

## **Role of cooperation activities for capacity building of Romanian Regulatory Authority (CNCAN)**

### **Abstract:**

With a slow but active nuclear development program of sector since 1980, Romanian regulatory authority had to permanently adapt to the changes in national and international environment in order ensure continuously increase of capacity building and effectiveness, commensurate with the growing nuclear sector. Limited human resources available at the national level put the Romanian Regulatory Authority in the position of building the Technical Support Organization as part of its on organization. International cooperation played an important role in capacity building of Romanian regulatory body and providing necessary assistance in performing regulatory activities or support in development of regulatory framework. Fellowships and technical visits, workshops and training courses provided through IAEA TC at national or regional level, technical assistance provided by European Commission (EC) through PHARE Projects, all provided valuable contribution in assuring training of regulatory staff and development of proper regulatory framework in Romania. Therefore, Romanian Regulatory Authority is putting a strong accent on strengthening and promoting international cooperation through IAEA Technical Cooperation Programme, MoUs between regulatory bodies, as one of the key elements in supporting capacity building of regulatory authorities in countries having small or embarking on nuclear power program. Building networks between training centers and research facilities and establishments of regional training centers represent one of the future viable options in preserving knowledge in nuclear field.

### **2. Introduction in Romanian National Nuclear Programme**

The first nuclear site was developed at Cernavoda, in the south-eastern area of Romania (Dobrogea region) on the right bank of the Danube River, about 180 km east of Bucharest. Cernavoda Nuclear Power Plant (NPP) was initially designed with five identical CANDU 6 reactor units of 700 MWe capacity each. But the lack of financial resources and the drop in power demand after 1990 resulted in the suspension of the construction work on the last three units, and efforts were focused on the completion of the first two units. Construction works for Unit 1 started in 1980, under Romanian management, and in 1991 were completed 45%. The basic plant upon which Romania was to build its nuclear program is the CANDU 6 nuclear reactor, design of Atomic Energy of Canada Limited (AECL), similar to those operating in Canada, Republic of Korea and Argentina. The non-nuclear part of the plant was designed by Ansaldo ENERGIA of Italy. The unit has a General Electric turbine-generator, with a rated gross capacity of 706.5 MWe.

After 1990, the Nuclear National Program was reviewed and, following the recommendations of the International Atomic Energy Agency – IAEA Vienna, the former power Romanian utility RENEL signed in 1991 a Project Management Contract (PMC) with the AECL-ANSALDO Consortium (AAC), for the completion and commissioning of Unit 1. Cernavoda Unit 1 NPP started its commercial operation on December 2, 1996 and the total gross power generated by December 2006 was about 51.77 million MWh (GCF 87.5%).

After 2002, Romanian Government considered that the nuclear energy represents a pragmatic solution for ensuring the security of power supply, the increase of competitiveness and for combating the climate change. In this context, the continuation of the National Nuclear Program, by completion of Cernavoda NPP Unit 2 and resuming construction of Units 3 and 4, as well as assuring a high level of nuclear safety represent two major priorities. At the level of infrastructure, the Government declared as a priority the development of public authorities capabilities related to the formulation and implementation of national and local policies, in line with international standards, and to reach the performance level of the EU Member States.

## **2. Role of International cooperation in assuring Romanian regulatory effectiveness**

Once expanding nuclear national power programs, Romanian Government became concerned that is essential to ensure an independent and effective nuclear regulatory system to cope with the new challenges so that government and society can be assured that nuclear activities deployed in Romania are safe and consistent with national and international standards.

At national level, the National Commission for Nuclear Activities Control (CNCAN) is the national competent authority in nuclear field, exercising the attributions of regulation, authorization and control, having responsibilities in the field of safe operation of radiological and nuclear installations.

Limited human resources available at the national level brought the CNCAN, at the end of 2004, in the position of building the Technical Support Organization as part of its own organization. In support of capacity building and achievement of regulatory effectiveness, commensurate with national nuclear power programme, in the period of 2002-2009 CNCAN made an extensive use of external assistance provided either through IAEA TC programme, external consultancy companies financed by EU under the PHARE Project, or international cooperation established between CNCAN and regulatory authorities (Canadian Regulatory Authority) in order to ensure training of regulatory staff, to assist in development of national regulatory framework and to support regulatory review activities.

### **2.1 Role of IAEA TC programme in CNCAN capacity building**

As an IAEA Member State since 1957, Romania has had from the very beginning an active participation in the IAEA technical cooperation programme. Involvement of Romania in the Agency's technical cooperation programmes was considered the major channel of technology transfer between IAEA and Romania.

Romanian regulatory authority's involvement in IAEA projects -- either at the national, regional, or interregional level -- covered a wide range of scientific and technical work related to nuclear power; the nuclear fuel cycle; radioactive waste management; radiation protection; safety of nuclear installations; and programme direction and support.

Over the years, the areas of interest for the cooperation between Romania and the International Atomic Energy Agency (IAEA) were stipulated in the Country Programme Framework having identified as priority for Romania, IAEA technical assistance for:

- the regulatory infrastructure;
- the radiological protection and health;
- the management of the radioactive waste and spent fuel;

- the nuclear safety and fuel performance of the Cernavoda NPP;
- the research-development activity as support of the National Nuclear Programme.

In particular, IAEA support in regulatory activities was provided through:

- involvement of CNCAN staff in regional training courses and workshops;
- organizing national training courses and workshops in Romania;
- IAEA expert missions in support of Romanian regulatory activities for assessment of deterministic and probabilistic analyses;
- supporting scientific visit and fellowships for CNCAN staff organized in IAEA Member States;
- organizing IRRT, IRRS missions for assessment of Romanian regulatory effectiveness;
- organizing expert mission for assistance in regulatory framework development;

## **2.2 European Commission support for further development of CNCAN capacity building**

Apart from IAEA support provided CNCAN over the years, European Commission granted a special attention to the strengthening of independence, resources and capabilities of the Romanian nuclear safety authority. This issue was addressed as recommendation in the almost all evaluation documents of the activities undertaken by Romania in the accession process. One of the recommendations addressed within the “European Union Report on nuclear safety in the context of enlargement” was related to the improvement of CNCAN capabilities, through further :

- Increase the CNCAN independent assessment capability through the setting up of a appropriate number of specialized staff as part of CNCAN’s Technical Support Unit (TSO);
- increase the CNCAN capability of intervention in case of radiological emergency;
- increase CNCAN inspection and control capability.

EC support was provided in the framework of Phare programme for Romanian nuclear regulatory authority, CNCAN being the beneficiary of several projects, such as:

- Support in transfer of Western European Methodology to the Nuclear Safety Authority of Romania”
- Support in Nuclear Safety Regulatory Regime Consolidation
- Support to the Romanian Nuclear Regulatory Authority (CNCAN) in the licensing review activities of Fire Protection, Overpressure Protection of Reactor Primary Circuit and Main Steam Line Design Safety Issues in Cernavoda 1 NPP”
- Support in improvement of Romanian Regulatory Emergency Response Center;
- Support in setting up a licensing process in Romania based on Periodic Safety Review of NPPs

## **2.3 Role of bilateral agreements in supporting development of regulatory systems in countries embarking nuclear power programmes**

An important role in providing initial support in setting up the regulatory framework and regulatory capacity building has to be given to bilateral agreements between regulatory authorities from countries having small or embarking on nuclear power program and regulatory authorities from the country of NPPs origin. In this respect, once Romanian

Government decided to build a NPP based on Canadian technology, a strong cooperation programme between CNCAN and Canadian regulatory authority has been established in order to:

- receive support from Canadian regulatory authority for the development of specific design regulation;
- make the know-how transfer from Canadian regulatory staff to Romanian regulatory staff regarding review and assessment of the licensing support documents;
- receive initial specific training from Canadian regulatory staff in regard to licensing approach of CANDU reactors;
- receive assistance with regard to Canadian regulatory inspection system during construction/commissioning/operating stage of NPPs;
- receive assistance during licensing process of the first NPPs Unit.
- setup a periodic meeting between Canadian regulatory authority and Romanian regulatory authority aiming to exchanging knowledge with regard to licensing approach and requirements, operating experience, regulatory inspection findings, etc.

The bilateral agreement between Romanian and Canadian regulatory authorities was one of the main pillars in setting up the initial regulatory system in Romania.

### **3. Steps forward in knowledge preservation in Romanian nuclear sector**

Since very beginning CNCAN took systematic actions in order to achieve its objectives and fulfillment of IAEA and EC recommendations. At the international level, CNCAN received a positive image with regard to development of regulations, licensing process and regulatory control of nuclear installations in Romania.

As per National Strategy for Nuclear Safety of Romania, CNCAN took further actions in order to maintain and to further develop the knowledge in the Romanian nuclear sector, to setup a national/regional Training Center in Romania and continuously support international cooperation;

### **4. Conclusion**

International cooperation between Romanian Regulatory Authority and IAEA/EC/RBs has had a major contribution in development of regulatory framework, CNCAN capacity building and in increase of regulatory effectiveness. Therefore, Romanian Regulatory Authority is putting a strong accent on strengthening and promoting international cooperation through IAEA Technical Cooperation Programme, MoUs between regulatory bodies, as one of the key elements in supporting capacity building of regulatory authorities in countries having small or embarking on nuclear power program.

Building networks between training centers and research facilities and establishments of regional training centers represent one of the future viable options in preserving knowledge in nuclear field.