



Authority for Nuclear Safety and
Radiation Protection

Programme New Initiatives Nuclear (NIN)

Colophon

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Executive Summary

Due to the climate objectives, the related energy transition and the energy crisis, nuclear energy is once again in the spotlight. The Netherlands has also expressed its ambition in the nuclear field by focusing on the possible construction of two to four new large nuclear power plants, extending the Borssele nuclear power plant operation time, and focusing on the development of so-called 'Small Modular Reactors' (SMRs).

This ambition creates numerous challenges for the ANVS, the most significant being uncertainty, complexity and novelty.

In order to meet these challenges as effectively as possible, several preconditions are important, including cooperation, sufficient knowledge, a good information position, sufficient capacity and a robust communication strategy.

To achieve this, the ANVS has chosen to set up a programme called NIN, *New Initiatives Nuclear*, initially for a period of three years.

The individual projects required to prepare ourselves are carried out in the line organization under the responsibility of the relevant team leader. The progress of the projects is monitored in the programme. The programme also discusses the coherence between the projects and, where necessary, the prioritisation. To this end, seven workflows have been set up in which the intended results and planning are recorded. The workflows are: programme development and accountability; developing implementation policy; extension of the operating time of the Borssele nuclear power plant; new initiatives – *large reactors*; new initiatives – *small reactors, advanced techniques, nuclear-powered ships and floating reactors*; national environmental management and coordination international ANVS.

We look forward to good cooperation.

1 Introduction

1.1 Background

Due to climate objectives, the related energy transition, and the energy crisis, more citizens and political parties, internationally as well as locally, have a positive attitude towards nuclear energy. This has led nuclear energy to once again come into focus. The Dutch government is also firmly committed to this direction. Multiple parties, including (national) governments, are already involved or will be involved in these new nuclear initiatives. The ANVS has an independent and neutral role within this field, and with the expertise that the ANVS has, it continually monitors and promotes nuclear safety, radiation protection, and security for current and future generations. ANVS does this, among other things, by means of licensing and supervision. Over 50 years since the commissioning of the Borssele nuclear power plant, various new nuclear initiatives are beginning to surface. While it remains uncertain which initiatives the ANVS will ultimately assess, it is crucial to be prepared for them.

1.2 Cause

The assessment of new nuclear initiatives is complex. This complexity stems from emerging technologies, uncertain timelines and future social and political developments. The ANVS must thoroughly prepare for the new nuclear initiatives. This also requires the development of a sustainable adaptability to deal with these challenges in a dynamic, flexible and future-proof way. To best meet these requirements, the ANVS has chosen to set up a programme called NIN (*New Nuclear Initiatives*), initially for a period of three years. This document outlines the structure and operation of the programme.

The main reason for setting up this programme is the various nuclear initiatives that the ANVS is facing. A coordinated and integrated approach is essential; for assessing these initiatives. There are plans to prepare for the construction of two to four new nuclear power plants in the Netherlands and potentially extending the operating time of the Borssele nuclear power plant (KCB) after 2033, provided that this can be done safely. In 2023, the ANVS issued a licence for the construction of a nuclear reactor for the production of medical isotopes: PALLAS. The medical company SHINE also had plans for the construction of a new nuclear plant in the Netherlands. The exploratory talks have been postponed by SHINE. In addition, there are various initiatives for the development and realisation of small nuclear power plants, so-called Small Modular Reactors (SMRs). There is particular interest in this at provincial and municipal level. Various initiators and developers with new techniques are also looking at the Netherlands with interest.

1.3 Challenges

The government's ambition and all the new nuclear developments pose a number of challenges for the ANVS. The most important ones are:

- *Uncertainty*: it is not known how politics, nuclear energy policies and private initiatives will develop. The uncertainty revolves around whether, when and for which new nuclear installations licence applications will be submitted.
- *Complexity*: the number of initiators, various techniques and the outlines uncertainties make it complex: each process is unique and therefore requires its own approach. There will also be initiators who want to build SMRs or (small) nuclear power plants using a different technique. There is limited experience with this worldwide.
- *Newness*: Going through a licence process for a new nuclear reactor from the start has not happened in the Netherlands in recent decades. The licence application for PALLAS – a research reactor – can be regarded as a precursor. The KCB's *Long Term Operation* (LTO) is also relatively new, because an operating life of a nuclear power plant of more than 60 years has not often occurred internationally. Assessing whether this can be done safely requires significant care.

1.4 Influences

In the Netherlands, various national governments play roles in the energy supply. The Ministry of Climate Policy and Green Growth is responsible for the share of nuclear energy in the energy mix. The Ministry of Infrastructure and Water Management is responsible for the policy on nuclear safety and radiation protection in the Netherlands. The Authority for Nuclear Safety and Radiation Protection (ANVS) operates as an independent administrative body under the Ministry of Infrastructure and Water Management. As an independent and neutral authority, the ANVS ensures that nuclear safety, radiation protection, and nuclear security in the Netherlands meet the highest standards.

It is the responsibility of initiators to build nuclear power plants (whether large or small) in the Netherlands. Moreover, the choice of reactor design and location is determined by the market (along with any conditions for government funding). The ANVS does not dictate the technology choice or the specific location of reactor construction. Instead, we assess whether a particular reactor type can be safely built at a specific site.

Due to climate targets, there is pressure on the government to complete the necessary processes as soon as possible. However, ensuring the highest standards of nuclear safety and radiation protection requires a thorough safety assessment of each reactor type at its designated site. This process takes time, which can conflict with the urgency to build nuclear power plants. In chapter 2, in our vision, we outline our approach to conducting these comprehensive safety assessments as efficiently as possible, without compromising safety.

2 Vision

In order to be ready for the future, the ANVS has developed the following vision.

As ANVS, we ensure early interaction with initiators (also of innovative technologies). In this way, we can provide safety requirements to the initiator in a timely manner. In addition, we also get a good idea of what may be coming our way so that we can anticipate it in time.

The initiator is responsible for ensuring that the nuclear safety of the installation is guaranteed, we will have to monitor this adequately.

Further, if we identify an issue we will transparently communicate this in a timely manner. We are also clear about our expectations and way of working. In addition, we will ensure that we have sufficient capacity and expertise in-house. We are also committed to strengthening cooperation with foreign regulators: as a relatively small regulator, we cannot develop everything ourselves, but we want to make optimal use of the experiences of our fellow international regulators.

All underlying trajectories of the programme are carried out in the line organization under the responsibility of the relevant team leader. The programme monitors progress, provides an overall overview and ensures an integrated approach of all the trajectories.

3 Goals and approach

Five goals have been formulated for the programme. Below, we explain how we plan to ensure that the ANVS is prepared for new nuclear developments for each goal.

1. We want to intensify cooperation with governments and regulators.

- We learn from other regulators (including process-based approaches) and understand how they handle relevant pathways, such as by establishing partnerships to jointly assess design models. An example of this is the collaboration with other regulators to assess the conceptual design of NUWARD. We make effective use of assessments from foreign regulators without losing sight of our own responsibility. We have insight into the input and output of foreign assessments and analyses, as well as the preconditions that have been used.
- We collaborate with foreign regulators on assessments when it is beneficial for the ANVS, with the common goal of improving efficiency.
- We collaborate with foreign regulators on assessments to gain experience or to be able to assess the design more effectively.
- We support other governments with knowledge and advice on nuclear safety.
- We cooperate with other departments and governments to jointly manage new developments based on our own responsibilities.
- We participate in relevant activities such as workshops and conferences.

2. We want to develop and secure our knowledge

- We provide sufficient substantive/technical knowledge of the designs that are relevant to the Dutch market. We also know what the determining safety factors are, how they are safeguarded, and what technology-specific risks are, etc.
- We keep a close eye on what is happening in the market, within the industry, the nuclear sector, and among potential initiators to provide safety requirements at an early stage. We are alert to emerging initiatives and their status.
- We learn from our experiences with previous licence processes, such as the recent licence for the construction of the PALLAS reactor in Petten.
- We stay informed about policy developments in the Netherlands, as well as in other countries and from international bodies (IAEA, WENRA, ENSREG, HERCA).

3. We want to get our capacity (people and resources) in order

- We have sufficient staff available, for example for the assessment of applications and underlying (safety) documentation for new nuclear initiatives.
- We also have sufficient staff available for (legal) support, communication and advise.
- We have robust systems available, among other things, to be able to manage the documentation properly.
- We utilise our Technical Support Organisation (TSO) to assist us with safety assessments.

4. We have our communication in order

- We proactively inform the public about the safety aspects of the nuclear initiatives. We have set up a communication strategy for this.
- We proactively communicate to technology providers and potential market initiatives about the Dutch requirements, how the preliminary consultation/licence process works and what our role as ANVS is in this.
- We inform other stakeholders proactively about relevant safety aspects.
- We follow political and public developments closely, so we can anticipate in a timely manner.
- We also communicate extensively internally, so that everyone is informed and has the same view.

5. We have various assessment frameworks available

- We can handle different techniques and technologies flexibly due to our targeted legal system. Because each application is assessed against radiological criteria, the balance between installation-specific risk and suitable locations is guaranteed.
- We ensure that our guidelines, with detailed technical expectations, are comprehensive, suitable for all relevant technologies, and aligned with international norms, codes, and standards.
- In addition to the national system, we also use international standards, such as those of the IAEA. Furthermore, applicants can choose which codes and standards to use to substantiate their assumptions in the application and safety analyses.

4 Results

All underlying individual trajectories and projects of the programme are carried out within the regular line organisation. The programme monitors progress and maintains an overall overview while simultaneously ensuring coherence and an integrated approach. Furthermore, lessons learned from the individual trajectories are shared and implemented through the programme. By considering the trajectories together, the programme identifies potential bottlenecks (e.g., in capacity, finances, or expertise) early on, so they can be addressed through the regular line organisation. International cooperation is more effectively managed as a result of the coherence within the programme.

To properly monitor the progress and coherence of all underlying trajectories, the programme will produce progress reports. These reports will cover all relevant developments in the ANVS, the relationships between those processes, and the issues we will focus on. This approach allows us to provide adequate and relevant input for the various team annual plans within the internal organization.

5 Organisation of the programme

5.1 Demarcation and framework conditions

The programme focuses on organising the preparation of the ANVS for new nuclear initiatives and the associated organisational challenges up to the formal licence application.

Preparing for oversight of new nuclear licenses is not part of the programme (for now). However, there must be good coordination with oversight (inspection and enforcement) on certain points.

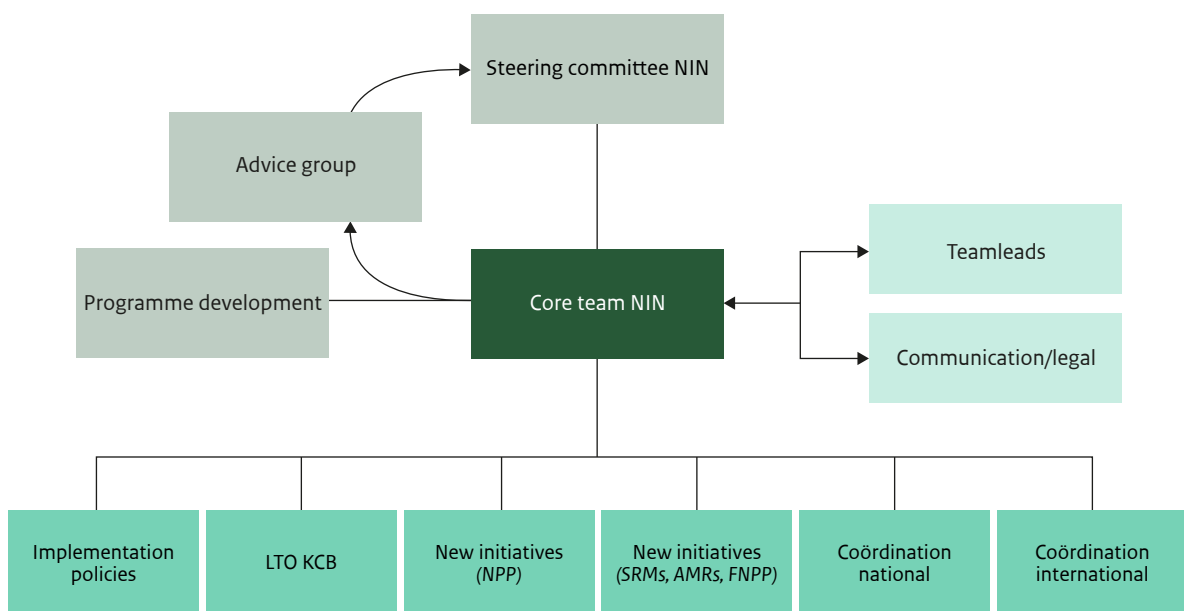
The programme also ensures a good connection to topics such as knowledge development, the involvement of society and the public (participation), and the management of radioactive waste.

The division of roles between the ANVS (independent regulator), the Ministry of Infrastructure and Water Management (responsible for the policy on nuclear safety, radiation protection, and radioactive waste), and the Ministry of Climate Policy and Green Growth (responsible for the share of nuclear energy in the energy mix) must be clear and the role stability must be guaranteed. This is important to maintain our independence in the interests of nuclear safety and radiation protection.

5.2 General

The programme provides a structure for coordinated, integrated and dynamic management. The responsibility for carrying out the underlying activities lies within the line organisation of the ANVS. The overarching coherence between the work, the progress and the prioritisation of that work lies within the programme.

Given the size of the programme and its broad objectives, the programme consists of multiple work streams with individual timelines and actions/projects.



5.3 Steering Committee

The steering committee is responsible for the realisation and safeguarding of the programme’s goals and ensuring the necessary resources to achieve them. The relevant line managers are members of the steering committee, thereby integrating line management directly into the programme’s governance.

5.4 Programme leader

The programme leader coordinates the programme on behalf of the steering committee and ensures that the goals of the programme are achieved within the agreed timelines (frameworks and preconditions).

5.5 Core group

The core group is chaired by the programme leader and all workflow coordinators and support are part of the core group. If necessary, a delegation from legal affairs, security, business operations and/or communication will be involved. The core group prepares decisions for the steering committee and ensures that the right people are involved.

Workflows

Each workflow has a workflow coordinator. The workflow coordinator actively gathers information from the projects and reports progress and bottlenecks to the programme leader. They are accountable to their respective team leader. Multiple projects and initiatives occur within each workflow. To ensure smooth operation, each coordinator develops a plan or roadmap outlining the scope. There are seven workstreams in total, covering the following topics:

1:	Programme development and accountability
2:	Developing implementation policy
3:	Extension of the operating time of Borssele nuclear power plant
4:	New Initiatives – <i>large reactors</i>
5:	New initiatives – <i>small reactors, advanced technologies, nuclear-powered ships and floating reactors</i>
6:	National environmental management
7:	Coordination international ANVS

Team Leader

The team leader is responsible for individual projects from the workstreams (ensuring quality and timely delivery), provide relevant information to the programme through the workflow coordinator and manage staff capacity.

5.6 Evaluation and assurance

By programming and implementing the various trajectories in conjunction, the ANVS can prepare for upcoming challenges. Due to the organisational structure of the programme, the lessons learned in the various programmes are safeguarded and the way of working can be put into practice in other programmes. A report is compiled of the lessons learned that is shared in the core group. This allows the scope of the workflows to be adjusted where necessary (to be approved by the steering committee), thereby ensuring necessary flexibility is built in.

5.7 Technical Advisory Group

Due to the novelty of several developments, questions may arise for which no established framework exists, potentially setting precedents for future projects. Therefore, an advisory group is being established. Should there be a need to bring a more complex issue to the steering group, it will be accompanied by substantiated advice. The advisory group will also assist in prioritizing between different initiatives. The advisory group will consist of a small core and will engage internal and external experts to provide advice based on specific issues. A Terms of Reference (ToR) will be prepared for this purpose.

6 Financing

For the performance of its tasks as an independent authority, the ANVS receives money from the Minister of Infrastructure and Water Management, as stipulated in the Nuclear Energy Act. On the basis of the *Kew Fees Decree* (hereinafter: the Fees Decree), licence holders and supervised nuclear installations pay money to the Ministry of Infrastructure and Water Management for the activities of the ANVS. This fee only starts with a formal licence application. The efforts of the ANVS in the preliminary consultation for a licence application must be pre-financed. If there is no formal licence application, these costs cannot be recovered from the initiator.

The developments (preparations for the construction of two large nuclear power plants, the possible extension of the operating time of the Borssele nuclear power plant and the preparation for the developments around SMRs) are financed by the Ministry of Climate Policy and Green Growth from the Climate Fund. This Ministry allocates resources from the climate fund to the Ministry of Infrastructure and Water Management to fund ANVS activities.