



ROMANIA

NATIONAL COMMISSION FOR NUCLEAR ACTIVITIES CONTROL – CNCAN

Recruiting and Retaining the Next Generation for CNCAN

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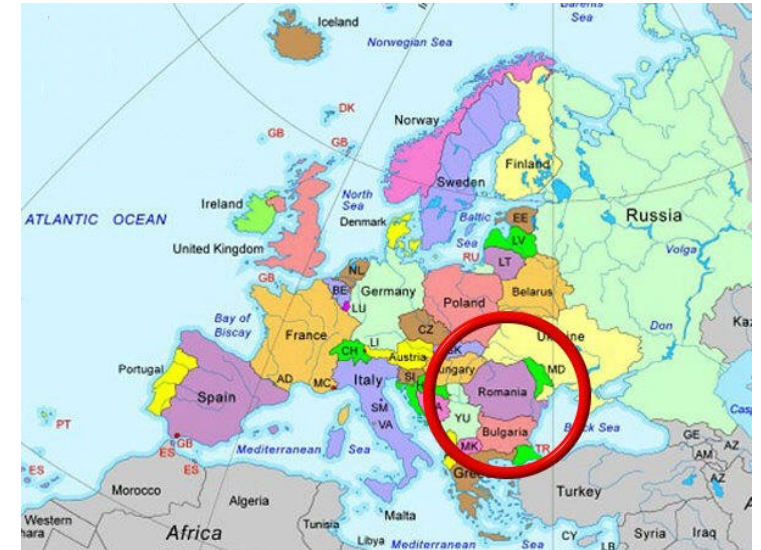
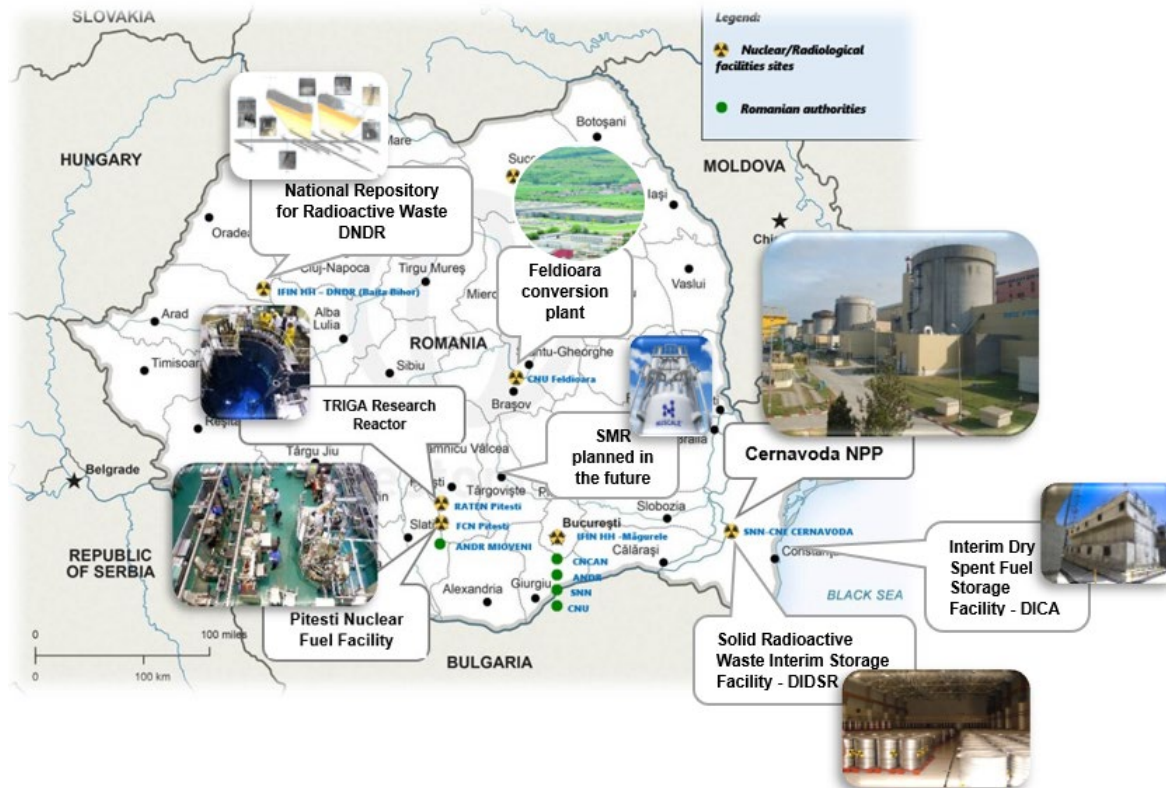
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Introduction

- ✓ In accordance with the Law no. 111/1996 on the safe deployment, regulation, licensing and control of nuclear activities, republished, with subsequent modifications and completions, National Commission for Nuclear Activities Control (CNCAN) is the national competent authority responsible for the regulation, licensing and control in the nuclear field, for all the nuclear activities and installations on the Romanian territory.



- ✓ CNCAN has all the necessary legal powers to issue mandatory regulations, to issue licenses for nuclear facilities and activities and to perform evaluations, inspections and enforcement.

Introduction

Regulated Nuclear Activities and Installations within Romania

Nuclear installations and activities

- ❖ Cernavoda NPP – 2 PHWR Units, CANDU type
 - 2 x 706.5 Gross Capacity MW(e)
- ❖ 14 MWt TRIGA-type Material Testing Reactor – operational
- ❖ Other major regulated facilities in Romania include:
 - Facilities for uranium ore mining, milling and processing;
 - Fuel Production Plant;
 - Heavy Water Production Plant – closed, only laboratory still functioning;
 - Radioactive Waste Management Facilities.
- ❖ Regulated activities: transport of nuclear and radioactive materials
- ❖ Manufacturing and supply of services for nuclear safety related items etc.

Radioactive sources and installations

- ❖ Total number of economical agents licensed by CNCAN for use of ionizing radiation sources – 9145
- ❖ 857 Radiological installations for Industrial field
- ❖ & 6308 Radiological installations for Medical field
- ❖ Number of licenses/registration issued in 2023: 2793
- ❖ Total number of equipment registered in CNCAN data base - 7165.



Introduction

New Projects in the Nuclear Sector of Romania

Refurbishment of U1
Cernavoda NPP



Unit shutdown and the effective refurbishment of the project, scheduled to develop during **2027 –2029**.

Romania is expected to detritiate its CANDU (Canada Deuterium Uranium) units at Cernavoda **starting 2024**, with the goal of improving radiological safety.



Detritiation Facility
(Tritium Removal
facility)

U3&U4 of
Cernavoda NPP



The last stage of the project consists in resuming construction of civil constructions, construction – installations activities and start-up activities at the site, phase estimated to last 69-78 months. It is estimated that **Unit 3** will be commissioned in **2030**, with the commissioning of **Unit 4** to follow in **2031**.

03.10.2019 ICN Pitesti and the FALCON Consortium signed a Memorandum of Understanding regarding the cooperation for the development of the 4th Generation reactor



ALFRED Project

SMRs



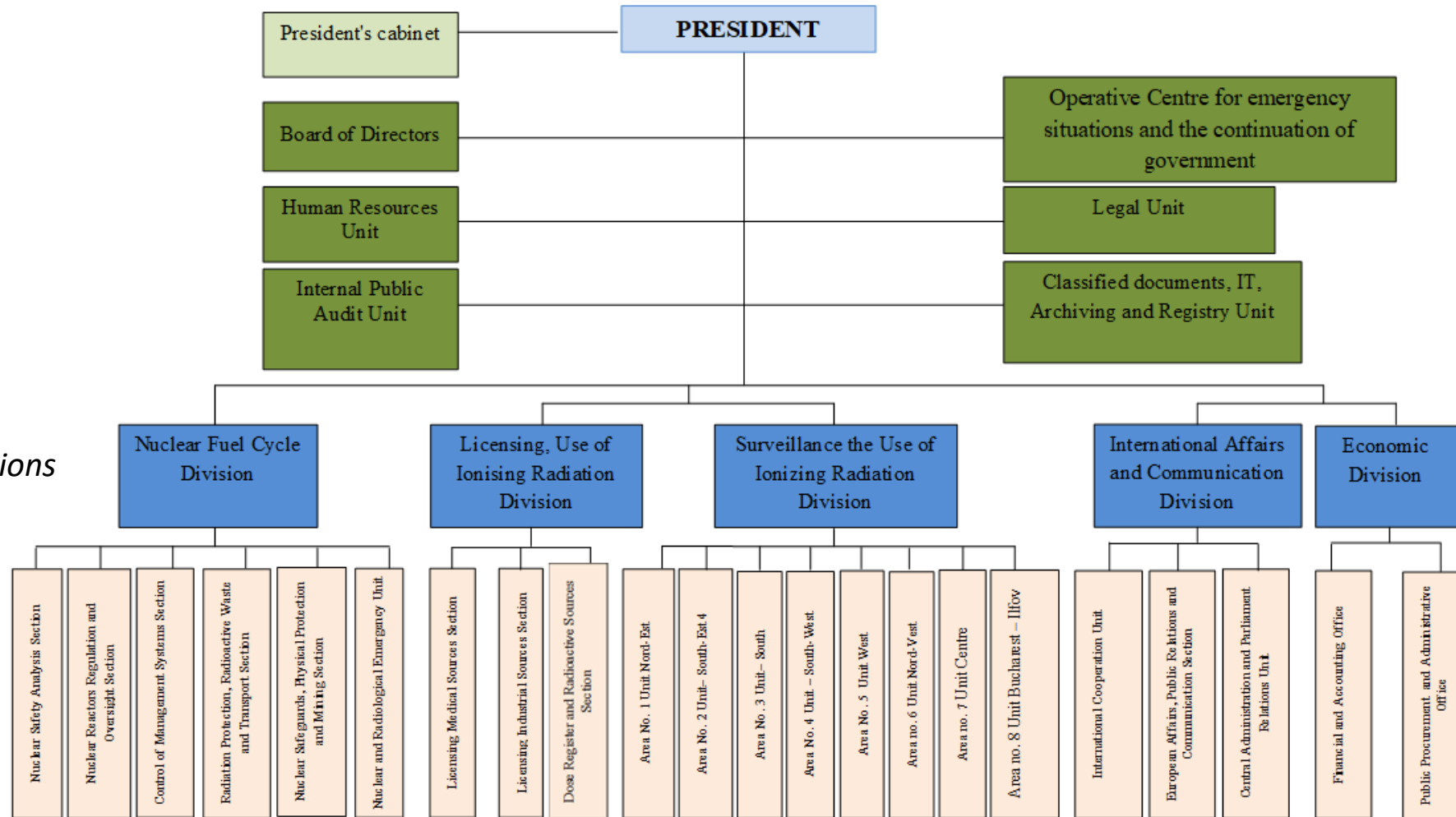
In November 2021, Nuclearelectrica and NuScale Power signed an agreement in order to advance the implementation of the innovative technology of the small modular reactors of NuScale, in Romania, in this decade. **The plan is to have 6 modules with an installed capacity of 462 MWe.**

Introduction

About CNCAN

The management, core and support processes established within CNCAN management system ensure throughout the organisational chart adopted that all responsibilities allocated by Law 111/1996 and additional regulations are properly discharged.

200 positions



Introduction

About CNCAN, Main Responsibilities

The Law no. 111/1996 empowers CNCAN to issue licenses and to provide a regulatory framework and perform regulatory oversight on :

- ✓ Nuclear safety;
- ✓ Radiological protection;
- ✓ Quality management systems;
- ✓ Nuclear safeguards / Non-proliferation of nuclear weapons;
- ✓ Physical protection of nuclear facilities and materials;
- ✓ Transport of nuclear and other radioactive materials;
- ✓ Management of radioactive waste and spent nuclear fuel;
- ✓ Emergency preparedness and response in case of nuclear or radiological accident;
- ✓ Manufacturing of products and supply of services for nuclear installations.



In addition, as mentioned in article 35 from Law 111/1996, CNCAN ensures the initial and continuous professional training of the personnel having responsibilities in the implementation of CNCAN's attributions.



Introduction

CNCAN Organisational Needs and Work Force Requirements

- ✓ In accordance with Law 111 / 1996 and the Nuclear Safety Directive adequate resources, both human and financial, have to be available in order for CNCAN to fulfil its mandate.
- ✓ From the current organisational structure approximately 140 positions must be occupied with technical qualified personnel.
- ✓ The technical expertise of CNCAN staff has to cover a wide range of different science and technology curricula.



Introduction

Knowledge, Skills and Attitudes - KSAs in Basic Science and Technology

Nuclear Installations Safety

Basic science and technology

- Mathematics
- Physics
- Chemical, electrical, civil and mechanical engineering;
- Chemistry, including radiochemistry;
- Earth sciences, including geology, seismicity, meteorology, hydrology, etc.;
- Computer science;
- Nuclear engineering, including nuclear reactor concepts, nuclear physics, reactor physics, etc.;
- Environmental engineering;
- Materials, metallurgical engineering;
- Radiography including medical applications;
- Thermodynamics and thermo hydraulics;
- Behavioural sciences.

Expected to be learned in university

Applied science and technology

- Nuclear reactor and power plant technology;
- Research reactor technology;
- Nuclear fuel cycle technology;
- Nuclear safety technology;
- Technologies regarding the application of radiation in industry, research and agriculture;
- Medical physics;
- Radiation physics, including shielding;
- Health physics, radiation protection and naturally occurring radiation;
- Environmental sciences;
- Management systems, including safety management, safety culture and quality management.

Expected to be learned during post – graduate studies and/or OJT

Specialized science and technology

- Methodologies and analysis:
- Safety assessment methodology;
 - Deterministic accident analysis;
 - Probabilistic safety analysis;
 - Severe accident analysis;
 - Reliability analysis;
 - Human and organizational factors and human performance;
 - Site evaluation;
 - Fire analysis and protection systems
- Specialized areas:
- Instrumentation and control systems of nuclear installations, including software reliability;
 - Criticality safety;
 - Materials: including radiation effects on materials, corrosion, corrosion chemistry, etc.;
 - Dosimetry.
- Additional areas:
- Security, nuclear materials protection, control and accountability
 - Safety in transportation of radioactive material;
 - Management of spent fuel and radioactive waste;
 - Decommissioning of nuclear installations;
 - Industrial safety;
 - Radio-ecology.

Expected to be learned during post – graduate studies and/or OJT

Introduction

Knowledge, Skills and Attitudes - KSAs in Basic Science and Technology

Radiation Facilities and Activities

Basic science and technology

- Physics;
- Chemistry;
- Earth and Environmental sciences;
- Health sciences;
- Communication and Social sciences

*Expected to be
learned in
university*

Applied and specialized science and technology

- Medical physics;
- Radiation or Health physics;
- Radiation dosimetry;
- Radiochemistry;
- Radioecology;
- Technologies regarding the application of radiation in medicine, industry, research and agriculture;
- Radiology, Radiotherapy, Nuclear medicine;
- Mechanical engineering, Civil engineering, Physics engineering;
- Safety assessment methodology;
- Hazard assessment;
- Calibration and Radiation measurement;
- Radiation source security;
- Safety in transportation of radioactive material;
- Management of radioactive waste (e.g. hydrology, geochemistry, geology);
- Decommissioning of facilities;
- Emergency management;
- Human, social and organizational factors, including safety culture.

*Expected to be learned
during post – graduate
studies and/or OJT*

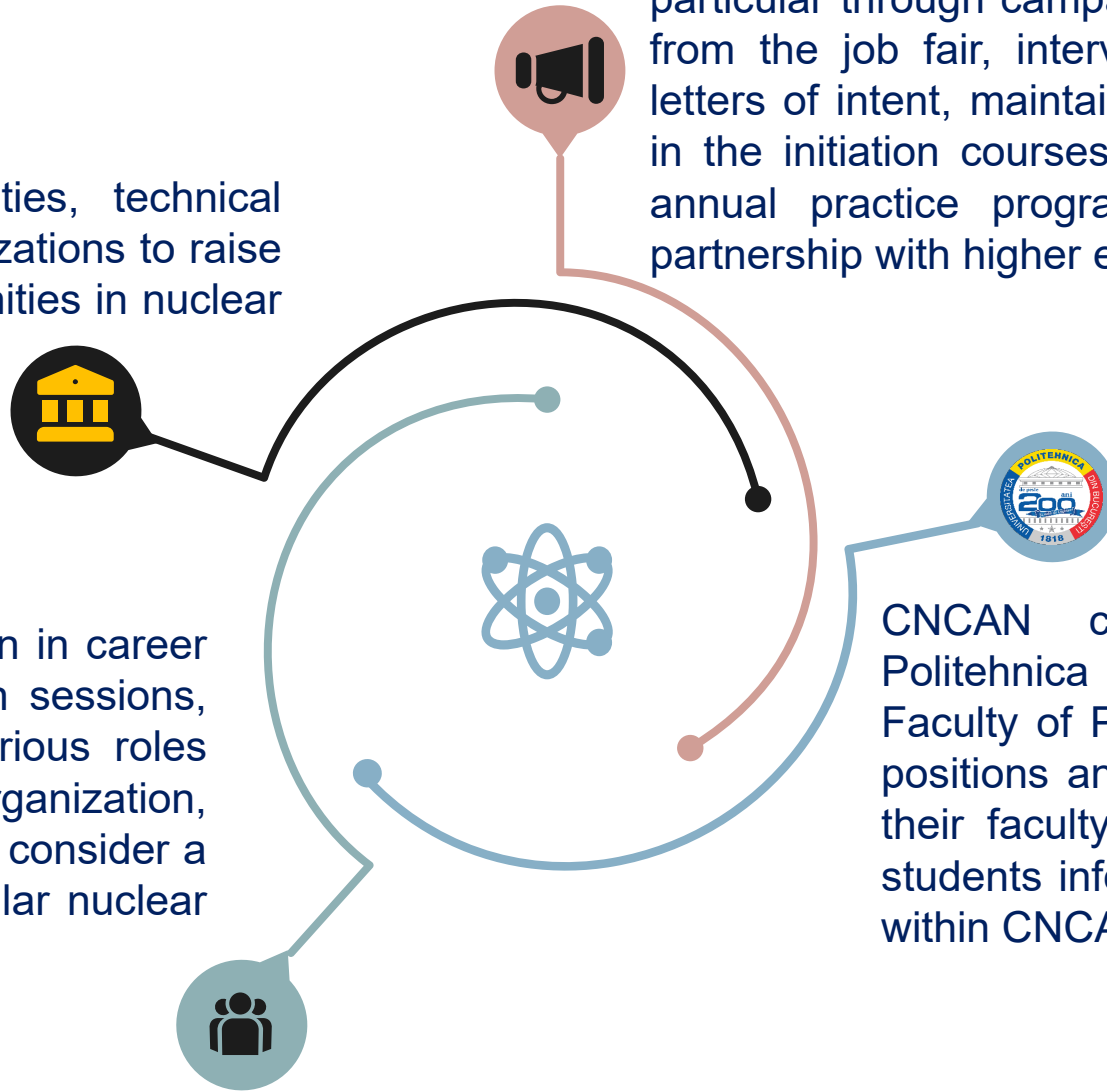
Recruitment Process

CNCAN engages with universities, technical colleges, and professional organizations to raise awareness about career opportunities in nuclear industry.

We plan to participate more often in career fairs, workshops and information sessions, where CNCAN presents the various roles and responsibilities within the organization, inspiring the young generation to consider a career in nuclear field, in particular nuclear and radiological safety.

The workforce attraction program was carried out in particular through campaigns to recruit graduates directly from the job fair, interviews with the people who sent letters of intent, maintaining contact with the participants in the initiation courses in nuclear activities, conducting annual practice programs and master's programs in partnership with higher education institutions.

CNCAN communicates with the University Politehnica of Bucharest, especially with the Faculty of Power Engineering, about the available positions and they publish our announcements on their faculty's website and thus always keep the students informed about employment opportunities within CNCAN.



Recruitment Process

The university annually hosts a job fair called PoliEnergy Fest in which CNCAN plans to participate in order to encourage the next generation of nuclear safety and security talent and to attract even more young people to join our institution.



In today's digital age, an online presence is essential for reaching a broader pool of candidates.



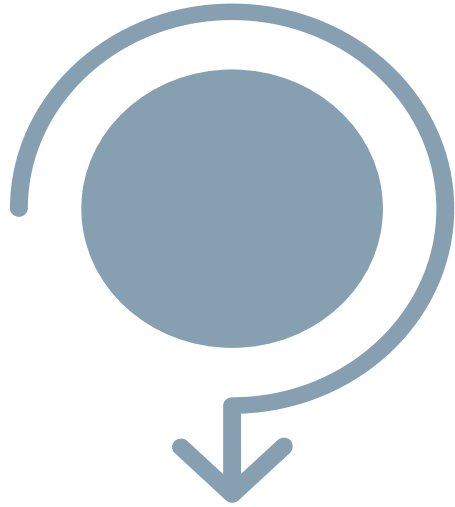
CNCAN leverages digital platforms, to advertise job openings and engage with potential applicants.



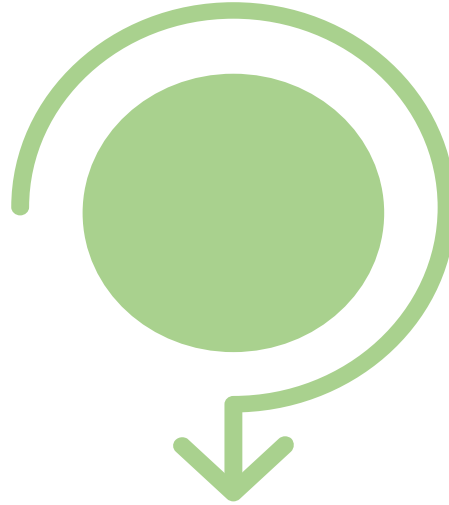
Through informative online content, CNCAN plans to communicate its commitment to excellence in nuclear industry and to attract the next generation of nuclear safety and security talent who resonate with its values and objectives.



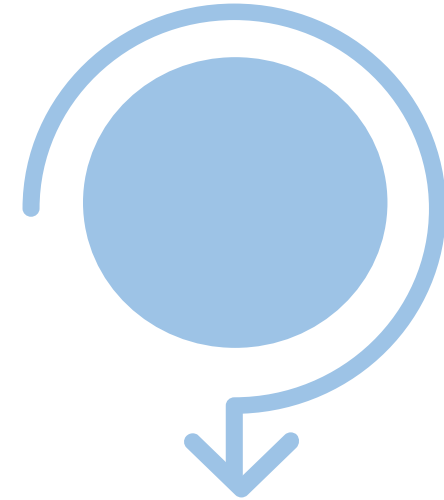
Educational Opportunity



Recognizing the importance of practical experience in shaping future leaders, CNCAN offers internships to students and recent graduates.



Every year we have groups of students from the University Politehnica of Bucharest who attend the internship program within CNCAN.



By immersing themselves in the day-to-day operations of CNCAN, interns gained invaluable insights into regulatory processes, technical assessments, and international standards, preparing them for careers in nuclear industry.

Professional Development



1

CNCAN prioritizes the professional development of its employees by offering training workshops, seminars supported by the IAEA and other international organizations.

2

CNCAN organizes training workshops, seminars, and conferences to provide ongoing professional development opportunities for its employees and stakeholders.

3

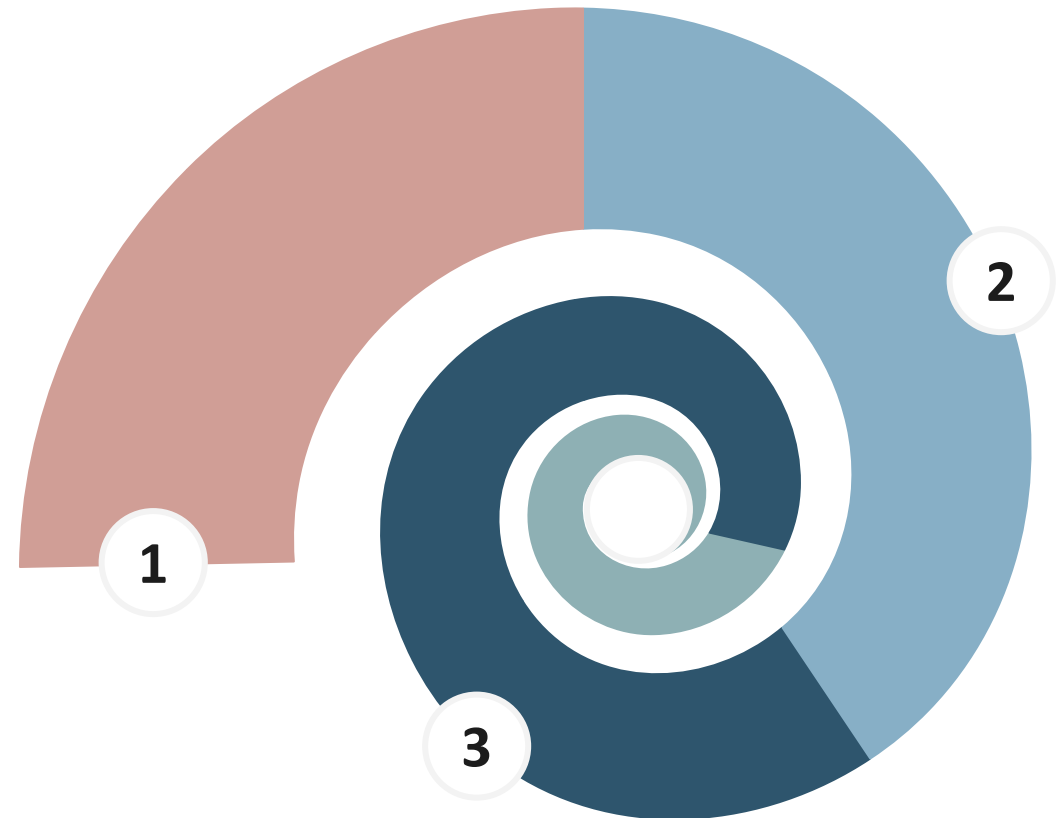
In collaboration with Cernavoda NPP and research institutes, CNCAN frequently enrolls its employees to training courses within the training centres.

4

By investing in the development of its workforce, CNCAN ensures that its employees remain at the forefront of regulatory practices and technologies.

Mentorship Programme

- Through mentorship programs, workshops, and networking events, CNCAN fosters a culture of continuous learning and growth, empowering employees to reach their full potential.
- The Mentorship Program facilitates the transfer of knowledge and expertise from experienced mentors to new employees. Mentors share insights, best practices, and lessons learned from their own experiences, helping mentees develop the skills and competencies needed to excel in their roles within CNCAN.
- The training program with the mentor takes about 6 months, during which the mentee is shown the procedures, learns about the nuclear law, the regulations, the licensing and control process and goes on inspections with the mentor to see the installations and to understand the control process.



Conclusion

- ✓ Currently CNCAN is redesigning its organizational chart in order to fulfil the roles and responsibilities set by the Law, with its most recent amendments and to safely accommodate the new activities in nuclear field;
- ✓ The technical positions within CNCAN are rapidly gaining recognition among the nuclear industry; CNCAN colleagues are coming from the universities or are engineers from other industries wanting to join nuclear industry;
- ✓ CNCAN is making continuous efforts to provide state – of the art tools and equipment for its staff and increase the salary level in order to be more attractive for the universities graduates or fellow specialists from all industries through:
 - *partnerships with educational institutions*
 - *educational opportunities: internships and training programs*
 - *mentorship programme*
 - *prioritisation of the professional development of its employees by offering training workshops, seminars supported by IAEA and other international organisations*





Thank You!

