Nuclearelectrica – Building a Sustainable Future for Tomorrow's Generations

NUCLEARELECTRICA

Romania's journey in the nuclear industry – in a nutshell

- **Nearly 30 years** of operations
- **Excellence:**
  - CNE Cernavodă operates 2 of the best-performing units among +440 nuclear power plants worldwide, considering on the capacity factor
  - Romania – the first place worldwide considering the **Station Lifetime Capability Factor – UCF: 92.1% (PRIS)**
- **Supply chain:** +50 years - experience in nuclear, evolving as a mature local nuclear industry
- **Education in engineering: Employer branding platform – Nucleus of Excellence:** partnerships/collaborations with universities where we operate: Politehnica University in Bucharest (SMR Simulator to train students) & Pitești University Centre, Ovidius University in Constanța (Dual education partnership), Constanta Maritime University, Dunarea de Jos University in Galati, Valahia University in Târgoviște, Alexandru Ioan Cuza University in Iasi, Transilvania University in Brasov.
- **Corporate Social Responsibility (CSR) Platform – Nucleus of Care** – our commitment to supporting the development of the communities we operate in; projects in strategic areas: i.e. **health, education, environment** etc

Nuclear energy in Romania at present

CO_2 emissions in Romania avoided since the commissioning of Cernavodă NPP	232 milion Tones
Annual avoidance of CO_2 emissions due to the operation of the plant	10 milion Tones
Nuclear energy in Romania now – 1,400 MWe, production - 235,500,000 MWh, Average Capacity Factor: 92.00%	18-20%
Nuclear contribution to clean electricity	33%
Jobs in the industry	11,000
Investments estimated at the level 2030 decade	EUR 20 bln

Nuclear energy in Romania a 2031/2032

Annual CO2 emissions estimated to be avoided with 4 units in operation + SMR power plant	24 mil. Tones
Contribution of nuclear energy in Romania	36%
Contribution of nuclear energy in total CO2-free energy	66%
Jobs in industry	20,000

RoPower Nuclear (50% Shareholding SNN)

NUCLEARELECTRICA (SNN)
Bucharest Headquarters

Cernavodă NPP – Units 1&2
Branch

- Safe & Efficient operation of Units 1 & 2
- Management of all Company assets in Cernavodă
- Town heating supplier

100% owned by SNN

Energonuclear Subsidiary (PCO) Units 3&4 Project

Nuclearelectrica SERV Subsidiary

Uranium Concentrates Processing Factory Subsidiary (FPCU)

Nuclear Fuel Plant Pitești (FCN Pitești)
Branch

- Manufacturer of nuclear fuel bundles for Cernavodă NPP

Shareholders structure

- Ministry of Energy 82.4981%
- Others 17.5019%

Nuclearelectrica Projects for Repowering Romania
– We invest for the future –

- Refurbishment / Life Extension of Unit 1
- 2 new CANDU Units – timespan: 2031/2032
- Cernavodă Tritium Removal Facility (CTRF)
- SMR Development
- Medical Isotopes
- Integrated Nuclear Fuel Cycle

Refurbishment of Unit 1

History & performance (1996–2025)

- Commissioned in 1996
- 148 million MWh produced (November 2025)
- Contribution: ~9% of annual national consumption
- >140 million tones of CO_2 avoided
- For many years in a row, it has been among the **top 3 reactors** in the world in terms of capacity factor (current CF: over 90%)

Benefits for the next 30 years (after refurbishment)

- + 30 years – safe and economically efficient operational life
- **5.5 million MWh/year** of clean, safe, stable, and affordable energy
- **5 million tones of CO_2 avoided/year**
- Conservation and development of value chain - certified according to nuclear standards
- Creation and maintenance of jobs for the next 30 years
- Development of expertise and increase in the number of specialists dedicated to the project.

Unit 1 – Milestones and impact

30 years of clean energy, without CO2 emissions

Refurbishment of Unit 1

Stages of the Unit 1 refurbishment project – CNE Cernavodă

Phase 1 – Defining the project scope - Completed

Phase 2 – Preparing for implementation (2024–2027) – currently being rolled-out

Main activities: engineering, procurement, EPC contract, permits & authorizations, licensing, EC opinion, financing, planning, infrastructure construction

Key milestones:

- **June 11, 2024**: signing of the framework agreement with Canadian Nuclear Partners S.A. for PMO services
- **December 19, 2024**: signing of the EPC contract between SNN and the international consortium (Candu Energy Inc./AtkinsRéalis, Ansaldo Nucleare, Canadian Commercial Corporation, KHNP)
- **August 20, 2025:** signing of the EPC-T contract with ArabelleS for the refurbishment of the turbogenerator
- **September 3, 2025:** start of work on the infrastructure required for the project

Completion: 2027

Phase 3 – Actual implementation of the modernization work on Unit 1 (2027–2030)

Execution of the refurbishment project

30 years of clean energy, without CO2 emissions

Units 3 & 4 Project

- **>11 million MWh/year** of clean energy
- **10 million tones of CO_2 avoided**/year
- Development of the supply chain and strengthening of the local nuclear industry
- **~20,000 jobs** created and **maintained for 30–60 years of operation**
- Romania – **opportunity to become a regional supplier of clean energy**
- The Romanian State owns assets necessary for the development and operation of the Project (1,100 tones of heavy water for the initial inventory and uranium octoxide for the first load of nuclear fuel).
- Project implementation through EnergoNuclear S.A. (100% owned by SNN)
- The project will benefit from the experience of CANDU technology evolution and the Romanian engineering and industry will be part of this effort.

Strategic benefits

Units 3 & 4 Project

Stages

Stage I – Preparatory (2021–2024) – completed

- 2021–2023: Reassessment of existing structures
- June 2023: Signing of the Support Agreement (Romanian State – SNN)
- June 2024: Positive opinion from the EC – Art. 41 Euratom Treaty
- Nov. 2024: Signing of the EPCM contract – LNTP phase
- Obtaining the Letter of Comfort from CNCAN

Stage II – Preliminary Works – LNTP / FNTP (2024–2027) – current phase of the project

- Development of critical engineering for project definition
- Structuring and contracting financing
- Completion of Preliminary Safety Analysis Report (PSAR) & Nuclear Safety Authorization for construction
- Obtaining the Final Investment Decision (FID) to move to stage III

Stage III – Start of construction – 2027

Start of construction works: mid-2027

Cernavoda Tritium Removal Facility

- The CTRF facility will remove tritium from heavy water, reducing environmental impact and providing a safer working environment for employees.
- It is an innovative Romanian technology developed by ICSI Râmnicu Vâlcea and will be the **first facility of its kind in Europe** and the **third in the world.**
- CTRF opens up the opportunity for **Romania to contribute to the global supply of tritium for nuclear fusion** (e.g., ITER) and to capitalize on the resulting helium-3.

Status

- **June 2023 –** Signing of the EPC contract with KHNP
- **December 2023** – Signing of the €145 million loan agreement with the EIB
- **March 2024 –** Obtaining the construction-assembly permit from CNCAN
- **June 2024 –** Start of construction works
- **June 2025 –** Launch of works by pouring the first concrete for the foundation

Small Modular Rectors

Capacity and technology

- 6 modules × 77 MWe → 462 MWe total capacity
- Clean, safe, and stable energy for decades to come

Economic and social impact

- 200 permanent jobs in operation, 1,500 jobs during construction
- 2,300 jobs in manufacturing and supply chain

Environmental benefits

- 4 million tons of CO_2 avoided annually

Strategic positioning

- SNN – preferred operator, with almost 30 years of experience in safe operation
- Romania – first country to implement SMR in Europe
- Regional leader and catalyst for SMR development in the region

Industrial development and know-how

- Creation of an SMR production, assembly, and maintenance base through local supply chains
- Regional hub for training SMR operators and specialists

Status

- **November 2021 –** Official announcement by the US and Romania at COP26; USTDA funding for feasibility studies
- **December 2022 –** U.S. EXIM Bank and DFC announce financial support for SMR project development
- **2023 –** Launch of P-TECC; Romania designated regional hub for SMR technology
- **July 24, 2024** – Signing of FEED 2 contract between RoPower Nuclear and Fluor Corporation
- **May 2025 –** NRC (US) approves NuScale SMR standard design
- **Q4 2025 –** Recruitment of new strategic partners to strengthen the project

Workforce Training

- May 12, 2023 – **launch of the first simulator in Europe, mirroring a SMR Control Room**, at **POLITECHNICA University in Bucharest (Faculty of Energy Engineering)**
- The simulator is used for the training of future generations of nuclear engineers

Medical Isotopes

- **Lutetium-177 (Lu-177):** innovative radioisotope used in targeted cancer treatments (radioligand therapies), with promising results in modern oncology
- **Essential in cancer treatment**, medical imaging, and device sterilization
- **10,000 hospitals worldwide** → ~49 million procedures/year with radioisotopes
- In the EU, over **1,500 centres** → ~10 million procedures/year

Impact:

- Radioisotopes: **4,000 doses** for Romania

Status

November 2024

- SNN & Framatome agreement for the production of Lu-177 (oncological radioisotope) **Stage 1 (September – December 2024)**
- Finalizing the agreement with the main terms of the irradiation agreement
- FID decision for project implementation

Stage 2 (2024–2025)

- 03.09.2025 - Approval of the irradiation contract between Framatome & SNN
- Engineering, licensing, procurement activities

Stage 3 (2025–May 2027)

- Project authorization, equipment manufacturing, mock-up & external installation

Stage 4 (May–December 2027)

- Installation during planned outage, testing & commissioning

2028 – Launch of commercial irradiation service for medical isotopes

Integrated nuclear fuel cycle

- At the end of 2023, Nuclearelectrica completed the acquisition of assets from the technical uranium concentrate processing stream at the CNU Feldioara Branch.
- Between January and March 2023, the company operationalized the **Feldioara Branch** as part of **Romania's integrated nuclear fuel cycle development strategy**. The branch is currently operating at optimal capacity.
- In October 2025, the Feldioara Uranium Concentrate Processing Plant (FPCU) announced the delivery of nuclear fuel (uranium dioxide - UO2) to Argentina.

Maintaining and developing the integrated nuclear cycle ensures Romania's competitive advantage and strengthens Nuclearelectrica's ability to effectively and resiliently support its strategic investment projects for new production capacities.

The strategic investment portfolio is valued at over €20 billion and is structured around 3 strategic directions

Direction I – Expansion and diversification of production capacity

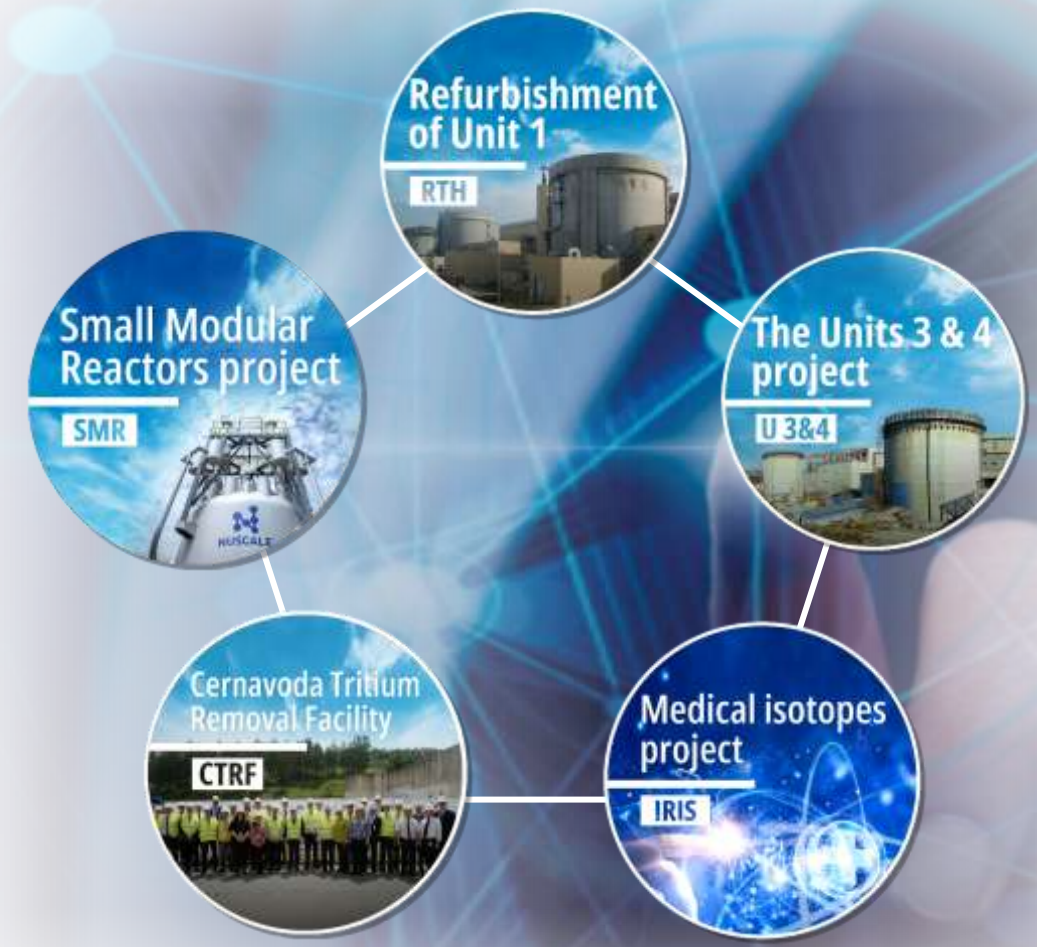
1. Development of units 3 and 4 of the Cernavodă Nuclear Power Plant
2. Development of Small Modular Reactors (SMRs)

Direction II – Strengthening safety, reliability, and operational excellence

1. Refurbishment of Unit 1 Cernavodă
2. Development of the Interim Spent Fuel Storage Facility (DICA)
3. Development of the Emergency Response Center
4. Modernization and development of the nuclear fuel plant
5. Modernization, refurbishment, and development of the uranium concentrate processing plant
6. Digital transformation and cybersecurity

Direction III – Sustainability and innovation

1. Implementation of the heavy water detritiation facility;
2. Diversification of the product portfolio through the production of medical radioisotopes.



Nucleus of Excellence – SNN de Employer Branding Platform

2700 team members

CNE Cernavodă ~ 2000 people

FCN Pitești ~ > 350 people

Head office ~ > 200 people

SNN subsidiaries ~ 540 people: Nuclearelectrica Serv and Energonuclear

- Jobs:
  - **Engineers** (energy engineers, electricians, mechanics, chemists, physicists, etc.)
  - **Specialists** in nuclear analysis, preventive and corrective maintenance
  - **Support roles**: economists, lawyers, IT, HR etc.

Growing a Career in Nuclearelectrica

Comprehensive HR strategy focused on: attracting, engaging and retaining talent!

- **Start a conversation with SNN** (events, presentations and workshops conducted by our colleagues; visiting the power plant and the fuel plant)
- Tailor-Made **programs for youth**
- **Attractive Employee Value Proposition**

- **Strong and inspiring culture, aligned to international standards**
- **Training and development opportunities**
  - Internal & international courses
  - Benchmarking / Exchange of experience
  - Career paths, coaching and mentoring
- **Reward and Recognition of performance**

Purpose, Pride and Satisfaction

Benefits for Economic and Social development

Direct benefits:

- **Substantial increase** in clean energy production capacity
- Ensuring the **stability and security of the energy system,** as well as strengthening **Romania's energy independence**
- Investments in projects such as the refurbishment of Unit 1, the construction of Units 3 and 4 in Cernavodă, and the development of SMR create demand for specialized equipment, materials, and services, **stimulating industrial production and the construction sector.**

Indirect benefits:

- Contribution to national **GDP growth** through **capital investment** and **domestic intermediate consumption,** generating **income and jobs in industry, construction, energy,** and **specialized services.**
- **The nuclear industry** already supports over **12,000 direct and indirect jobs,** and with the expansion of investments**,** this number could reach **over 20,000 employees,** including in related fields such as medicine, through the production of isotopes and the development of new technologies.

Wide-ranging economic impact:

- **Revitalization of national industry** through the involvement of local companies in the supply chain
- **Modernization and renewal of production equipment**
- **Training of a new generation of specialists** in the field of nuclear energy and equipment manufacturing.

NUCLEARELECTRICA

MISIUNESNN

Generăm energie curată la standarde de excelență

VIZIUNESNN

Construim un viitor durabil pentru generația de mâine

- SIGURANȚĂ ȘI SUSTENABILITATE
- EXCELENȚĂ PROFESIONALĂ
- GRIJĂ FAȚĂ DE ANGAJAȚI
- EMPATIE ȘI RESPONSABILITATE
- DEZVOLTARE DURABILĂ