

Czech Republic

Links with country priorities

The priority areas identified in the Country Programme Framework 2016–2021 of the Czech Republic include nuclear safety and nuclear power; nuclear applications in health and science including radiation protection and sustainability of nuclear institutions; and knowledge management. A new Country Programme Framework for the period 2022–2027 is under development and the draft includes the priority areas nuclear safety and nuclear power; nuclear and radiation safety and security; radioactive waste management and environmental monitoring; and sustainability of nuclear institutions and knowledge.

The proposed national programme of the Czech Republic is in line with national priority areas outlined in the draft Country Programme Framework 2022–2027.

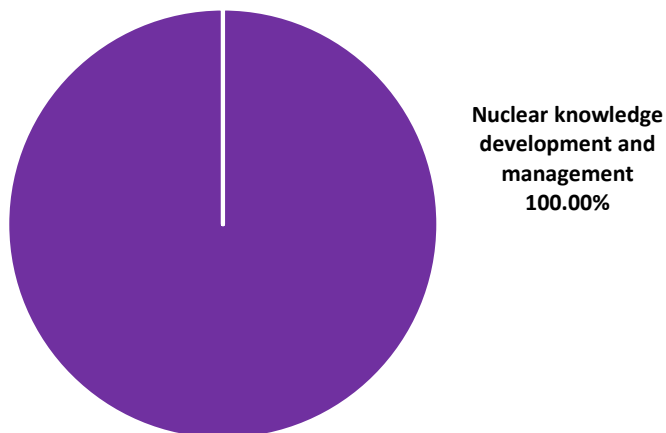
Programme overview

The current national technical cooperation programme for the Czech Republic contains one national project supporting human resource capacity building in relevant institutions in the nuclear field. These institutions include the regulatory body, technical support organizations, relevant research institutions and universities. The project helps to ensure the provision of reliable services as well as operations and supports necessary activities, such as planned new nuclear constructions (including radioactive waste and spent fuel repositories) and emergency preparedness and response to ultimately strengthen the nuclear base.

The 2022–2023 technical cooperation programme for the Czech Republic has one new project, continuing to strengthen human resource capacity building in relevant institutions in the nuclear field in priority areas identified in the Country Programme Framework.

The Czech Republic will also participate in regional projects that are relevant to its national priorities.

Proposed New Core Programme for 2022-2023 Cycle



1. Strengthening Human Resources Capacity in Nuclear Science and Technology (CZR0011)01 New

Overall Objective: To develop and strengthen human resources in the peaceful use of nuclear technology

Project Duration: 2 Years

Budget:

CORE FINANCING

Year	Human Resource Components (Euro)						Procurement Components (Euro)			Total (Euro)
	Experts	Meetings	Fellowships	Scientific Visits	Training Courses	Sub-Total	Equipment	Sub-Contracts	Sub-Total	
2022	5 250	0	75 222	20 160	0	100 632	0	0	0	100 632
2023	5 250	0	75 222	20 160	0	100 632	0	0	0	100 632

Project Description: Capacity building is a major aspect of ensuring the sustainable use of nuclear technologies. The Czech Republic needs to enhance its human resource capacity in order to carry out activities which are of high priority for the country’s development programme. These are identified in the Country Programme Framework (2016–2021), and the new Country Programme Framework (2022–2027). The needs are related to capacity building in the following priority areas: (1) nuclear safety and nuclear power; (2) nuclear applications and science, including radiation protection; (3) radioactive waste management and environmental monitoring; and (4) sustainability of nuclear institutions and knowledge. These have been identified based on a thorough review of relevant sectoral, national and international strategies and policies including the State Energy Policy (SEP) of the Czech Republic 2040, the “Concept of Radioactive Waste and Spent Nuclear Fuel Management in the Czech Republic”, the Sustainable Development Strategy (SDS) of the Czech Republic until 2030 and the State Environmental Policy of the Czech Republic 2030 with a view to 2050. Furthermore, the Czech Republic is facing a generational shift. Experts and employees aged 50+ account for about 40% of the total number of people employed and this is also reflected in the nuclear field. The project therefore aims to address these challenges and needs and to strengthen and upgrade the skills and capabilities of people working in areas involving peaceful uses of nuclear technologies. This will in addition foster knowledge transfer and sustainability and indirectly contribute to the Sustainable Development Goals (SDGs) 3, 4, 6, 9 and 17.

Problem to be addressed: The Czech Republic has identified in its current Country Programme Framework (2016–2021), and the new Country Programme Framework (2022–2027) the following priority areas that require action and enhancement of human resource capacity. They include: (1) nuclear safety and nuclear power; (2) nuclear applications and science including radiation protection; (3) radioactive waste management and environmental monitoring; and (4) sustainability of nuclear institutions and knowledge. These areas have been identified based on thorough reviews of relevant sectoral, national and international strategies and policies and the country’s needs including: (1) the State Energy Policy (SEP) of the Czech Republic 2040; (2) the Concept of Radioactive Waste and Spent Nuclear Fuel Management in the Czech Republic; (3) the Sustainable Development Strategy (SDS) of the Czech Republic until 2030; and (4) the State Environmental Policy of the Czech Republic 2030 with a view to 2050. (I) Within the framework of the State Energy Policy, several future considerations are outlined. (1) Supporting the development of nuclear energy, including a target of nuclear energy to comprise 50% of the amount of electricity generated and maximizing heat supplies from nuclear power plants. (2) Supporting and accelerating the process of negotiating, preparing and implementing new nuclear units at existing nuclear power plant sites with a total output of up to 2500 MW or annual production of approximately 20 TWh by 2030–2035. (3) Creating conditions to extend the lifetime of the Dukovany plant to 50 or 60 years, while taking into account existing

technology, safety and security regulations, the economy and European Union rules. (4) Scheduling the potential construction of a new block at existing nuclear power plant sites in line with the expected decommissioning of the Dukovany nuclear power plant (NPP) (i.e. after 2035). (5) Making a decision concerning the storage of nuclear waste by 2025. (II) “The Concept of Radioactive Waste and Spent Nuclear Fuel Management in the Czech Republic” was approved by the Government Decision No. 487/2002 in 2002 and is in line with the requirements of the Council Directive 2011/70/Euratom. The last update of the concept was approved in August 2019 by Government Resolution No. 597/2019. According to the concept high level waste and spent nuclear fuel generated at the Dukovany and Temelín nuclear power plants will eventually be disposed of in a deep geological repository. Such a repository should start operation in 2065. It is envisaged that, after 2025, the Concept will be reassessed, and the relevant aims and objectives updated. In compliance with a recommendation contained in these directives, discussions are ongoing regarding implementation of national legislative frameworks in the site selection process for a deep geological repository for high level waste and spent nuclear fuel storage. Based on a preliminary timetable, the selection of the final sites is scheduled for 2025; construction of the deep geological repository is scheduled for 2050–2064; the commissioning of the repository is scheduled for 2065. (III-IV) The National State Environmental Policy and the Sustainable Development Strategy outline radiation protection, environmental monitoring and remediation work as a priority of the Czech Republic. Currently a number of activities are ongoing simultaneously in the Czech Republic which urgently require human resource capacity and expertise. On the other hand, a major problem in the country is the generational shift of experts in all areas concerning the peaceful development and use of nuclear technologies. Despite the efforts of the Czech Republic to educate and train nuclear experts the country suffers from both ageing personnel and decreased interest in nuclear science and technologies. Consequently, this could contribute to the deterioration of the quality of services provided in various fields and negatively affect the country’s further development. The project will address through a systematic approach the need (1) to strengthen and upgrade the skills and capabilities of human resources, (2) to develop new human resources and to (3) to transfer nuclear knowledge. Furthermore, the nuclear safety and security infrastructure will be further strengthened through the involvement of relevant stakeholders and the sustainable supply of competent human resources.

Stakeholders: The main project counterpart, coordinator and beneficiary is the State Office for Nuclear Safety (SÚJB). This is the regulatory body and designated organization for cooperation with the IAEA for the nomination and approval of applications for scientific visits (SV), fellowships (FE) and TC sponsored participation. SUJB will provide the technical capacity, human resources and existing infrastructure that are needed for implementing the project and achieving the project outcome. The main task for SÚJB is to identify, in cooperation with other stakeholders, the young experts for participation in FE/SV/TC sponsored participation, facilitate the communication among all stakeholders and the IAEA, successful implementation of the capacity building activities and utilization of knowledge gained at the national level. Other relevant stakeholder and beneficiaries are that have been identified. (1) Scientific communities: (a) The Czech Technical University (CVUT-FJFI) where The Nuclear Engineering Faculty in Prague deals with nuclear technologies research; (b) the Nuclear Research Institute (CVUT-FJFI) Rež as the Technical and Scientific Support Organization (TSO) of SÚJB, with an experimental base of two research reactors (LVR-15 Research Reactor in ÚJV Rež plc and LR-0 Critical Assembly in ÚJV Rež) which are employed to perform research on core physics, storage racks and to simulate neutron fields in the power reactors; (c) The National Radiation Protection Institute (SÚRO) which provides technical support to SÚJB and is focusing on protection against ionizing radiation. This includes the provision of infrastructure and research in areas of security, radiation monitoring network as well as research on exposures to artificial sources of ionizing radiation, medical exposures and exposure to natural radiation. (2) Individual companies such as (a) The Radioactive Waste Repository Authority (SÚRAO). The authority engages in all activities related to the management of radioactive waste, and undertakes the operation of all Czech radioactive waste repositories; (b) Diamo s.p. (the state enterprise) which has a very important role in eliminating any consequences of mine activities and mining water treatment in localities where mines have been terminated. The outlets of the main abandoned mines, which were closed after surveying and mining uranium, polymetallic ores, coal and lignite, are periodically inspected. The mining, liquidation and remediation works include monitoring their effects on the environment; (c) Nuclear power plants Temelín and Dukovany ; and (d) several research institutes. Each of these stakeholders is expected at an institutional level to: (1) assess the available and required resources necessary to implement human resource activities that are also based on the long term human development plan; (2) facilitate where possible the implementation of

training measures; (3) monitor the training; and (4) utilize knowledge gained by the trainees upon their return at the institutional level. The stakeholders will facilitate communication and provide respective infrastructure, and where applicable, experts and premises to facilitate project implementation, such as experts' missions and training courses. Knowledge transfer activities are required which involve all stakeholders. Investment in adequate knowledge development and dissemination is an important prerequisite for the safe use of nuclear energy.

Partnerships: A partnership will be established between SUJB and CVUT-FJFI, UJV, SÚRO, SÚRAO and DIAMO. Contact was already established at an early stage with the respective institutions. This was in order to pre-identify the areas for capacity building based on a long term human development plan and trainees. The respective roles and responsibilities within the project were also pre-agreed with the aim of fostering sustainability to facilitate knowledge transfer upon the return of the trainees.

Role of nuclear technology: The project addresses the development of human resources in those areas where nuclear technology has a proven comparative advantage. The project aims to strengthen national nuclear infrastructures through a capacity building initiative in alignment with IAEA methodology. Capacity building activities will allow the Czech Republic to have in place a consistent plan for sustainable human resource development. It will also create a robust approach to education and training in support of the national nuclear safety capacity building plan. The expected role of the IAEA is to provide assistance in the form of advice, expertise and training. This support will be given through training activities and expert missions. The use of nuclear technologies is not planned in the project. However, the knowledge gained by the parties will promote the implementation and use of new technologies, particularly in the fields of: (1) nuclear safety and nuclear power; (2) nuclear applications in human health and science including radiation protection; (3) sustainability of nuclear institutions; and (4) knowledge management in order to fulfil the requirement of the IAEA standards (General Safety Requirements (GSR) Part 1-GSR Part 7). It will also be possible for the Czech Republic to cooperate with other regional/international institutions. IAEA missions fielded to the Czech Republic since 1993 have greatly contributed to the continuous improvement of the country's national safety infrastructure, which is fully in line with international standards. In May 2017, for example, an "Integrated Regulatory Review Service" (IRRS) mission to review the regulatory framework for nuclear and radiation safety in the Czech Republic was conducted by senior nuclear safety and radiation protection experts. They concluded the Czech regulatory system for nuclear and radiation safety is robust and that SÚJB is an effective and independent regulatory body. In May 2015, CEZ was the first company to undergo a corporate Operational Safety Review Team (OSART) review. This was an addition to the IAEA OSART programme which focused on the centralized functions of the corporate organization affecting all the operational safety aspects of a utility's nuclear power plants.

Logical Framework Matrix:

		Indicators	Means of Verifications	Assumptions
Overall Objective	To develop and strengthen human resources in the peaceful use of nuclear technology			
Outcome(Specific Objective)	Strengthened capacities in applying nuclear technology to meet strategic priority needs.	Baseline: Based on a thorough review of relevant sectoral, national and international strategies and policies and a spectrum of ongoing activities in the Czech Republic needs for human capacity and have been identified in the priority areas (1) nuclear safety and nuclear power; (2) nuclear applications and science	Reports, statistics and close cooperation with stakeholders who enabled their staff to complete FEs/SVs abroad; and direct communication with fellows	Continued support of the Government for R&D as well as stakeholders for new recruitments in the nuclear field and their continuing education Investment in adequate knowledge development and dissemination will be facilitated by government and stakeholders/partners Willingness of people to continue further education by

		including radiation protection; (3) radioactive waste management and environmental monitoring; (4) sustainability of nuclear institutions and knowledge. Number of activities are ongoing simultaneously in the Czech Republic which most importantly require the need for human capacity and expertise. The Czech Republic is facing a generational shift of experts and employees with an age of 50+ that account for about 40% of the total employment rate which is as well reflected in the nuclear field Indicators: 18 of trained experts/personnel 2 expert missions conducted		participating in FE/SV abroad Responsible selection of appropriate experts designated for training (current staff and new recruitments). Personnel will remain in the respective field at least for 5 years after the completion of FE/SV Respective stakeholders will utilize knowledge gained by the trainees upon their return at the institutional level
Output(s)	Strengthened human resources capacity of personnel in the field of nuclear technologies relevant to high priority needs	Baseline: Due to the ongoing activities are in the Czech Republic and due to the generational shift there is a need to strengthen human resource capacity of personnel in the field of nuclear technologies of TSOs, universities and intuitions Indicators: 18 of trained personnel, 10 of FEs implemented, 8 of SVs implemented, 2 of IEX implemented	Reports, statistics and close cooperation with stakeholders who enabled their staff to complete FEs/SVs abroad; and direct communication with fellows	Willingness of people to continue further education by participating in FE/SV abroad Responsible selection of appropriate experts designated for training (current staff and new recruitments). Continued support of the Government for R&D as well as stakeholders for new recruitments in the nuclear field and their continuing education Trainees share their newly gained knowledge with others, apply their knowledge in their institutions and help build/develop networking in the partners institutions

Major inputs (items with a cost of over Euro 150,000) No elements with a cost of Euro 150,000