

## LEI activities in the EU projects directed to support the Regulatory Body of Iraq

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Following the Chernobyl accident in 1986, the EU launched a nuclear safety programme under the TACIS (Technical Assistance to the Commonwealth of Independent States) which, between 1991 and 2006, allocated some EUR 1.3 billion to nuclear safety and security projects. From 2007 to 2013, the EU expanded its nuclear safety assistance to the third countries under the Instrument for Nuclear Safety Cooperation (INSC) program with a total budget allocation of over EUR 0.5 billion. In June 2014, the strategy for the implementation of Phase 2 of the INSC was agreed for 2014–2020, committing extra ~EUR 0.25 billion.

Since the 1960s, Iraq has had a fairly extensive nuclear program. There are ten nuclear sites in the country, among them the Al-Tuwaitha site is one of the largest in Iraq, where 18 nuclear facilities are located. All nuclear sites are presently shutdown and most of them were heavily damaged during the Gulf War in 1991. In 2004, the Government of Iraq had requested assistance from the IAEA in decommissioning its damaged nuclear facilities. As a result, the Iraq Decommissioning Project was initiated in 2006, with the aim to assist Iraq in planning for, and decommissioning of, the damaged nuclear facilities, and manage the resulting radioactive waste, remediating the contaminated sites, as well as drafting the relevant legal and regulatory framework.

In the framework of the INSC programme financed by the European Commission (EC), the Project IQ3.01/14 ‘Support to the Regulatory Body of Iraq on Radioactive Waste Management, Decommissioning of Nuclear Facilities and Remediation of Contaminated Sites’ was signed on

10 February 2016 between the EC and the Consortium created by leader ANDRA (France), SUJB (Czech Republic) and Lithuanian Energy Institute, LEI (Lithuania). The Beneficiary of this project was the Ministry of Environment (MoEN) of Iraq, and the End-users were the Iraqi Regulatory Body and the Radiation Protection Centre within the MoEN when the Ministry of Science and Technology was involved in the project indirectly. The overall objective of the Project was to enhance the capabilities of the Iraqi Regulatory Body and its personnel in all aspects of their mission by transferring knowledge and know-how from EU experts, including improvement of the institutional infrastructure, the licensing process and licensee oversight, the regulation and oversight of nuclear safety and radiation protection of radioactive waste management activities, decommissioning of nuclear facilities and remediation of contaminated sites. The support vector was directed to achieve, in all the regulatory activities, a level of efficiency in line with international standards, and consistent with the best practice of the EU, taking into account the valuable IAEA recommendations.

The Project activities were subdivided into six tasks including the project management and final reporting together with the dissemination of obtained results. Another four tasks were dealing with technical aspects. One of the tasks covered the analysis of the current Iraq legal and regulatory framework and support in the development of regulatory guidance. A set of recommendations for the improvement and update of legislation was developed. The LEI experts involved in the project were responsible

for the review of regulatory documents and existing guides related to the safety assessment of radioactive waste management facilities during its operation and decommissioning. Following the formulated recommendations, the Consortium developed 12 safety guides designed for the review of licensing documents, safety assessment and inspection activities. The LEI experts developed three safety guides devoted to the safety assessment of pre-disposal and disposal facilities, and the safety assessment of decommissioning activities.

Two separate tasks were assigned: (1) to support the Iraq regulatory staff in licensing of the new near-surface radioactive waste disposal facility at the Al-Tuwaitha site (a review of the existing pre-construction safety assessment report of this facility was conducted); (2) to transfer the EU experts' experience and state-of-the-art knowledge related to the organizing and implementation of inspections of radioactive waste disposal and interim storage facilities during their construction, operation and closure phases (under this issue three technical visits for the Iraq regulatory staff, one in the Czech Republic and another two in France, were organized at disposal facilities in both countries with mock-up inspections).

Extensive activities were conducted under the task dealing with providing theoretical and practical training that enhanced the capacity of all regulatory staff involved in the regulation and oversight of existing and future Iraqi waste management facilities, as well as of decommissioning and remediation activities. The Con-

sortium experts developed a training program addressing the identified needs of Iraqi specialists. Eight training sessions were organized, and 32 Iraq regulatory staff members were trained. The training sessions covered numerous and various topics, 20 in total. A separate training session was provided for the introduction of special computer codes RESRAD-OFFSITE and GoldSim. The LEI experts developed and provided the training and tutoring on the safety assessment of radioactive waste pre-disposal and near surface disposal facilities, decommissioning safety assessment of nuclear facilities, and on-hands training on the evaluation of various decommissioning scenarios for dose assessment.

All along the Project, a logical approach was used for its implementation with the main objective that the Iraqi Regulatory Body be ready for implementing its regulatory functions. The Project was completed in 2020 and the objectives were achieved for all tasks. At the final stage, the EC representatives indicate that taking into account the destroyed nuclear infrastructure in the country this project is of paramount importance in assisting Iraq in regulating the decommissioning of the existing nuclear facilities, the management of radioactive waste and the remediation of contaminated sites. The End-user considers this project to be a new basis for further progress in the field of nuclear waste management in Iraq. It is gratifying to note that the LEI representatives also contributed to the successful implementation of this Project, as well as to the increase of the level of nuclear safety in this country.

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