Training and Tutoring (T&T)
Projects for capacity building for Nuclear Safety Regulators through the Instrument for Nuclear Safety Cooperation

This project is funded by the European Union and implemented by ENSTTI & Iter Consult
The European Union’s view regarding the safe utilisation of nuclear energy is that it requires “a competent, independent and adequately financed national nuclear safety authority, including their technical support organisation(s)”. This view is consistent with the provisions of the International Atomic Energy Agency’s “Safety Requirements for Legal and Government Infrastructure for Nuclear, Radiation, Radioactive Waste and Transport Safety”, which address the issues of NRA competencies and training by requiring that “In order to ensure that the proper skills are acquired and that adequate levels of competencies are achieved and maintained, the regulatory body shall ensure that its staff members participate in well-defined training programmes. The training should ensure that staff members are aware of technological developments and new safety principles and concepts.” To achieve these goals, an essential aspect of the European Commission’s policy is to assist countries outside the EU in strengthening their safety authorities through the Instrument for Nuclear Safety Cooperation (INSC).

Because of the high demands on technical competence, the continuous availability of new information, the recruitment of new staff, development of new reactor types, new safety mechanisms or new assessment methodologies, there is always a need for general, in-depth and specific training for the staff of NRAs, as they should be committed to the training and development of their employees. In this respect, the Training & Tutoring (T&T) initiative to support capacity building worldwide is part of the INSC’s efforts towards making the EU a global reference in matters of nuclear safety and radiation protection, emergency preparedness and regulatory framework.

It is my pleasure to introduce you to the present document, which provides an overview of the progress achieved in this area since 2012, when the T&T initiative was launched.

Olivier Luyckx
Head of Unit, Nuclear Safety, Security
Dir B – People and Peace
Directorate-General for International Cooperation and Development
European Commission
Aiming for the highest nuclear safety standards worldwide

About the European Union
The European Union is a unique economic and political partnership between 28 European countries. In 1957, the signature of the Treaties of Rome marked the will of the six founding countries to create a common economic space. Since then, first the Community and then the European Union have continued to enlarge and welcome new countries as members. The European Union is a major player in international cooperation and development aid. It is also the world’s largest humanitarian aid donor.

The Instrument for Nuclear Safety Cooperation
The European Union attaches great importance to the highest standards of nuclear safety in Europe and beyond its borders. The Instrument for Nuclear Safety Cooperation (INSC) was set up as part of the European Commission’s Development and Cooperation Programme, and contributes significantly to improve the level of nuclear safety and efficient, effective nuclear safeguards in non-EU countries.

Key elements of INSC cooperation with non-EU countries include the promotion and development of effective regulatory frameworks, technical support to nuclear regulatory bodies, and national technical safety organisations. Other activities concern the field of nuclear safeguards, radioactive waste management and emergency preparedness. The EU aims to ensure that the concept of nuclear safety remains the top priority in regulatory and legal frameworks and operational decisions in non-EU countries.

The T&T initiative: capacity building in nuclear safety, radiation protection and control of nuclear material
The INSC includes a Training & Tutoring (T&T) initiative meant to provide capacity building in nuclear safety, security and radiation protection through a wide range of disciplines that require highly professional expertise. Building such expertise is more than a matter of education, as it involves transferring practical knowledge and culture. This transfer is best done by senior experts from Nuclear Regulatory Authorities (NRAs) and Technical Safety Organisations (TSOs) who actually work in the areas that are pertinent to regulatory practices. It is internationally recognised that the quality of training in safety and security assessment depends on the practical expertise of the trainers.

The T&T initiative: a major training and tutoring programme
The T&T initiative has been implemented since the beginning of January 2012. So far, 15 million euros have been devoted to the programme.
The T&T initiative’s partner countries around the world

To date, 23 countries are partnering in the T&T initiative run by the European Commission. The programme’s regional dimension has been expanding since 2016, with 32 regional training courses currently conducted worldwide.

Armenia
- Nuclear and Radiation Safety Center (NRSC) – (TSO)
- Armenian Nuclear Regulatory Authority (ANRA) – (NRA)

Belarus
- Gosatomnadzor (NRA)

Brazil
- Comissão Nacional de Energia Nuclear (CNEN) – (NRA)

Egypt
- Egyptian Nuclear & Radiological Regulatory Authority (ENRRA) – (NRA)

Ghana
- Nuclear Regulatory Authority, Ghana – (NRA)

Indonesia
- Badan Pengawas Tenaga Nuklir (BAPETEN) – (NRA)

Iran
- National Nuclear Safety Department (NNSD) – (NRA)

Iraq
- Radiation Protection Centre (RPC) – (NRA)

Jordan
- Energy and Minerals Regulatory Commission (EMRC) – (NRA)

Malaysia
- Atomic Energy Licensing Board (AELB) – (NRA)

Mexico
- Comisión Nacional de Seguridad Nuclear y Salvaguardias (CNSNS) – (NRA)

Mongolia
- Nuclear Energy Commission (NEC) – (NRA)

Morocco
- Agence marocaine de sûreté et de sécurité nucléaires et radiologiques (AMSSNuR) (NRA)

Nigeria
- Nigerian Nuclear Regulatory Authority (NNRA) – (NRA)

Philippines
- Philippine Nuclear Research Institute (PNRI) – DOST – (NRA)

Serbia
- Serbian Radiation Protection and Nuclear Safety Agency – (SRBATOM) – (NRA)

South Africa
- National Nuclear Regulator (NNR) – (NRA)

Tajikistan
- Nuclear and Radiation Safety Agency (NRSA) – (NRA)

Tanzania
- Tanzania Atomic Energy Commission (TAEC)

Thailand
- Office of Atoms for Peace (OAP) – (NRA)

Turkey
- Türkiye Atom Enerjisi Kurumu (TAEK) – (NRA)

Ukraine
- State Nuclear Regulatory Inspectorate of Ukraine (SNRIU) – (NRA)

Vietnam
- Vietnam Agency for Radiation and Nuclear Safety (VARANS) – (NRA)

1) Subject to adaptation as a function of training needs.
2) TSO: technical safety organisation.
3) NRA: nuclear regulatory authority.
The T&T initiative in figures

Trainers and Tutors

- Belgium: 5%
- France: 32%
- Germany: 14%
- Italy: 11%
- Lithuania: 6%
- Slovenia: 8%
- Spain: 7%
- Germany: 14%
- Spain: 7%
- Italy: 11%
- Other: 17%

Total number: 730 senior experts
Representing 36 organisations, 73% TSO and 25% NRA, 2% other types of organisations, in 14 European countries

Trainees and Tutees

Total number: 1872

- Breakdown by age:
  - <30: 338
  - 30-39: 855
  - 40-49: 424
  - 50-59: 190
  - >60: 65

- Breakdown by gender:
  - Women: 29%
  - Men: 71%

Breakdown by region:

- Africa: 23%
- Asia: 31%
- Europe-Central Asia: 23%
- Latin America: 9%
- Middle East: 14%

Training Breakdown by Topic

- Nuclear Safety: 46%
- Radiation Transport and Waste Safety: 30%
- Regulatory Framework: 14%
- EP&R: 4%
- Control of Nuclear Material: 6%

Volume of Training and Tutoring

- Training: 13,400 student.days
- Tutoring: 3,200 student.days
- i.e. 16,600 student.days over 6 years
Experience feedback from trainees and tutees

T&T courses provide postgraduate professional education to expert staff at regulatory authorities and technical support organisations from non-EU countries to help them reinforce their managerial capabilities and technical resources, and become self-reliant in executing their tasks and responsibilities. To date, more than 922 trainees and 45 tutees have built up their capacity through the T&T initiative in various areas such as nuclear safety, nuclear security, radiation protection, emergency preparedness and regulatory framework.

“In the tutoring on Decommissioning Safety, hosted by IRSN on behalf of ENSTTI as a part of the EU’s INSC programme, I gained in-depth knowledge on three major issues: the final shutdown of a research reactor, the safety of research reactor decommissioning, and the management of waste from decommissioning. In each subtheme, the tutoring starts with a brief but clear explanation by tutors followed by an assignment with a designated deadline. Before
reaching the deadline, the tutee presents his/her work, reviewed by the tutors who make remarks and suggestions. This process sequence is a good approach, as it helped me cover the different aspects and materials of the tutoring.

As a staff member of BAPETEN’s Directorate for Inspection of Nuclear Installation and Nuclear Material, I am tasked with developing inspection guidance. My involvement in the tutoring has enhanced my knowledge and skill to develop such guidance especially at decommissioning stage. The tutoring has given me a solid basis in decommissioning issues that I intend to further develop in the future, in particular as regards characteristic survey and final survey issues that are not covered yet by the tutoring.”

Joko Supriyadi
Directorate for Inspection of Nuclear Installation and Nuclear Material, Indonesian Nuclear Energy Regulatory Agency (BAPETEN)

“The INSC course entitled Radiation Protection helped me improve my knowledge of international standards, the main principles of radiation protection and nuclear installation safety, the facilities for radioactive waste, and other facilities that use radioactive materials. I learned about effective prevention of potential radiological hazards and accidents with radiological consequences, thereby keeping the exposure of the nuclear plant personnel and the public within the regulatory limits.

I think this course helped me develop and broaden my personal knowledge of the overall picture of international regulatory practices so that I may better contribute to ensuring radiation protection. This course, including an introduction to nuclear technology, radioactive waste management, decommissioning and environmental restoration, will provide the necessary basis for me to ensure the proper operation and improvement of the regulatory system in Ukraine.”

Svitlana Gorieva
Chief Inspector, State Nuclear Regulatory Inspectorate of Ukraine (SNRIU)
Mrs. Dziyana Rakitskaya, Belarus, and Mr. Younes Sadeq, Morocco, received the Merit Award “Training & Tutoring” from Mr. Adriaan van der Meer and Mr. Henri Pauwels, European Commission, during the 2017 EUROSAFE Forum in Paris.

Maro Aghazarian (Nuclear & Radiation Safety Centre (NRSC), Armenia) and Indah Annisa (BAPETEN, Indonesia), were honoured during the 2015 EUROSAFE Forum in Brussels with the European Commission Training & Tutoring Award for their top performance in the ENSTTI training courses.

This publication has been produced with the assistance of the European Union. The contents of this publication are the sole responsibility of ENSTTI and can in no way be taken to reflect the views of the European Union.

Photos credits
Benjamin Miesse/Vertigo, DR European Commission, DR Iter Consult, Karina Robin/EC, DR médiathèque IRSN, Laurent Zylberman/médiathèque IRSN

Coordination
ENSTTI for the European Commission

Copydesk
HIME, Carolyn Mc Bride Nafziger

Design and production
Martin Brunner Associés

Printing
Atelier parisien d’arts graphiques APAG
Printed on PEFC and FSC certified Condat Silk paper
ISSN: pending

Read more on

e-mail: europeaid-info@ec.europa.eu