NUCLEARELECTRICA

No. 15106/16.12.2024

Endorsed by,
Chair of the Board of Directors
Teodor Chirica

NOTE

on the approval by the Ordinary General Meeting of Shareholders (OGMS) of S.N. Nuclearelectrica S.A. ("SNN"), respectively by the Extraordinary General Meeting of Shareholders (EGMS) of SNN, of the updated Investment Strategy and Decision, for continuation of the investment in Cernavoda NPP Unit 1 Refurbishment Project, based on the updated Feasibility Study, and the empowerment of the SNN Board of Directors, with the possibility of sub-delegation to the executive management of SNN, to take all the measures required to implement the updated Investment Strategy and Decision for continuation of the investment in Cernavoda NPP Unit 1 Refurbishment Project, based on the updated Feasibility Study (FS version v2 of 2024), in compliance with the competences set out in the SNN's Articles of Incorporation and the applicable legal requirements

1. Approval Competences:

- The provisions of the SNN's Articles of Incorporation, the updated version (14 November 2024), the Article 13(2)(h) of which states that one of the main powers of SNN OGMS is approve the Company's development strategies and policies;

- The provisions of the SNN's Articles of Incorporation, the updated version (14 November 2024), the Article 13(4)(a) of which states that, in addition to the competences and duties listed in Article of Incorporation 3 or set out under the law, the Extraordinary General Meeting of SNN Shareholders also decides on "a) conclusion by the Company of any contract, taking up of any obligation or commitment that could involve expenses, or taking up any other important obligation by the Company, according to the limits of competences provided in Appendix no. 1 to these Articles of Incorporation", read in connection with the Provisions of Appendix no. 1, paragraph 2 of the Table, reading that the decisions on investments equal to or higher than EUR 50 million shall be cleared by the executive management of SNN and by the SNN BoD, and shall be approved by the SNN GMS;

- The total amount of the investment in the Cernavoda NPP Unit 1 Refurbishment Project is **EUR 2,998,141,442** net of VAT (overnight), plus the financing costs (EUR 374,000,000), the implementation reserve for price adjustment respectively inflation (EUR 182,084,294), resulting into an updated value of the General Estimate, in the recommended scenario, of EUR 3,554,225,737; in addition to this amount, expenses of a nominal amount of EUR 239,888,756 will be also booked until these are to be distributed pro-rata to the Unit 2 Refurbishment Project, thus resulting into an updated amount of the investment of **EUR 3,794,114,493** at the time of its approval;

- The Resolution of the Extraordinary General Meeting of SNN Shareholders (EGMS) no. 27/23.12.2013 was adopted to approve the Cernavoda NPP Unit 1 Refurbishment Strategy and Plan aimed at extending the Unit's lifetime and the involvement in the final scoping exercise for the Project while the Resolution of the Extraordinary General Meeting of SNN Shareholders (OGMS) no. 12/28.10.2021 approved the Investment Strategy of Societatea Nationala Nuclearelectrica S.A. for the period 1 July 2020 – 1 July 2025 was approved which listed the Cernavoda NPP Unit 1 Refurbishment Project as the single priority strategic project;

- Subsequently, under the Shareholders Resolution (SNN EGMS) no. 4/23.02.2022, the investment decision concerning the Refurbishment Project for Cernavoda NPP Unit 1 was approved based on the Feasibility Study (initial version);

Consequently, according to the principle of symmetry of legal acts, the power to approve the updated Investment Strategy and Decision for continuation of the investment in the Cernavoda NPP Unit 1 Refurbishment Project, based on the updated Feasibility Study, rests again with Company's shareholders, after endorsment by the SNN Board of Directors of the updated Investment Strategy and Decision because both the initial Strategy and the initial Investment Decision had been approved also by the shareholders in OGMSs, respectively, EGMSs.

2. Overview of the Project's Background

Nuclear power plants, like any installation, have a limited lifetime given mainly by the lifetime of the reactor vessel, *i.e.* for CANDU plants, their lifetime is given by the fuel channel assemblies, Calandria tubes and feeders. By design, Cernavoda NPP's Units have a 30-year lifetime.

In early 2000s, as the first CANDU plants were approaching the end of their first 30-year operating cycle, the CANDU design license-holder developed a technology to refurbish them so that they could further operate for another 30-year lifecycle. The key element of this technology is replacement of the CANDU reactor components (fuel channel assemblies, calandria tubes, feeders), also known as retubing. The previous operating experience shows that retubing of CANDU reactors is technically and economically feasible, and allows extension of their service lifetime by one more lifecycle, under appropriate safety and economic efficiency conditions.

The key benefit of refurbishing a nuclear, after the end of its first lifecycle, is that the refurbished nuclear unit can operate at design parameters for one more operating cycle, for an investment amount that is lower that what it would have costed to build a new similar facility. Also, another advantage is that the estimated time needed to refurbish a nuclear unit is significantly shorter than the time needed to build a new unit.

Bearing this in mind, the Resolution no. 27/23.12.2013 of the Extraordinary General Meeting of SNN Shareholders approved the Cernavoda NPP Unit 1 Refurbishment Strategy and Plan with a view to extending its lifetime and to involving in the final scoping of the Project.

At the same time, under the Resolution of the Ordinary General Meeting of SNN Shareholders no. 12/28.10.2021, the Investment Strategy of Societatea Nationala Nuclearelectrica S.A. for the period 1 July 2020 – 1 July 2025 was approved; under this, the Cernavoda NPP Unit 1 Refurbishment Project is listed as a priority and strategic project.

Subsequently, under the Resolution no. 4/23.02.2022, the Investment Decision concerning the Refurbishment Project for Cernavoda NPP Unit 1 was approved based on the Feasibility Study.

The purpose of refurbishing Unit 1 of Cernavoda NPP is to ensure the unit's safe and economically efficient operation for another lifecycle. To achieve this objective, all U1 refurbishment preparation and implementation activities rely on the international experience gained so far from refurbishment of the other CANDU units.

Implementation of Cernavoda NPP Unit 1 Refurbishment Project was structured in 3 Distinct Phases:

Phase 1 (2017 – 2022) – commenced after having passed the Resolution of the Extraordinary General Meeting of SNN Shareholders no. 9/28.09.2017 approving the kick-off of **Phase 1** of the Strategy for the Cernavoda NPP Unit 1 Refurbishment Project, was mainly aimed at identifying the activities to be included in the scope of Unit 1 Refurbishment and at preparing the Feasibility Study. The Investment Decision substantiated by the Feasibility Study was approved with the EGMS Resolution no. 4/23.02.2022.

Phase 2 (2022 – 2026) commenced in **March 2022** and includes the activities needed to prepare implementation of the project: planning of activities; conclusion of the Engineering and Design contracts in order to determine the need for works and equipment, contracts for procurement of long-lead equipment/materials; estimation of the project's costs and preparation of the construction plan; risk assessment and devising strategies to mitigate their impact; obtaining the necessary approvals according to the domestic and EU regulations; construction of the infrastructure (civil and nuclear) needed for project's implementation; and securing the financial resources.

Phase 3 (2027 – 2029) is envisaged to commence at the shutdown of Unit 1 in January 2027, and consists of the effective implementation of the Refurbishment Project's works, followed by commissioning of the unit, due to occur in September 2029.

The activities related to the phase 3 are divided into:

- ✓ replacement of reactor components, referred to as retubing activities;
- ✓ refurbishment of the Nuclear Steam Plant (NSP)/Balance of Plant (BOP) of U1, consisting mainly of improvement activities stemming from implementation of the recommendations of the assessment of the status of systems and components and the study on the design changes recommended to be performed, both conducted in Phase 1.

Cernavoda NPP Unit 1 was put into commercial service on 2 December 1996, and is now closing its first operating cycle, as it reached the 210,000 Effective Full Power Hours (EFPH).

In 2019, SNN awarded the contract for "Analyses and Assessments of the Reactor Assembly to demonstrate that Unit 1 of Cernavoda NPP can operate up to 245,000 Effective Full Power Hours (EFPH)" to SNC Lavalin.

Under the PLEX (Plant Life Extension- PLEX) contract, CANDU Energy Inc. (formerly AECL Canada, the initial designer of Unit 1 and the holder of the Unit's NSP design) reassessed all input parameters assimilated to be factored in calculation of the maximum authorized operating lifetime.

Life extension from 210.000 EFPH to 245.000 EFPH will be deployed in 2 stages. In the first stage, CNCAN approved a design change titled "Extension of the Postulated Lifetime of Unit 1 from 210,760 EFPH to 227,760 EFPH", which extends the lifetime of U1 to 227,760 EFPH, due to occur in August 2025.

A new updating of the Deterministic Nuclear Safety Analyses (DSA), for the 245,000 EFPH lifetime, will be performed before August 2025 (when 227,760 EFPH are expected to be reached), by which time a revision of the abovementioned design change for the second stage of the U1 lifetime extension from 227,760 EFPH to 245,000 EFPH, estimated to be reached in October 2027, will be have been performed and approved, insofar as the average capacity factor of 1 is maintained.

After the end of the first lifecycle of Unit 1, this will be shut down for refurbishment, which has 2 major components:

- ✓ Replacement of the reactor components the lifetime of which expires after the first lifecycle (fuel channels, calandria tubes, feeders), called retubing. This activity gives the project's critical path.
- ✓ Implementation of the recommendations stemming from assessment of Unit 1's Systems, Structures, Components and Equipment (SSCE), with the main aim of replacing/rehabilitating the SSCE the lifetime of which expires after the end of the first lifecycle of Unit 1 and of making the design changes scoped for Unit 1 refurbishment, and thus to improving the nuclear safety and reliability of Unit 1 in its second lifecycle.

3. General aspects

The 2022 version 1 of the Feasibility Study of U1 Refurbishment Project analyzed into 3 technical and economic scenarios. The scope of each scenario resulted from how the recommendations of the Condition Assessment for the Structures, Systems, Components and Equipment (SSCE) (Condition Assessment) and the proposed design changes (studies conducted in Phase 1) would be implemented, namely:

1. Scenario 1 Mandatory;
2. Scenario 2 Enhanced Safety;
3. Scenario 3 Good to Have.

The recommendation made in the Study was to implement the project in Scenario 2, as the optimal variant for implementation of Cernavoda NPP Unit 1 Refurbishment Project, because it ensures that the nuclear safety requirements are met with increased margins and an optimal balance between the operational/financial performance of the plant and the risks of refurbishment/post-refurbishment operation, in the second lifecycle. Also, implementation of the "Enhanced Safety" Scenario responds to the principle that nuclear safety prevails over any other principles.

The investment Decision adopted by shareholders under the EGMS Resolution no. 4/23.02.2022 was based on the scope recommended by the consultant in scenario 2 of the Feasibility Study. The total nominal total cost (nominal CAPEX), without the financing costs of Scenario 2, was EUR 1.93 billion, equivalent to a total "overnight" cost - uninflated and without financing - of EUR 1.85 billion.

At the time when the Feasibility Study, version 1, was prepared, the cash-flow timing considered the E&Y estimates (and relied in part also on budget estimates received by SNN and revisited by the technical experts E&Y) and made in real terms for years 2019-2021, based on information obtained from similar refurbishment projects carried out in years 2005-2020, and then adjusted for inflation.

The cost estimate was done with Class 4 (according to AACE International classification), meaning a possible increase of up to +50%, as it was based on conceptual design solutions and information available from other refurbishments; therefore, the accuracy was limited at that time.

Thus, the costs of refurbishing other Candu plants were taken into account: Bruce Power Units 1 & 2 (Canada): 2005 - 2012, Point Lepreau (Canada): 2008 - 2012, Embalse (Argentina): 2016 - 2019, Darlington Unit 2 (Canada): 2016-2020, to which inflation has been applied for the period starting with the year following the completion date of the refurbishment project and until 2020 (included), as well as the prices then charged worldwide for labour, engineering and design services, equipment, and infrastructure.

As regards the implementation of the ongoing Phase 2 activities, the contractual strategy has undergone several updates compared to the initial concept, taking into account both the international economic context (including supply chain trends and recent experiences in similar projects) and the increased

requirements in terms of the procurement procedure applicable to SNN.

Over the past year, the contracting strategy has not sustained any material changes, but it has matured in terms of the progress attained in meeting the Project's contracting needs. Thus, up to the time of this report, the contracting status for preparation of the Project, including the strategy for future contracting required for the Project, are summarized below.

Contracts Signed	Supplier
PPC1- Pre-Project: Engineering services for the preparation of the documentation related to the acquisition of the reactor components with a long manufacture term, which shall be replaced upon the Refurbishment of Cernavoda NPP Unit 1 and for the assessment of the condition of the set of specialized tools to be used for the replacement of the reactor components and for the preparation of the documentation for the acquisition of the benchmarks that require replacement/modification.	Candu Energy Inc.
PPC2-Pre-Project: Engineering services for : (i) technical specifications and the design documentation for the refurbishment activities requiring the procurement of long lead components/equipment and for complex activities requiring long design time; and (ii) the technical documentation required for starting the process for obtaining the construction permitry of infrastructure required for Unit 1 reactor retubing execution.	Candu Energy Inc.
PPC3 - Supply of reactor components to be replaced and of retubing tools required for the refurbishment of the Cernavoda NPP Unit 1 reactor.	Candu Energy Inc. (CEI) and Canadian Commercial Corporation (CCC)
Framework-Agreement (PMO): " Services for project management, technical assistance, consultancy and staff training necessary for preparation and implementation of Cernavoda NPP Unit 1 Refurbishment Project.	Canadian Nuclear Partners S.A.
EPC (Engineering Procurement Construction) Contract, covering for completion of the technical designs and execution details, procurement of equipment and materials, performance of the construction and assembly works and of the infrastructure works required for U1 refurbishment.	Atkins Realis KHNP Ansaldo
Engineering Procurement Contract for the Turbine Generator (EPC-T) system, covering for refurbishment works to Unit 1's turbine generator.	Arabelle Solutions

4. The necessity and opportunity for Updating of the Feasibility Study

4.1 Economic perspective

The experience so date, as documented in the procurement procedures carried out under the Project, has shown a steep rise in the nuclear industry prices.

Thus, the total amount of the investment in the Cernavoda NPP Unit 1 Refurbishment Project is **EUR 2,998,141,442** net of VAT (overnight), plus the financing costs (EUR 374,000,000), the implementation

reserve for price adjustment, and the inflation (EUR 182,084,294), resulting into an updated value of the General Estimate, in Scenario 2.2, *i.e.* the recommended scenario, of EUR 3.554.225,737. We point out that, in addition to this amount, expenses of a nominal amount of EUR 239,888,756 will be also booked until these are to be distributed pro-rata to the Unit 2 Refurbishment Project, thus resulting into an updated amount of the investment of **EUR 3,794,114,493** at the time of its approval.

- **The key underlying consideration for increasing the investment amount are determined by:**

PPC3 Contract: the contract price showed that the market in reactor retubing components and skilled labour was disrupted by both the COVID-19 pandemic and the war in Ukraine, and by the high demand for reactor components and experienced labour, since CANDU nuclear unit refurbishment projects are simultaneously carried out at Darlington, Bruce Power, Qinshan, Wolsung and Pickering, leading to significant increases in the manufacturing prices of the reactor components.

Also, by way of comparison with the activities and cost items considered when preparing the Feasibility Study (FS) v1., the contract's subject-matter also contains requirements related to:

- ✓ transport services, transport assistance and transport insurance;
- ✓ 3D scanning services and preparation of technical documentation in order to obtain model approval for the K-Box unit;
- ✓ certain new retubing tools;
- ✓ engineering/technical assistance/technical support services carried out at the request of SNN, amounting to 3,000 hours.

Regarding the **PMO contract**, we mention the following:

- ✓ in the Feasibility Study, the estimated amount was calculated as being a percentage of 9% of the nominal Capex of EUR 1.8 billion;
- ✓ the percentage of 9% resulted by reference to the historical costs related to the refurbishment projects of CANDU Point Lepreau and Darlington Unit 2;
- ✓ by comparison with the costs considered upon preparation of the Feasibility Study (SF), the object of PMO contract includes additional requirements;
- ✓ the increase in costs is caused not only by inflation, but also by the shortage of skilled labour, caused by the high demand for specialists to work in the simultaneous CANDU unit refurbishment projects at Darlington, Bruce Power, Qinshan, Wolsung and Pickering.

- **Other general consideration relate to:**

The post-pandemic rise in the global interest rates has increased the financing costs for large investment projects such as those concerning nuclear power plants. The higher financing costs for contractors have been key to the general increase in the investment costs.

The fluctuations seen on the global energy market, exacerbated by geopolitical events such as the Russia-Ukraine war, have influenced the prices of fuels and construction materials, leading to unpredictability in the availability and cost of essential resources for nuclear constructions, and thus to higher investment costs.

The growing global interest in nuclear energy has placed additional pressure on costs and delivery times for the specialized equipment needed for these projects.

After having researched the domestic and global market, SNN entered into informal discussions with potential partners, including the original designers of Unit 1. Taking into consideration the complexity of the Refurbishment Project, which covers for a wide range of engineering activities, equipment/material procurement, civil and nuclear construction, assembly of process systems and installations, equipment, etc., these discussions led in October 2023 to the formation of a multinational consortium able to implement this project. The Consortium includes the original designers, Candu Energy and Ansaldo Nucleare, together with KHNP, a South Korean company with extensive experience in nuclear projects.

Thus, the value of the contracts signed and in progress, plus the estimated costs of EPC contracts,

significantly exceeded the budget estimated for Scenario 2 of the 2022 version 1 of the Feasibility Study.

4.2. Technical Outlook

In light of the above and of the results of the review of the design documents prepared under the PPC2 Contract, which provided technical details about the selected solutions, the scope of the Project emerged as in need of revision.

The SNN team reviewing the scope of the Project reassessed the key activities in terms of content, related costs and implementation risks that can be assumed, relying on in-house technical expertise and external benchmarking with other organizations that are currently engaged in the implementation of CANDU nuclear unit refurbishment projects.

The reassessment results led to descoping and deferring. This adjustment was intended to mitigate the risks attached to an excessive extension of, or increase in, the complexity of the Project, while ensuring that the objectives were met.

The reassessment's purpose is to adjust the scope of the Project, while ensuring that the critical objectives will be achieved and minimizing the potential risks of failure stemming from the complexity of the Project.

An important aspect in the choice of activities to be descoped was the desired to maintain robustness in terms of nuclear safety and regulatory compliance. The activities have been selected so that the nuclear safety, reliability and long-term performance of the plant are maintained.

This process is briefly presented below:

Scenario 1: (former 2 in FS version 1 2022) includes 217 activities;
Scenario 2: includes 176 activities, the difference between the two scenarios being of 41 activities, split as follows:

- ✓ 7 activities to be performed by NPP Operations Directorate;
- ✓ 27 activities to be performed during the lifetime of U1, after the refurbishment, depending on the analyses of the technical department, which will prioritize them over time;
- ✓ 7 activities are not feasible and, therefore, will not be implemented;
- ✓ 24 activities will be implemented a reduced scope.

5. Updated Feasibility Study

Considering the results of the overall contracting process and of the Project scope review process, it followed that the Feasibility Study needed to be updated in terms of the technical and economic scenarios and, implicitly, the technical and economic indicators of the investment. Thus, an open tender was performed to award the services contract to a specialized consultant. The procurement procedure concluded with the signing of the services contract no. RUEC 1219/02.08.2024 with the consultant Ernst & Young SRL for "Feasibility Study Updating Services for Cernavoda NPP Unit 1 Refurbishment Project".

5.1 Financial Considerations

In order to determine the financial performance of U1 refurbishment project, SNN's future operational performance, debt structure and CAPEX payment timing have been modelled.

Financing Structure

Under Scenario 2.2, considered to be technically and financially optimal, the main assumptions in terms of the project's financing sources the following:

1. The first source of funding will be the Company's excess cash, as available in the first phase of each refurbishment process. A minimum cash limit has been maintained both during and after the refurbishment period in order to allow the Company to operate with a reasonable financial safety margin.

2. Secondary financing relies on financing facilities contracted or estimated to be needed to cover for the refurbishment financial needs, with the assumptions and terms listed below:
    - Syndicated Loan (MLA) – intended to finance the refurbishment preliminary works
    - Loans from Export Credit Agencies (ECAs) – commercial loans that help improve margin thanks to inclusion of a Government guarantee.
    - A grant from the Modernisation Fund.

Income Projections

The income included in the Financial Model enclosed to the Feasibility Study is calculated starting from the historical production curves of the two units. The average sales prices on the open market are retrieved from the Baringa Q2 2024 report. The law provides for calculation of a price capping mechanism based on the difference between the average sale price of electricity and RON 450/MWh (EUR 90/MWh) until March 2024 and RON 400/MWh (EUR 80/MWh) until March 2025.

In consideration of the assumptions underlying the financing structure and other envisaged economic considerations, as presented, since the project has a negative NPV, implementation of a CfD mechanism has been modelled to ensure the economic feasibility of the project.

Economic and Financial Indicators.

In Scenario 2.2, considered to be technically and financially optimal, the project observes the following financial indicators, before application of the State aid measures:

Project IRR: 5.3%

SNN Equity IRR: 6.7%

NPV of Cash Flows at a 8% Weighted Average Cost of Capital: - RON 3.7 billion

NPV of Cash Flows at a 9.2% Weighted Average Cost of Capital: - RON 4.6 billion

From the simulations conducted, after implementation of State measures such as a Grant from the Upgrading Fund and a CfD Contract with a duration of 30 years after post-refurbishment commissioning of Unit 1, the project observes the following financial indicators:

Project IRR: 9.3%

SNN Equity IRR: 9.3%

NPV of Cash Flows at a 8% Weighted Average Cost of Capital: RON 1,913 million

NPV of Cash Flows at a 9.2% Weighted Average Cost of Capital: RON 90 million

The financial indicators have been calculated for each of the two CAPEX scenarios:

Scenario 1 – S1 covers for the full scope of the refurbishment project, as approved by Resolution no. 4/23.02.2022 of SNN EGMS, including reactor retubing, the necessary project infrastructure, arrangements for radioactive waste handling and storage, and activities resulting from the review of the design changes and the recommendations made further to assessment of the technical status of the plant's SSCEs, submitted by SNN, as well as workforce and contract management, in a nutshell, all Scenario 2 activities under the 2022 version 1 of the Feasibility Study. The goal of Scenario 1 (the former Scenario approved in 2022) ensures that the unit enjoys all the necessary upgrades and changes to meet the licensing requirements and prepare it for its second lifecycle. In Sub-Scenario 1.1, which does not take into account either the proportional reallocation of the common costs of Units 1&2 refurbishment projects between reactors, or the staff cost synergies related to Units 3&4, the total CAPEX of U1 Refurbishment is estimated at an overnight value (in real terms and without the

financing costs) of EUR 3.74 billion; in nominal terms and including the financing costs, it is EUR 4.39 billion. Also, in Sub-Scenario 1.2, which does take into account the proportional reallocation to U2 of the related share of the common costs of the Units 1&2 refurbishment projects and the marginal synergy with Units 3&4, the total CAPEX of U1 Refurbishment, as an overnight value (in real terms and without the financing cost) is estimated at EUR 3.42 billion; in nominal terms and including the financing cost, this is EUR 4.06 billion.

Scenario 2 – S2 covers for all the key activities described in Scenario 1, with some adjustments to the project's scope. Reassessment of the design related to Scenario 1, in terms of both content and related costs, in response to the challenges posed by the global issues arising after approval of the refurbishment project and addressed above, led to development of Scenario 2.
In Sub-Scenario 2.1, built without reallocation of the common costs described above in Sub-Scenario 1.1, the total CAPEX for U1 Refurbishment is estimated at an overnight value (in real terms and without the financing cost) of EUR 3.22 billion; in nominal terms and including the financing cost, this is EUR 3.79 billion. Also, in Sub-Scenario 2.2 (equivalent to the logic of Scenario 1.2 above), the total CAPEX for U1 Refurbishment is estimated at an overnight value (in real terms and without the financing cost) of EUR 2.99 billion; in nominal terms and including the financing cost, this is EUR 3.55 billion.

In terms of the future operation of the two Units, apart from the Project CAPEX, no differences between the 2 Scenarios are considered in terms of the future operating performance of Unit 1 (*e.g.* net energy production, OPEX or recurring CAPEX), as the estimated financial performance of its Units in the new lifecycle (as derived from their actual historical performance) should be considered as a single target in the 2 Scenarios.

A summary of indicators under review is presented in the table below, in all CAPEX scenarios and financial sub-scenarios. Save for the Project's IRR (which is relevant only for Unit 1), the remaining indicators are calculated at SNN, for the period relevant to U1 Project (including any possible overlaps with U2 refurbishment and indebtedness). The base date for calculation of these indicators is the base date of the general analysis in the financial model - 31 December 2023.

The first table lists these indicators before application of the State aid measures, whereas the other two show them after application of the State aid measures. *Key financial indicators for each of the scenarios,* ***before implementation of the State aid measures:***

#	Key Performance Indicators	Scenario 1.1	Scenario 1.2	Scenario 2.1	Scenario 2.2
1	SNN Equity IRR	4.0%	5.8%	5.3%	6.7%
2	Project IRR	3.2%	4.6%	3.9%	5.3%
3	Minimum DSCR, including cash balance	0.4x	0.9x	0.6x	1.6x
4	Maximum Leverage (Net debt / EBITDA)	17.9x	11.8x	13.4x	8.7x
5	Adjusted Maximum Leverage (Net Debt/EBITDA)	7.8x	5.9x	5.7x	4.3x
6	Minimum cash reserve required	400	400	400	400

Source: EY analysis; SNN input data; the IRR figures in this study relate to RON. The DSCR minimum figure excludes the refinancing year of the MLA facility through ECA. The indicators related to financing are calculated over the period until repayment of the loans taken up for U1 refurbishment.

Key financial indicators for Scenarios 2.1 and 2.2, ***with application of the State aid measures to achieve a positive NPV at a 8% WACC:***

#	Key Performance Indicators	Scenario 2.1		Scenario 2.2	
for a 8% Project IRR		**with CfD**	**with CfD and Modernisation Fund**	**with CfD**	**with CfD and Modernisation Fund**
1	CfD start price	117	106	107	**97**
2	SNN Equity IRR	8.9%	8.3%	8.8%	**8.3%**
3	Minimum DSCR, including cash balance	2.2x	2.1x	2.1x	**2.1x**
4	Maximum Leverage (Net debt / EBITDA)	7.6x	5.8x	7.6x	**5.2x**
5	Adjusted Maximum Leverage (Net Debt/EBITDA)	3.1x	2.9x	3.0x	**2.7x**
6	Minimum cash reserve required (million RON)	400	400	400	**400**

Key financial indicators for Scenarios 2.1 and 2.2, ***with application of the State aid measures to achieve a positive NPV at a 9.2% WACC:***

#	Key Performance Indicators	Scenario 2.1		Scenario 2.2	
for a 9.2% Project IRR		**with CfD**	**with CfD and Modernisation Fund**	**with CfD**	**with CfD and Modernisation Fund**
1	CfD start price	129	117	118	**107**
2	SNN Equity IRR	10.0%	9.4%	9.8%	**9.3%**
3	Minimum DSCR, including cash balance	2.2x	2.5x	2.2x	**2.4x**
4	Maximum Leverage (Net debt / EBITDA)	7.6x	4.9x	7.6x	**4.9x**
5	Adjusted Maximum Leverage (Net Debt/EBITDA)	2.5x	2.3x	2.5x	**2.3x**
6	Minimum cash reserve required (million RON)	400	400	400	**400**

Source: EY analysis; SNN input data; the IRR figures in this study relate to RON. The DSCR minimum figure excludes the refinancing year of the MLA facility through ECA. The indicators related to financing are calculated over the period until repayment of the loans taken up for U1 refurbishment.

5.2 Technical Choices for Implementation of Cernavoda NPP Unit 1 Refurbishment Project

The updated Feasibility Study analyzed 2 technical and economic scenarios for implementation of the Project:

Scenario 1 contains all activities of Scenario 2, as analysed in 2022 version 1 of FS, where the following were updated:

- ✓ the costs of engineering, design, reactor components and retubing tools, using the amounts set out in the contracts signed so far;
- ✓ the costs estimated for the 2 EPC contracts, using in-house technical expertise and external benchmarking with other organizations that are currently engaged in implementation of nuclear unit refurbishment projects.
- ✓ other related costs, which inflation has been applied to for years 2022-2024.

The technical solution reviewed in Scenario 1 includes mainly the following:

- ✓ Retubing activities (replacement of fuel channels, feeders and reactor support components);
- ✓ Infrastructure related to the refurbishment project;
- ✓ Activities recommended further to the Condition Assessment for the Systems, Structures, Components and Equipment (SSCE Condition Assessment);
- ✓ Implementation of the design changes recommended in the refurbishment project (Design Changes).
- ✓ Required tests and inspections;
- ✓ Obtaining/maintaining the Environmental Permit;
- ✓ Bringing Fire Safety to the existing standards;
- ✓ Changes to enhance the reliability and performance of the special nuclear safety systems and the nuclear safety support systems (as stemming from PSA or other analyses);
- ✓ Compliance with the new CNCAN requirements;
- ✓ Attaining the expected power generation commercial performance.

This scenario includes 217 activities which are necessary to ensure the stability of the plant's operating parameters in the future and to maintain a high capacity factor during the second lifecycle, similar to the level attained during the first cycle.

Furthermore, Scenario 1 provides for the necessary safety and production margins for Unit 1 to achieve its reliability targets, thus ensuring economic efficiency and sustaining the commercial viability of SNN at the high standards previously set.

Scenario 2 – the recommended scenario, resulted from reassessment of the project scope reviewed in Scenario 1.

The content of Scenario 2 provides the facility with all the necessary upgrades and changes to meet the requirements to obtain/maintain the permits and licenses for its second lifecycle.

The reassessment result led to some necessary descoping, which involves reducing or eliminating certain activities from the project's scope. All key activities described in Scenario 1 will be performed in Scenario 2. Scenario 2 will include 176 activities.

The technical differences between the two scenarios are:

a. Descoping further to assessment of the technical condition of the Systems, Structures, Components and Equipment (Condition Assessments);
b. Removal of certain Design Changes;
c. Implementation of certain activities with reduced scope or by alternative solutions.

The project's scope reassessment has been constantly aimed at ensuring:

- ✓ Robustness and maintenance of nuclear safety, in accordance with the regulatory requirements;
- ✓ Improvement of the plant's performance in the long run;
- ✓ Risk mitigation and reduced operation and maintenance costs.

The technical arguments supporting implementation of the optimized scenario can be summarized as follows:

- ✓ Nuclear safety remains a central priority. The proposed adjustments maintain the nuclear safety objectives.
- ✓ Economic efficiency: removal of non-feasible or deferrable activities helped optimize resource allocation and cut down the capital costs, while maintaining long-term performance and reliability.
- ✓ Meeting the refurbishment requirements: the optimized scenario complies with the regulatory requirements and meets the project's objectives through a balanced approach between complexity, cost and operating impact.

This scenario, backed by a detailed technical analysis, ensures economic viability and safe and efficient

operation of Unit 1 in the long rung, and is also in line with industry best practice.

The key activities under this Scenario are:

1. **Replacement of reactor components at the end of the first lifecycle** - namely the fuel channels, calandria tubes and feeders - *i.e. retubing*. The new components installed during this process will be superior to the original ones, and will build in the lessons learned from the previous CANDU reactor refurbishment projects.

For instance, improvements include the use of "melted four times" pressure tubes, which have a lower hydrogen concentration to reduce embrittlement, and a lower iron content to minimize oxidation, deuterium uptake and fuel channel diameter expansion. Other improvements include reduced levels of carbon, chlorine and phosphate, which decreases deuterium uptake and increases the resistance of the fuel channel to cracking. Pressure tubes will also have thicker walls and tighter tolerances for the inner diameter, thus increasing mechanical strength. Installation of "Back End" pressure tubes at the exhaust head will help reduce axial extension, with calandria tubes enjoying improved heat transfer. Feeders will also be made with a minimal chromium content, which increases corrosion resistance.

The Unit 1 refurbishment project, besides the main retubing activities, will require an extended reactor shutdown period, *i.e.* to defuel the reactor and complete the following tasks:

2. **Replacement of the major equipment** that has reached their end of lifetime after the first operating cycle, such as standby and emergency diesel generators, instrument and breathing air compressors, steam generator moisture separators, medium voltage cells and transfer panels.

3. **Replacement of the outdated equipment**, such as the analogue control systems of the classic Marconi and Nuovo Pignone systems, with modern digital distributed control systems (DCS), as well as replacement of programmable digital comparators (PDC).

4. **Implementation of the design changes** successfully applied in other CANDU refurbishment projects, including improvements to the coverage of the Quick Shutdown System (SDS) triggers, digital reactor outlet piping (ROP) systems and installation of a hydrogen control system in the reactor building.

6. Recommendations

The recommendation made by the authors of the Feasibility Study, Ernst&Young, as cleared in SNN's Technical, Economic and Social Board (CTES) with the clearance no. 34/11.12.2024, is that technical implementation of Scenario 2, *i.e.* the **Optimal Scenario** and financial implementation of Scenario 2.2 make up the recommended variant to implement Cernavoda NPP Unit 1 Refurbishment Project because it supports attainment of the nuclear safety requirements and strikes an optimal balance between the operating/financial performance of the plant and the refurbishment/post-refurbishment risk in the second lifecycle.

Also, technical implementation of Scenario 2 responds to the principle that nuclear safety prevails over any other principles.

Scenario 2 is recommended because it meets all the criteria for Refurbishment of Unit 1 in the following key respects:

- ✓ It ensures compliance with all the regulatory and nuclear safety standards, including with the updated nuclear safety analyses results and the approvals of the relevant authorities;
- ✓ It includes a robust financial analysis to ensure the economic viability of the refurbishment and thus provide for another 30 years of operating lifetime, at high safety and performance standards;

- ✓ The technical condition assessment for the major critical components, such as fuel channels, feeders, steam generators, containment/insulation structures and major Balance of Plant components, was used to plan and implement the scope of the refurbishment;
- ✓ Replacements or upgrades will be made as and where necessary;
- ✓ Upgrades to the control and instrumentation systems, along with implementation of updated cyber security standards, are also in scope with a view to meeting the current operating and safety requirements;
- ✓ The environmental impact of plant operation is carefully assessed, with implementation of updated waste management and decommissioning plans;
- ✓ Stakeholder engagement, public communication and emergency preparedness will continue to be key activities to ensure public confidence and regulatory compliance during the refurbishment outage and during the extended lifecycle of the unit.

Technical and Economic Indicators of the Investment as per the recommended Scenario 2:

In Scenario 2.2, considered to be technically and financially optimal, the project observes the following financial indicators, before application of the State aid measures:

Project IRR: 5.3%

SNN Equity IRR: 6.7%

NPV of Cash Flows at a 8% Weighted Average Cost of Capital: - RON 3.7 billion

NPV of Cash Flows at a 9.2% Weighted Average Cost of Capital: - RON 4.6 billion

Since, in consideration of the financing structure assumptions and other economic considerations, as presented, the NPV of the project is negative, supplementation of the analysis to include also the following State aid measures was deemed both advisable and necessary: a Grant from the Modernisation Fund and a CfD Contract with a duration of 30 years after post-refurbishment commissioning of Unit 1. Thus, after implementation of these measures, the project observes the following financial indicators:

Project IRR: 9.3%

SNN Equity IRR: 9.3%

NPV of Cash Flows at a 8% Weighted Average Cost of Capital: RON 1,913 million

NPV of Cash Flows at a 9.2% Weighted Average Cost of Capital: RON 90 million

To sum up, in Scenario 2.2 (the selected economic scenario, as per the recommendations of the technical analysis), the key performance indicators of Unit 1 Refurbishment Project have the best figures, which makes it the scenario that covers for all the expenses to be made with the refurbishment works and services and also optimizes the shareholders' benefit, without increasing the rate of additional indebtedness.

In the other scenarios under review, the financial model shows that the U1/SNN KPIs are affected by the higher CAPEX figures and even give rise to additional financing needs, above ECA levels, in Scenarios 1.1 and 1.2. Although these scenarios may show a higher Equity IRR under certain conditions, this increase is obtained for additional financing which gives rise to additional costs for the Company and which is probably not an option under customary financing conditions.

7. Updated Implementation Strategy

In consideration of the above and taking into account the need to update the Project implementation timeline, the implementation strategy needs to be updated by reference to the implementation time-limits, as follows:

Phase 1 (2017 – 2022) – commenced after having passed the Resolution of the Extraordinary General Meeting of SNN Shareholders no. 9/28.09.2017 approving the kick-off of **Phase 1** of the Strategy for

the Cernavoda NPP Unit 1 Refurbishment Project, was mainly aimed at identifying the activities to be included in the scope of Unit 1 Refurbishment and at preparing the Feasibility Study. The Investment Decision substantiated by the Feasibility Study was approved with the EGMS Resolution no. 4/23.02.2022;

Phase 2 (2022 – September 2027) kicked off in **March 2022** and includes the activities needed to prepare implementation of the said project: planning of activities; conclusion of the Engineering and Design contracts in order to determine the need for works and equipment, contracts for procurement of long-lead equipment/materials; estimation of the project's costs and preparation of the construction plan; risk assessment and devising strategies to mitigate their impact; obtaining the necessary approvals according to the domestic and EU regulations; construction of the infrastructure (civil and nuclear) needed for project's implementation; and securing the financial resources;

Phase 3 (August 2027 – May 2030) will commence at the shutdown of Unit 1 in October 2027, and consists of the effective implementation of the Refurbishment Project's works, followed by commissioning of the unit, due to occur in May 2030.

8. Proposals

In the light of the above, we submit to the SNN **shareholders the following proposals**:

- **approval by the Extraordinary General Meeting of SNN Shareholders (EGMS)** of the updated Strategy for continuation of Cernavoda NPP Unit 1 Refurbishment Project, based on the updated Feasibility Study;
- **approval by the Extraordinary General Meeting of SNN Shareholders (EGMS)** of the updated Investment Decision for continuation of Cernavoda NPP Unit 1 Refurbishment Project, based on the updated Feasibility Study;
- approval by the Ordinary General Meeting of SNN Shareholders (EGMS) of authorization of the SNN Board of Directors, with the possibility of sub-delegation to the executive management of SNN, to take all the measures required to implement the updated Investment Strategy and Decision for continuation of the investment under the Cernavoda NPP Unit 1 Refurbishment Project, based on the revised/updated Feasibility Study (FS version v2 of 2024), in compliance with the competences set out in the SNN's Articles of Incorporation and the applicable legal requirements.

Specifically, this will require/involve:

(i) Continuation of the Investment for Cernavoda NPP Unit 1 Refurbishment Project at a total cost of EUR 2,998,141,442 net of VAT (overnight), plus the financing costs (EUR 374,000,000), the implementation reserve for price adjustment respectively the inflation (EUR 182,084,294), thus resulting into an updated value of the General Estimate (in the Financial Scenario 2.2 detailed in this note, being the recommended scenario) of EUR 3,554,225,737; in addition to this amount, expenses of a nominal amount of EUR 239,888,756 will be also booked until these are to be distributed pro-rata to the Unit 2 Refurbishment Project, **thus resulting into an updated amount of the investment of EUR 3,794,114,493 at the time of its approval**, based on the updated/revised Feasibility Study (version v2 of 2024), with implementation of the recommended Scenario 2.2 projecting a higher financial performance, as the optimal version for Cernavoda NPP Unit 1 Refurbishment.

(ii) The updated/revised implementation strategy, as detailed in this Note and subject to the approval requested from the shareholders hereunder, will be put in place according to the following updated/revised implementation timeline:

Phase 1 (2017 – 2022) – commenced after having passed the Resolution of SNN EGMS no. 9/28.09.2017 approving the kick-off of **Phase 1** of the Strategy for the Cernavoda NPP Unit 1 Refurbishment Project, which was mainly aimed at identifying the activities to be included in the scope of Unit 1 Refurbishment and at preparing the Feasibility Study. The Investment Decision substantiated by the Feasibility Study was approved with the SNN EGMS Resolution no. 4/23.02.2022;

Phase 2 (2022 – September 2027) kicked off in **March 2022** and includes the activities needed to prepare implementation of the said project: planning of activities; conclusion of the Engineering and

Design contracts in order to determine the need for works and equipment, contracts for procurement of long-lead equipment/materials; estimation of the project's costs and preparation of the construction plan; risk assessment and devising strategies to mitigate their impact; obtaining the necessary approvals according to the domestic and EU regulations; construction of the infrastructure (civil and nuclear) needed for project's implementation; and securing the financial resources;

Phase 3 (August 2027 – May 2030) will commence at the shutdown of Unit 1 in October 2027, and consists of the effective implementation of the Refurbishment Project's works, followed by recommissioning of the unit, due to occur in May 2030.

9. Appendices

Appendix 1: 2024 Feasibility Study for the Refurbishment of Cernavoda NPP Unit 1 (version v2), due to be made available to shareholders subject to these signing a Non-Disclosure Agreement and to their capacity as shareholder as at the reference date 10 January 2025 being checked, and after having received the Shareholders Register from the Central Depository, as provided for in the template Non-Disclosure Confidentiality Agreement published on the SNN website, Investor Relations page, GMS Information, GMS dated 22 January 2025.

Cleared by,

CEO
Cosmin Ghita

CFO
Daniel Adam

Chief Development Officer and Portofolio Management
Gioara Mihai Laurentiu

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