing from Central Government.
- When it comes to tourism entrepreneurs in relation to housing of migrant workers (full accommodations for years), it can be stipulated as a condition that they invest the accumulated capital back into the tourism business case in due course.
- Combine the (temporary) housing needs of labour migrants with developments and needs in the leisure sector for structural improvement of Zeeland's demographic composition (in relation to Zeeland's ageing population).
- Put in place clear guidelines, agreements and precautions for mental wellbeing of foreign workers to prevent nuisance.
- Shortage of healthcare professionals.
- Make Walcheren Hospital complete again.

Limiting transport movements

- Improve and reinforce infrastructure, both before construction and after construction. Both for transporting goods and construction materials and for transporting workers.
- Try to organise some of the work in the neighbourhood where workers are. Not all work needs to be done on site. More work in urban areas has advantages (think for instance of accessibility). Possible disadvantage: less local economic added value.
- Set conditions in the construction phase for transport and infrastructure. For example: supply by sea, construction of additional rail tracks, investment in public transport.
- Sustainably improve public transport network; this contributes to improved accessibility and reducing nitrogen emissions.
- Improve public transport to reduce transport movements.
- Increase focus on road safety; additional safety measures for roads, sports and waterways.
- Modify roads to separate modes to promote safety.
- Heavy construction traffic, A and N roads are prepared for that.
- Not only increase in construction traffic, but also increase in commuting traffic.
- Transport by water and/or rail to prevent inconvenience on roads.
- Organise collective transport for workers, thus concentrating the housing of workers in a number of places.
- Opportunity: Improve infrastructure (wider roads/safer roads).
- Measure: Traffic circulation plan/traffic safety plan.
- Provide adequate funds for repairing roads after construction is completed.

Residential and living environment of residents

- Make timely arrangements for local residents, e.g. to make their houses 'construction proof', or that they be bought out.
- Make all homes in Borsele more sustainable; noise, energy, insulation, etc. Rather do this than a establishing a fund where residents have to apply for money.
- Social cohesion under pressure due to buy-up of houses by newcomers.

- Improve residential environment; think of playgrounds, green spaces.
- Higher wages could also cause prices to rise faster in Zeeland. Offer compensation in the form of subsidy for residents to insulate their homes or make them more sustainable.

Physical security

- Nuclear plant will be in the Sloe area that houses a large chemical cluster of companies. This makes it a high-risk area. 'Chance of domino effect' in case of a disaster. This risk must be ruled out, otherwise some participants will not want it built.
- Clearing or evacuation of the area is already a problem. Models show that it would take several days to evacuate Zeeland in the event of a (water emergency) disaster. Outbound traffic has to cross four lanes of motorway in the event of a disaster. Emergency services enter via the (old) National Highway.
- Set up a crisis team now for rapid response and assurance of safety. This especially in relation to nuclear power and increasing crime. Evacuation options and routes should be mapped now.

Spatial layout

- Look at the overall picture for Borsele and its surroundings, in terms of spatial puzzle and impact. There are nine energy projects of national importance coming together here in a port area with its own dynamics. We are very concerned about whether this will all fit without coordination and an integrated approach. Start working with the region as soon as possible on a future-proof overall plan.
- Stay within the boundaries of the Sloe area. The villages are already close to industry and the nuclear power plant. Invest timely in a strong green buffer between the Sloe area and the villages. Do this with firm ambition (accessible nature is now relatively limited in size) and also in anticipation of the construction of the new nuclear power plants. This creates confidence.
- Ensure logical clustering/spreading of new facilities (housing for labour migrants) new facilities, so that this fits logically and sustainably in Zeeland.
- Construction site reclamation in Western Scheldt (compare Neeltje Jans).

Landscape, nature and water

- Utilise 'landscaping' to hide construction from view, for example by utilising soil that is excavated to reduce the visual impact of the construction.
- Attractive landscape, clean environment, strengthening natural values.
- Central Government commits to and invests in Zeeland's landscape plan. Not just any bag of money, where - given the pressure on space - there no physical space available to invest in the landscape.
- High-voltage lines, high-voltage substations and the possible arrival of cooling towers have an impact on Zeeland's landscape, nature and residents' living environment. Involve the Board of Central Government Advisors so that the quality of the landscape is preserved.
- Set conditions for (permitted) landscape degradation due to infra, roads and power lines).
- To even more high-voltage pylons through Zeeland; interconnect via Belgium.
- When planning and developing, immediately make a plan on what happens with the residual heat to prevent it being discharged (via water) into the Western Scheldt. For example 'into heat grid' or 'generation into power'.
- Green the extension of infrastructure needed for construction; fit the activities into the landscape.
- Realise plantings and green spaces.
- Lift ground level through optimal landscape fitting, also to avoid fragmentation of flora and fauna.

- Create new nature around sites.
- Look at water safety differently. The power stations must never be flooded. Think about that beforehand in terms of landscape design.
- Can the development towards a watershed landscape be combined with the arrival of the nuclear power plants?
- Residents pay relatively much for dike reinforcement and related parties because the population is low, but the tasks are serious in scale. The Sloe area has the highest risk profile in the Netherlands. 'We are doing jobs for the Central Government'.
- Current biodiversity is 0-state → opportunity to improve.
- Green projects around Sloe area are needed, but these have already been promised years ago and are still not there.
- The construction project may extract (ground) water from the surrounding area. This may have a major impact on the surrounding (agricultural) plots.

Careful and honest communication

- Make clear agreements on construction communication, where concerns and frustrations can be expressed to the right people.
- Use VR technology to impact the environment and visualise opportunities.
- Ensure very good and continuous communication from the government about what is going on, about timeline and expectations, about all phases and the final picture; also well in advance of the start of construction work/during the preparation phase.
- Ensure good communication from other parties directly involved (builder, subcontractors, etc.), this is also important.

Agreements with builders

- Allow for delays, in all arrangements at the front end. Always agree on a margin, so that delays do not come "at the expense" of the region or local businesses.
- Make clear agreements on what builders have to abide by, e.g. schedule checks, limits on numbers of heavy trucks on a road or motorway, limits on numbers of deliveries done by road and how many by water to the jetty.
- Require zero-emission/bio-inclusive construction in the permit.
- Climate-adaptive building.

Structural partnership and sustainable investment

- This is a mega-scale project without precedent. The impact of building two nuclear power plants is of un-Dutch impact. It involves thousands of workers and 10 to 15 years of construction time (see reference projects in Annex 1). Our people are very worried, some sleep badly. Please take their concerns seriously.
- Trustworthy Central Government that sees Zeeland as a partner (not as a colony).
- Make sure Zeeland's approach is not 'compensation', because that evokes the frame of a ransom. The aim should be a structural partnership and a reliable government that is also there for residents of Zeeland.
- Need for partnership, not only between relevant authorities, but also, for example, with education, builders and with parties in the value chain.

Annex 4: Overview of Documents

Overview of reference routes studied

Location	Reference
Hinkley Point C	Somerset County Council, West Somerset Council & Sedgemoor District Council. (2012). *Hinkley Point C. Local impact report. National Infrastructure Directorate.* *Project Ref: EN010001.* (Personal communication)
Sizewell C	East Suffolk Council & Suffolk County Council. (2021). *Joint Local Impact Report*. Sizewell C Nuclear Power Station. Accessed 20 November 2024, from Sizewell C Local Impact Report.
Olkiluoto	TVO. (2008) Environmental Impact Assessment Report. Extension of the Olkiluoto Nuclear Power Plant by a Fourth Unit. Accessed 20 November 2024, from KKW-Olkiluoto-Finnland-EIA-Report-englisch.pdf.
Sizewell B	Glasson, J. (2005). Better monitoring for better impact management: the local socio-economic impacts of constructing Sizewell B nuclear power station. *Impact Assessment and Project Appraisal*, 23:3, 215-226, DOI: 10.3152/147154605781765535

Analysis regional context

Based on relevant statistics, the Knowledge Centre for Zeeland Society was able to provide a situation sketch, on relevant topics, of the 'host region'. By this we mean Zeeland with a specific focus on Borssele and the Sloe villages. National and regional statistics have been used to create insight, for example data from the Central Bureau of Statistics (CBS) and data from the Employee Insurance Agency (UWV).

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Annex 5: Overview of Interlocutors

Representatives of the following organisations participated in the meetings with regional stakeholders ('ToC' meetings):

- Zeeland West Brabant Police
- Safety Region Zeeland
- GHOR Zeeland
- GGD Zeeland
- Province of Zeeland
- Scheldestromen Water Board
- Directorate General for Public Works and Water Management (Rijkswaterstaat)
- Nuclear Safety and Radiation Protection Authority (ANVS)
- Admiraal de Ruyter Hospital/Zorgzaam
- Ministry of Infrastructure & Water Management
- NRG Pallas
- Bouwend Zeeland
- Tennet
- EPZ
- Zeeland Environmental Federation
- Erfgoed Zeeland
- Kibeo Childcare
- Residents' group Living Environment Borsele
- Municipality of Borsele
- Impuls Zeeland
- North Sea Port
- VNO-NCW Brabant-Zeeland
- UWV (Employee Insurance Agency) (Leerwerkloket Zeeland)
- HZ | University of Applied Sciences
- Albero Schools
- Delmeco
- Thorizon
- Smart Delta Resources
- Borsele Conditions Group
- Local experts

Participants working session Consultation Zeeland Governments:

- Municipality of Borsele
- Municipality of Goes
- Municipality of Hulst
- Municipality of Kapelle
- Municipality of Middelburg
- Municipality of Reimerswaal
- Municipality of Terneuzen
- Municipality of Veere
- Municipality of Vlissingen
- Scheldestromen Water Board
- Zeeland Region Bureau

Participants in meetings to identify policy ambitions ('backward mapping')

- Policy officers and municipal secretary of the Municipality of Borsele
- Policy officers of the Province of Zeeland

Overview of experts and experts by experience consulted during 1-on-1 interviews

Name[44]	**Role**	**Focus interview**
Marieke van Gemert	Manager Nuclear new build projects at NRG	Construction and commissioning of the nuclear power plant
Adrian Bull	Associate director and BNFL Chair in Nuclear Energy and Society at the Dalton Nuclear Institute, part of The University of Manchester	Construction and commissioning of the nuclear power plant
Joanna Whitehead	Service manager - HPC project at Somerset	Impact on the region at large.
Ben Mellick	Managing Director at AMS Nuclear Engineering	Impact on the local economy and local entrepreneurship

Working visit and a reflection session with an expert by experience from Hinkley and Expert on large-scale infrastructure projects in the Netherlands

- Doug Bamsey, experience specialist Hinkley Point C, Somerset
- Peter Lobbezoo, in a personal capacity

44) All respondents consented to the use of name and position in the overview of interviewees in the impact report.

Colophon

Clients: Municipality of Borsele and Province of Zeeland
Contractors: HZ | University of Applied Sciences and Lysias Advies

Team Members
HZ | University of Applied Sciences:
- Ruben De Cuyper
- Jesse Kamstra
- Luc Verschuren
- Hanneke Wiltjer

Lysias Advies:
- Pieter van Eijsden
- Carla de Rie
- Annemieke van der Zijden

January 2025