European Investment Bank

Luxembourg, 15 November 2023

Environmental and Social Data Sheet

Overview

Project Name:	*Nuclear Safety Project Romania*
Project Number:	*2022-0558*
Country:	*Romania*
Project Description:	Design and construction of a tritium removal facility to improve radiation safety at the nuclear power plant.

EIA required: yes

Project included in Carbon Footprint Exercise[1]: no

Environmental and Social Assessment

Environmental Assessment

The project includes the design and construction of a Tritium Removal Facility (TRF) at the site of the Cernavoda Nuclear Power Plant (CNPP). CNPP has two CANDU reactors (Pressurized Heavy Water Reactors) in operation that use heavy water (deuterium oxide, D2O) in the nuclear systems as a moderator and a primary heat transfer (cooling) agent. During operation a radioactive element, tritium is produced and accumulating in the heavy water systems. In case of controlled or uncontrolled heavy water releases tritium potentially can be introduced into an organism, via inhalation and ingestion (via food or water). In such a case it has the potential to be harmful to personnel working at the plant, and to the surrounding environment and communities. The objective of the project is to remove tritium and therefore to improve radiation safety, to reduce radioactive waste and to enhance maintenance efficiency allowing incremental low-carbon electricity production.

Based on technical characteristics the project falls under projects listed in Article 13(a) of Annex II of the EIA Directive 2011/92/EU as amended by 2014/52/EU and transposed into Romanian law. The competent authority (Ministry for the Environment, Waters and Forests) in its screening decision concluded that an EIA report to address the Romanian national legislative and regulatory requirements was required for the project[2]. The competent authority published on its website the documents for environmental authorization including the EIA Report and the public consultations took place. The EIA report was sent to the interested neighbouring countries (Bulgaria, Republic of Moldova and Ukraine), notified as required by the national EIA legislation and Espoo Convention. The decision of the competent authority was issued in January 2023 and was made public on the ministry website.

[1] Only projects that meet the scope of the Carbon Footprint Exercise, as defined in the EIB Carbon Footprint Methodologies, are included, provided estimated emissions exceed the methodology thresholds: 20,000 tonnes CO2e/year absolute (gross) or 20,000 tonnes CO2e/year relative (net) – both increases and savings.

[2] Due to the initial involvement of the European Bank for Reconstruction and Development (EBRD) as a potential financier during project preparation an Environmental and Social Impact Assessment (ESIA) report was prepared in accordance with EBRD Performance Requirements (PRs). The package developed and disclosed for public review on the website of the project promoter also included an Environmental and Social Action Plan (ESAP), Stakeholder Engagement Plan (SEP) and Environmental and Social Management Plan (ESMP).

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The project is a brownfield project to be implemented within the existing nuclear power plant site having a valid environmental permit. The monitoring of potential impacts of the project and the environmental, health and safety performance of the TRF will be integrated into the existing environmental monitoring system of the CNPP.

The impacts associated with the project include construction health and safety, noise, vibration, dust and combustion emissions as results of earthworks and construction activities, and the operation of heavy machinery and equipment on site. However, with mitigation measures implemented, including good construction practice measures, monitoring and remedial actions, this effect is not considered significant. The construction programme is expected to last for approximately 3 years, with peak civil construction activities carried out over a period of few months. Therefore, the significance of expected impacts will be reduced further by their limited duration.

The EIA assessed the potential impact of the project on biodiversity including protected areas of community (Natura 2000 sites) and national interest. The construction activities at the site will not result in the loss of any habitats of increased conservation value given the current negligible biodiversity value of the project site (managed grassland). Direct impacts to flora and fauna will be negligible due to the absence of species of increased conservation value within the site. Protected areas impacts will not occur due to the distance of the Site to the nearest protected area (approximately 2km). Overall, no significant effects have been identified upon ecological receptors neither during construction nor during operational and decommissioning phase of the project.

The predicted radiation doses related to the project during operation are several orders of magnitude below the regulatory dose limits. The TRF ventilation process will result in limited amounts of radioactive tritium being discharged from the facility stack. The current levels of tritium effluent from Units 1 and 2 have not demonstrated any adverse effects upon vegetation as evidenced through ongoing monitoring and reporting. Given the Project will be removing tritium from the current emissions baseline, therefore the impact associated with the project in terms of radiological tritium will be negligible, potentially even slightly beneficial.

In accordance with the EU's Radioactive Waste and Spent Fuel Management Directive 2011/70/Euratom Romania has a national policy for radioactive waste and spent fuel management and implements a national programme for the management of these materials. Decommissioning and waste management of the TRF will be integrated into this programme.

The project is beneficial considering resource efficiency aspects. The facility will separate a ‘contaminant’ (tritium) from a valuable resource (heavy water). Heavy water is a valuable resource, because production of heavy water is an energy and cost intensive process. The production of heavy water that is sufficient for one reactor requires the processing of some 170,000 tonnes of natural water. The heavy water after tritium removal would have improved characteristics for ongoing use. Besides, at the end of the life of the CNPP, it could be used at other nuclear power stations around the world and thereby offset the need to produce new heavy water. Moreover, the removed ‘contaminant’ – the radioactive tritium – is a valuable scarce resource that has significant strategic and financial value. Tritium is a critical material needed in the development process of another promising low-carbon power generation technology, nuclear fusion. Significant quantities of tritium will be needed as fuel for one of the biggest ongoing research and development ventures in Europe, the international nuclear fusion research project ITER and its follow up the fusion demonstrator reactor (DEMO).

Without the Project, the heavy water contaminated with tritium would need to be carefully managed as a radioactive liquid waste. The long-term storage of large volumes (approximately 1000 tonnes) of tritiated heavy water during a multiannual refurbishment project or at the end of the life of the NPP would be resource and cost intensive and would represent certain radiological safety risk to the humans and the environment.

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The climate change mitigation and resilience aspects of the project were assessed in the EIA Report. The calculation presented in the study concluded that the estimated absolute and relative GHG emissions related to the project considering both construction and operation phases are well below the threshold (20 kt CO2e/year) defined for the EIB's Carbon Footprint Exercise (CFE). Therefore, GHG emissions have not been calculated and the project is not included in the EIB CFE. The project will allow to simplify and shorten regular maintenance works and planned refurbishments of the nuclear units. More efficient maintenance and refurbishment resulting in shortened outage periods will enable incremental low carbon electricity generation. The EIA Report concluded that with some mitigation measures implemented, which include certain design measures the climate resilience of the facility is sufficient and no significant effects of climate change on the operation of the Project are anticipated.

The project has been assessed for Paris alignment and is considered to be aligned both against low carbon and resilience goals and policies set out in the Climate Bank Roadmap and Energy Lending Policy. The relevant criterion implemented is the one covering low-carbon energy sources, which meet the emission performance standard of the Bank.

EIB Paris Alignment for Counterparties (PATH) Framework

The counterparty SNN is in scope and was screened in for PATH framework assessment for climate resilience based on its climate change vulnerability. Considering low carbon aspects, it was screened out, because although it operates in a potentially high emitting sector (electricity production), it produces electricity with 100% nuclear power, which is CO2-free. The counterparty is not engaged in incompatible activities. No Environmental, Social and Governance (ESG) issues were defined that could directly contribute to increasing the climate vulnerability of communities and/or ecosystems. The appraisal confirmed the capability of the promoter to address physical climate risks from current and future climate change on their operations. Therefore, the counterparty already meets the requirements of the EIB PATH framework with its existing resilience alignment plan.

Social Assessment

With implementation of the proper mitigation measures defined during the assessment phase the project will not result in any significant adverse social effects. Some minor to moderate beneficial effects are expected related to employment and economy as well as to community health and safety.

Occupational and public radiation doses associated with normal operations and abnormal occurrences at the CNPP are below the operational and regulatory dose limits and are therefore considered to be adequately controlled. Further reductions in dose are expected after the implementation of the project.

Public Consultation and Stakeholder Engagement

Consultation activities were undertaken during EIA procedure carried out by the competent authority for the project[3]. Public debates were held in Bucharest, Constanta and Cernavodă. The EIA documents were published immediately after submission to the competent authority in accordance with Romanian EIA requirements. The CNPP established the Information and Community Consultation Board (CICC) that arranged regular meetings for affected stakeholders, including local communities and vulnerable groups. A Public Consultation Questionnaire has been produced to gather views on the Project, including the EIA.

The feedback gained was mainly of positive viewpoint emphasizing the economic and environmental benefits of the project and appreciating the transparency and community engagement of the project promoter. The concerns raised were the (i) potential negative perceptions of agricultural products from the local area (ii) lack of employment opportunities for local people that are not associated with the NPP and (iii) the perception that technical jobs are

[3] Further meetings and surveys were undertaken during the preparation of the ESIA based on the EBRD standards.

'men's work' leading to a lack of opportunities for women. These issues and concerns have been considered and mitigation measures were defined.

The Environment Ministries of Ukraine, Moldova and Bulgaria have been notified, with regards to the project as required by the national EIA legislation and Espoo Convention. Bulgaria and Ukraine manifested their willingness to participate in the EIA process, provided comments for the preparation of the EIA report and questions on the report itself (site selection, technology, cumulative impact, radioactive emissions, radioactive waste management, safety and accident procedures, potential emergency and risk situations). Both countries provided acceptance letters to the Ministry of Environment.

Other Environmental and Social Aspects

Protection of environment, radiation protection, occupational and public health and safety are given the highest considerations by SNN on the CNPP site. All these topics are governed by specific procedures and supported by dedicated organizational structure and training programmes. Detailed monitoring and performance indicators are used, and international best practices are implemented to perform beyond the minimum regulatory requirements. International comparison of performance indicators confirms the good performance of the CNPP units.

CNPP has obtained Environmental Management System certification ISO 14001, Occupational Health and Safety Management Systems ISO 45001 and EMAS (Eco-Management and Audit Scheme) for Environmental Management System.

Conclusions and Recommendations

The project will improve the safety, efficiency, and environmental sustainability of an operating low carbon power generation asset. The project is expected to provide a reduction of environmental, public and occupational health risks during operation and the following eventual decommissioning and remediation of the CNPP site by reducing radioactive waste, releases to the environment and radiation exposure of professional personnel. As a result of the project more efficient maintenance and refurbishment can contribute to incremental low carbon electricity generation.

Taking into consideration the potential environmental, social and climate change related impacts of the project, the mitigation plans as well as the capacity of the promoter to implement the project and the mitigation measures the project is not expected to have significant residual environmental or social impacts, therefore it is acceptable for EIB financing in E&S terms.