

Convention on Nuclear Safety 10th Review Meeting – 2026



Country Review Report for Switzerland

Drafted by Country Group N ° 5

(China, United States of America, South Africa, Switzerland, Mexico, Estonia, Qatar, Jordan, Niger, Syrian Arab Republic, Madagascar, Sri Lanka, Portugal, Liberia)

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DISCLAIMER: Pursuant to INFCIRC/571/Rev.9, Para. 16-19 and Annex IV, Contracting Parties were invited to comment on the implementation of the CNS reporting guidance. Contracting Parties were also encouraged to submit proposed Good Practices, Challenges, and Suggestions prior to the Review Meeting. The draft Country Review Report documents the preliminary observations identified by the Contracting Parties. The Country Review Report is the result of the CNS Review Process and was agreed by consensus by the Country Group.



1 EXECUTIVE SUMMARY

Switzerland is a Category 2 Contracting Party to the Convention on Nuclear safety. Switzerland has 5 nuclear power reactor units. 4 are in operation and 1 is under decommissioning. The existing operating reactors include 3 PWRs and 1 BWR.

The Federal Council has proposed a legal amendment to lift the ban on new nuclear power plants. Parliamentary deliberations are scheduled for 2025–2026, with a popular vote expected in late 2027 or early 2028.

Switzerland also voluntarily reported on its nuclear research reactors: it has 4 installations at the Paul Scherrer Institute, including 3 research reactors in various stages of decommissioning and 1 Hot Laboratory, where nuclear research still takes place. In addition, Switzerland has two small teaching reactors at the University of Basel and at the Swiss Federal Institute of Technology in Lausanne; decommissioning of the Basel reactor was completed in 2019, while the 100 W reactor in Lausanne remains operational.

1 out of 1 Challenge from the previous Review Meeting has been closed.

The Country Group highlights the following measures to improve safety in Switzerland's national nuclear programme:

- The following relevant legal documents relating to nuclear energy have been revised since the ninth Swiss CNS National Report:
 - Nuclear Energy Ordinance (SR 732.11)
 - Radiological Protection Act (814.50)
 - Nuclear Energy Liability Act (732.44)
 - Nuclear Energy Liability Ordinance (732.441)
- Several new ENSI guidelines have been issued, through a transparent process involving stakeholders and the public. Each new regulatory guideline includes the related international WENRA and IAEA requirements.
- In 2024, a ruling by the Swiss Federal Administrative Court confirmed that radiation protection, including occupational radiation safety, is legally part of nuclear safety, thereby reinforcing ENSI's supervisory authority in this area.
- In 2024, the Swiss Federal Council submitted a proposal to amend the Nuclear Energy Act and repeal the provisions banning the construction of new nuclear power plants. Parliamentary deliberations are scheduled for 2025–2026, with a popular vote expected in late 2027 or early 2028.
- In 2024, Axpo, the operator of the Beznau nuclear power plant, announced that Block 2 of the nuclear power plant will remain on the grid until 2032 and Block 1 until 2033. They will then be shut down and decommissioned.
- Copenhagen Atomics is planning to build a 1 MWth molten salt test reactor at the Paul Scherrer Institute (PSI) site. ENSI expects the applicant to submit an application for a facility with "low hazard potential" according to Art. 22 of the nuclear energy ordinance. Meanwhile ENSI is developing its knowledge base in the field of molten salt reactor technologies and ramping up its international



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activities and cooperation agreements with regard to SMRs and advanced reactor technologies.

The Country Group highlights the following results of international peer review missions of Switzerland:

- Switzerland hosted an IRRS mission in 2021. The IRRS team identified 7 recommendations (2 to ENSI and 5 to Government), 13 suggestions (11 to ENSI and 2 to Government), 2 good practices and 9 areas of good performance. After the IRRS mission, ENSI drafted an action plan to plan and monitor the implementation of the findings. ENSI is currently well under way with implementing the suggestions for improvement from the IRRS mission in conjunction with the authorities concerned. The follow-up mission to obtain an overview of developments is scheduled for autumn 2027.
- Switzerland participated on a voluntary base in the EU Stress Tests, the 2017 European Topical Peer Review (TPR) on ageing management and the second TPR on fire protection in 2023.
- An IPPAS mission was conducted in Switzerland in 2018, with a Follow-up Mission in 2023.
- In 2024, Switzerland hosted a Country Specific Safety Culture Forum (CSSCF), organised by NEA and WANO. The results of the forum will be summarised in a report, which will be published.
- Three WANO peer review missions and two WANO follow-up missions took place during the reporting period.

The Country Group identified the following Challenge for Switzerland:

- Challenge 1: Switzerland to establish an overarching national competence strategy for all stakeholders to ensure long-term sustainability.

In addition, the Country Group identified no Suggestions, four (4) Areas of Good Performance and no Good Practices.

The Country Group concluded that Switzerland:

- Submitted a National Report for the 10th Review Meeting, and therefore complies with Article 5, and on time, following Rule 39 of INFCIRC/573/Rev.8.
- Attended the 10th Review Meeting and therefore complies with Article 24.1 of the CNS.
- Held a National Presentation and answered questions during the 10th Review Meeting and therefore complies with Article 20.3 of the CNS.



2 BASIC INFORMATION ON SWITZERLANDS NUCLEAR PROGRAMME

Switzerland is a Category 2 Contracting Party to the Convention on Nuclear safety. Switzerland has 5 nuclear power reactor units. Four (4) units are in operation (2 units at Beznau, 1 at Gösgen and 1 at Leibstadt) and one (1) unit is under decommissioning (Mühleberg). The existing operating reactors include 3 PWRs and 1 BWR.

Switzerland decided in 2017 to phase out nuclear power, by not allowing the construction of new nuclear power plants and the reprocessing of spent nuclear fuel. The existing reactors were however allowed to continue operation as long as they are safe. The new build of research reactors and test reactors is still allowed. The Federal Council has proposed a legal amendment to lift the ban on new nuclear power plants. Parliamentary deliberations are scheduled for 2025–2026, with a popular vote expected in late 2027 or early 2028.

In 2024, Axpo, the operator of the Beznau nuclear power plant, announced that Block 2 of the nuclear power plant will remain on the grid until 2032 and Block 1 until 2033. They will then be shut down and decommissioned.

The Swiss Federal Nuclear Safety Inspectorate (ENSI) is the independent regulatory body, responsible for nuclear safety and security.

Copenhagen Atomics is planning to build a molten salt test reactor at the Paul Scherrer Institute (PSI) site. The project involves a full-scale molten salt test reactor designed with reduced power of 1 MWth. ENSI expects the applicant to submit an application for a facility with “low hazard potential”. ENSI is therefore building competence and capacity to regulate molten salt reactors and has also started to increase its international collaborations on this topic.

Switzerland also voluntarily reported on its nuclear research reactors: it has 4 installations at the Paul Scherrer Institute, including 3 research reactors in various stages of decommissioning and 1 operational Hot Laboratory dedicated to nuclear research. In addition, Switzerland has two small teaching reactors at the University of Basel and at the Swiss Federal Institute of Technology in Lausanne (EPFL); decommissioning of the Basel reactor was completed in 2019, while the 100 W reactor in Lausanne remains operational.

3 FOLLOW-UP FROM PREVIOUS REVIEW MEETING(S)

3.1 Challenges

Switzerland provided the following updates on Challenges identified during previous Review Meeting:

Challenge 1: A shortage of qualified staff (for operators, sub-contractors and nuclear safety regulators) which, due to the ban on nuclear new build and the increased demand from decommissioning activities, is a serious challenge to maintaining competence in the medium to long-term.

Switzerland addressed this challenge by reporting that at the governmental level there is no national strategy for maintaining nuclear competence; responsibility mainly rests with the industry. However, the government has recognized the issue, and according to



an assessment in 2021 by the Swiss Federal Office of Energy (SFOE), staffing needs are covered for the next 5–10 years, though a longer-term assessment is required.

At the regulatory level, ENSI has implemented a Human Resources Strategy covering targeted recruitment, training, succession planning, and “tandem positions” to ensure knowledge transfer before retirements. The workforce has been expanded by the equivalent of 20 full-time employees since 2022.

At the licensee level, workforce needs and risks of competence loss are closely monitored. They support education and training through the School of Nuclear Technology, academic programs, and traineeships. Following the last IRRS-mission, the project “Situation assessment and good practice in maintaining of competence in the Swiss nuclear energy sector” assessed national nuclear competence. The study concluded that competence is well managed in Switzerland, with a low risk of short- to mid-term competence loss (5 - 10 years), as challenges are recognized at all organizational levels and effective measures have been

put in place. On a longer term (> 10 years), the study suggested to better integrate the supply chain in the activities concerning the management of the nuclear competence and to establish overarching strategies on a national level.

Follow-Up Status: Closed, as the government, regulator, and industry have all taken concrete steps to maintain nuclear competence. However, both governmental authorities and industry stakeholders have identified the need to establish overarching national strategies to ensure long-term sustainability.

3.2 Suggestions

There were no Suggestions identified for Switzerland during the previous Review Meeting.

4 MEASURES TO IMPROVE SAFETY

4.1 Changes to the Regulatory Framework and the National Nuclear Programme

Since the Joint 8th and 9th Review Meeting, the Country Group took note of the following changes to the regulatory framework and the national nuclear programme of Switzerland:

- The following relevant legal documents relating to nuclear energy have been revised since the ninth Swiss CNS National Report:
 - Nuclear Energy Ordinance (SR 732.11)
 - Radiological Protection Act (814.50)
 - Nuclear Energy Liability Act (732.44)
 - Nuclear Energy Liability Ordinance (732.441)
- Several new ENSI guidelines have been issued, through a transparent process



involving stakeholders and the public. Each new regulatory guideline includes the related international WENRA and IAEA requirements.

- In 2024, a ruling by the Swiss Federal Administrative Court confirmed that radiation protection, including occupational radiation safety, is legally part of nuclear safety, thereby reinforcing ENSI's supervisory authority in this area.
- In 2024, the Swiss Federal Council submitted a proposal to amend the Nuclear Energy Act and repeal the provisions banning the construction of new nuclear power plants. Parliamentary deliberations are scheduled for 2025–2026, with a popular vote expected in late 2027 or early 2028.
- In 2024, Axpo, the operator of the Beznau nuclear power plant, announced that Block 2 of the nuclear power plant will remain on the grid until 2032 and Block 1 until 2033. They will then be shut down and decommissioned.
- Copenhagen Atomics is planning to build a 1 MWth molten salt test reactor at the Paul Scherrer Institute (PSI) site. ENSI expects the applicant to submit an application for a facility with “low hazard potential” according to Art. 22 of the nuclear energy ordinance. Meanwhile ENSI is developing its knowledge base in the field of molten salt reactor technologies and ramping up its international activities and cooperation agreements with regard to SMRs and advanced reactor technologies.

4.2 Safety Improvements for Existing Nuclear Power Plants

The Country Group took note of the following implemented and planned safety measures for existing nuclear power plants in Switzerland:

- Control system upgrades: ongoing replacement of analogue control technology with modern digital systems
 - Gösgen NPP - Significant part of the old control technology has already been replaced. Further project stages are being planned.
 - Leibstadt NPP - The control system modernisation of the first emergency cooling water division was installed in 2024, followed by the other two in 2025. Further project stages are being planned.
- Several minor safety improvements for Beznau NPP and Gösgen NPP as a result of an updated hazard analysis for external flooding (river flooding).
- PSR and LTO:
 - Leibstadt NPP - Submitted in December 2022 the documents for its latest PSR, covering the period from 1 January 2016 – 31 December 2021, including the evaluation for long-term operation. ENSI published its review report by the end of 2025.
 - Gösgen NPP - The latest PSR for was submitted in 2018. ENSI published its corresponding review report in December 2023.
 - Beznau NPP - Submitted its latest PSR in 2018 and ENSI completed its review including LTO in 2021.



At the National presentation,

- ENSI presented outcomes of their regulatory oversight of significant events since the last Review Meeting.
 - Also that all operating NPP have provided a safety case (DSA and PSA, including backfitting measures) that demonstrated margins to the updated Natural Hazards requirement that ENSI has accepted.
- The operator of Leibstadt NPP presented some of their many modernization projects implemented to support continued operation of the NPP. After a testing phase, the use of robotics (Inspection Robot, Indoor Drone and Outdoor Drone) have made a positive impact on personnel and plant safety, greater access to areas in the plant normally only available during outages, and can also provide real-time data.
- In preparing for long-term operation of the Leibstadt NPP, the operator has identified that spare parts are of great importance and mentions that Smart manufacturing (3D-printing) can be a part of the solution. The operator is also taking steps to secure the supply chain and avoid issues of obsolescence.
 - The current regulatory framework does not allow the installation of non-nuclear qualified equipment in safety systems.

4.3 Response to International Peer Review Missions

The Country Group took note of the following implemented or planned measures in response to the results of international peer review missions:

- Switzerland hosted an IRRS mission in 2021. The IRRS team identified 7 recommendations (2 to ENSI and 5 to Government), 13 suggestions (11 to ENSI and 2 to Government), 2 good practices and 9 areas of good performance. After the IRRS mission, ENSI drafted an action plan to plan and monitor the implementation of the findings. ENSI is currently well under way with implementing the suggestions for improvement from the IRRS mission in conjunction with the authorities concerned. The follow-up mission to obtain an overview of developments is scheduled for autumn 2027.
- Switzerland participated on a voluntary base in the EU Stress Tests, the 2017 European Topical Peer Review (TPR) on ageing management and the second TPR on fire protection in 2023.
- An IPPAS mission was conducted in Switzerland in 2018, with a Follow-up Mission in 2023.
- In 2024, Switzerland hosted a Country Specific Safety Culture Forum (CSSCF), organised by NEA and WANO. The results of the forum will be summarised in a report, which will be published.
- Three WANO peer review missions and two WANO follow-up missions took place during the reporting period.



5 RESULTS OF THE REVIEW

5.1 Implementation of the Vienna Declaration on Nuclear Safety (VDNS)

On 9 February 2015, the Contracting Parties adopted “Vienna Declaration on Nuclear Safety” (INFCIRC/872), which is a commitment to certain principles to guide them in the implementation of the CNS objective to prevent accidents and mitigate their radiological consequences, should they occur. The Contracting Parties agreed to discuss the principles of the VDNS in their National Reports to the 7th and the subsequent Review Meetings.

The Country Group made the following observations:

- The first principles regarding the design and construction of nuclear power plants are enshrined in the Nuclear Energy Act (NEA), the Nuclear Energy Ordinance (NEO) and ENSI guidelines. The NEA requires a general licence issued by the Federal Council for anyone intending to construct or operate a nuclear installation. Since January 2018, following the Swiss Energy Strategy 2050, the granting of general licences for new nuclear power plants has been prohibited (Article 12a NEA). Nevertheless, the preventive and protective principles for new nuclear power plants remain valid, in particular as a basis for backfitting requirements for existing plants. Articles 4 and 5 of the NEA specify that preventive and protective measures must follow internationally accepted principles and that all necessary measures shall reflect the state of the art in science and technology. The IAEA Safety Standards are used to define this state of the art and are reflected in Swiss national requirements.
- Regarding the second principle, the NEA requires a Periodic Safety Review (PSR) at least every ten years. According to Article 22(2)(g) NEA, the licence holder shall backfit the installation as necessary to reflect operational experience and the current state of backfitting technology, and beyond insofar as further upgrading is appropriate. Since the 2017 revision of the NEO, Article 34a requires an additional long-term operation safety assessment beyond 40 years, covering design limits, planned backfitting and staffing. ENSI-G02 (2019) “Design Principles for Existing NPPs” specifies backfitting requirements in line with IAEA and WENRA standards, and ENSI-A01 (updated 2024) further aligns the national methodology and boundary conditions for the backfitting of nuclear power plants with international practice. The dynamic requirement in the Swiss legal framework ensures that safety improvements in accordance with international good practice are implemented in a timely manner.
- Regarding the third principle, the NEA stipulates that precautionary measures must be taken according to experience and the state of the art in science and technology. Therefore, internationally accepted principles and IAEA Safety Standards are incorporated into the Swiss regulatory framework, and other good practices are addressed through the precautionary principle.
- Switzerland reports that its national requirements and regulatory regime incorporate appropriate technical criteria and standards to ensure that the principles of the Vienna Declaration on Nuclear Safety are achieved
- Switzerland reported a number of safety improvements to its existing NPPs as described in Sections 2.1 and 3.2.



5.2 Challenges

The Country Group identified the following Challenge for Switzerland

- Challenge 1: Switzerland to establish an overarching national competence strategy for all stakeholders to ensure long-term sustainability.

5.3 Suggestions

The Country Group identified no Suggestion(s) for Switzerland.

5.4 Good Practices and Areas of Good Performance

During the peer review of Switzerland's National Report, the Contracting Parties were invited to recommend Good Practices and to highlight Areas of Good Performance.

The Country Group identified no Good Practices.

The following Areas of Good Performance of Switzerland were commended by the Country Group:

- Area of Good Performance 1: Cooperation on nuclear safety, transparency and openness towards stakeholders at the European and international level. In 2022-25 Switzerland participated on a voluntary basis to the EU second topical peer review which focused on fire protection in nuclear installations. Switzerland's voluntary participation by submitting a national assessment as well as peer review experts is a commendable as good performance.
- Area of Good Performance 2: The dismantling of the Mühleberg NPP began without delay and has made substantial progress. The last of the spent nuclear fuel was transported from the site before 2024, ahead of schedule.
- Area of Good Performance 3: ENSI's development of a regulatory framework for low hazard potential facilities.
- Area of Good Performance 4: Switzerland continuously updates natural hazard analyses and corresponding probabilistic and deterministic safety analyses according to the latest state of science and technology.

6 COMPLIANCE WITH THE CNS AND ITS GUIDELINES

6.1 National Reports

Contracting Parties and Officers were invited to provide general comments on the Switzerland's implementation of the obligations of the CNS (e.g. National Report submitted on time, addressed all CNS articles, addressed the VDNS, and addressed all Challenges), transparency issues, and compliance with the CNS guidance documents and Major Common Issues identified at the Joint 8th and 9th Review Meeting.

Regarding the compliance with the requirements of the CNS and its Guidelines, the members of the Country Group made the following observations:

- Switzerland submitted the National Report for the 10th CNS Review Meeting on time.



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- The content and structure of Switzerland's National Report for the 10th Review Meeting complies with the CNS guidance.
- The directions of the Summary Report of the Joint 8th and 9th Review Meeting were taken into consideration in the Report for the 10th Review Meeting, as Switzerland has reported on the Major Common Issues.

6.2 Participation in the Review Process

With regard to Switzerland's participation in the review process, the members of the Country Group made the following observations.

In the 10th Review Cycle, Switzerland:

- Posted 107 questions to other Contracting Parties.
- Answered all 101 questions from other Contracting Parties on time.
- Delivered a National Presentation during the 10th Review Meeting.

The Country Group concluded that Switzerland:

- Submitted its National Report for the 10th CNS Review Meeting pursuant Article 5 of the CNS, and in time, following Rule 39 of INFCIRC/573/Rev.8.
- Attended the 10th Review Meeting and therefore complies with Article 24.1 of the CNS.
- Held a national presentation and answered questions and therefore complies with Article 20.3 of the CNS.



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ANNEX I. GLOSSARY

The Glossary lists the definitions of “Challenge”, “Suggestion”, “Good Practice”, “Area of Good Performance”, and “Major Common Issue” as found in Annex V of INFCIRC/571/Rev. 9.

Challenge

A Challenge is a difficult issue for the Contracting Party and may be a demanding undertaking (beyond the day-to-day activities); or a weakness that needs to be remediated.

Suggestion

A Suggestion is an area for improvement. It is an action needed to improve the implementation of the obligations of the Convention.

Area of Good Performance

An Area of Good Performance is a practice, policy or programme that is worthwhile to commend and has been undertaken and implemented effectively. An Area of Good Performance is a significant accomplishment for the particular Contracting Party although it may have been implemented by other Contracting Parties.

Good Practice

A Good Practice is a new or revised practice, policy or program that makes a significant contribution to nuclear safety. A Good Practice is one that has been tried and proven by at least one Contracting Party but has not been widely implemented by other Contracting Parties; and is applicable to other Contracting Parties with similar programs.

Major Common Issue

A Major Common Issue is an important safety-related issue shared by a significant number of Contracting Parties. Contracting Parties are encouraged to report, as appropriate, on their actions to address the Major Common Issues in their subsequent National Report.