

2015 Review Conference of the Parties to the Treaty on the Non-Proliferation of Nuclear Weapons

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Capacity-Building Initiative

**An informal group to support capacity-building networking, in the
frame of the International Atomic Energy Agency**

Working paper submitted by France and Romania*

I. The challenge of satisfying increasing capacity-building demands

A. A growing demand

In their 2010 Action Plan, States parties to the Non Proliferation Treaty (NPT) committed to “*encouraging national, bilateral and international efforts to train the necessary skilled workforce needed to develop peaceful uses of nuclear energy.*”

The two International Conferences on Human Resource Development, held in Abu Dhabi, March 2010, and in Vienna, May 2014, both called for more cooperation in building human resources for nuclear power programmes, to avoid isolationism.

Capacity-building is a key element of the responsible development of nuclear energy. As outlined in the International Atomic Energy Agency (IAEA) “Milestones”, States embarking on a nuclear power programme need to pay special attention to education and training. Capacity-building is also of utmost importance for States developing nuclear energy applications such as research reactors or medical uses. Moreover, whatever the topic concerned, Capacity-building remains a major support to safety improvement for all countries.

B. Promoting existing offers, supporting potential developments and identifying unsatisfied needs

As new nuclear power programmes develop worldwide, demands for building-up competences in both technical and political fields related to the pacific use of

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nuclear energy will increase significantly. The demand concerns not only countries willing to start a nuclear programme but also countries already involved in nuclear activities that have to face aging facilities and human resources renewal. Hence sharing know-how between nuclear countries and recipient ones becomes a real challenge; all the more so as training demands will soon exceed available capacities worldwide. Therefore, States should work together, through broad cooperation, to set up global answers to tackle this challenge. The IAEA already plays a major role in this field and should be further supported.

II. Towards enhanced cooperation, according to the four pillars of capacity-building of the International Atomic Energy Agency

As conceived by the IAEA, the Capacity-building consists of four essential elements:

- human resource development;
- education and training;
- knowledge management;
- knowledge network at the national, regional and international level.

Sharing competencies, tools and concerns could contribute to a global answer to the capacity-building challenge. A close and constant involvement of the IAEA in the Capacity-building Initiative would support the international effort while avoiding the risk of duplicating or conflicting actions.

A. Human resources development

Human resource development includes many of the other activities needed to build and maintain a highly competent, motivated workforce, including recruitment strategies, performance management, rewards, career planning and generation renewal management.

- States need to ensure they have appropriate policy and practices in place in these areas to ensure they can first attract, and then retain, competent personnel to ensure safe and efficient implementation of nuclear power programmes globally.
- A roadmap for such HRD, on a local scale, needs to be detailed and completed according to the development phase reached by the country.

B. Education and training

Member States should consider how to cope with ever increasing demands or specific needs in nuclear Education and Training, worldwide. The international nuclear community should seek for better synergies to optimize the provision of technical assistance. The IAEA could emphasize his role in directing States to possible capacity-building offers.

- Member States should identify both their needs and, based on their respective existing and internationally recognized competencies, the specific E&T programmes that they could assure or contribute to in a cooperative way.
- The access to international offer could be eased and rationalized through the identification of a National Reference Contact that would gather the national offers and answer to international or IAEA requests.

C. Knowledge management

Scientific and technical knowledge is necessary for countries willing to operate nuclear power plants but also for all the non-energy applications of nuclear technology. Inclusive cooperation to better manage nuclear knowledge should be strengthened so as to answer economic, safety, security, and non-proliferation issues in an integrated manner.

- The use of new technologies such as Internet, e-learning and smartphone apps is to be developed and encouraged to assure an efficient knowledge management, such as in the framework of the IAEA's Internet Reactor Laboratory project. For example, France is providing a virtual access to the ISIS pool research reactor to students from countries that do not run such a facility.
- Any action and tool developed to ease the public acceptance and the awareness of nuclear programmes actors is to be promoted.

D. Knowledge network

Nuclear knowledge and training infrastructures exist in different countries. The Knowledge Network could pool those capacities in a cooperative mode when answering the demands from countries, especially at regional levels. The IAEA has an essential role to play in this effort by framing and structuring the joint cooperation offers.

- Centres of excellence and their networking are models which could be duplicated in order to progressively build global cooperation networks, based on nuclear-experienced countries. Programmes dedicated to the use of Research Reactors for training sessions (ICERR programme) should be promoted identifying and assisting countries that could be designated in order to reach a sufficient world ICERR network (geographically and language speaking). The creation of bilateral agreements between ICERR designated countries and Member States willing to use them could be eased;
- Encourage the creation of local centers that could reach a regional influence.

III. Implementing the Capacity-Building Initiative

Each pillar could be led by a State willing to involve in the initiative, in close cooperation with the IAEA Secretariat. Thus the IAEA would be asked to name a co-chair for each pillar, that would be the referee of the CBI activities to the Agency.

The pillar leader would have in charge to organize up to 2 meetings a year, with all willing member States of the IAEA, to define goals, to follow the implementation of previous meetings decisions and to identify specific needs. Depending on the number of participants, such meeting could occur on the same day for several pillars, in order to limit their time consuming impact. According to the subject dealt with during these meetings, country would be free to designate any national expert they would judge suitable to attend the meeting.

An annual meeting, implying all the pillar leaders, the IAEA co-chairs, the IAEA Secretariat and the willing member states, could be organized to share information, take stock and propose actions dedicated to Capacity-building. A report of these activities could be made, each year, to the IAEA and its member States.

It could also be proposed to write a dedicated informal report, the writing of which could be led by the States willing to engage in this initiative.

A possible agenda

2015 could be dedicated to the reckoning of the education and training programmes proposed by the IAEA and the States, to build a general build-up offer “handbook”.

At the same time, all member States willing to be part of this initiative could identify a programme or action they wish to emphasize and/or major needs they have not yet a solution for.

By the second semester of 2015, those preparatory works could constitute the skeleton of the programme of actions and lead to a first draft agenda for 2016. By the beginning of 2016, States participating in the initiative could approve the agenda and start working by the board of Governors of the IAEA in March 2016 and implement activities described for 2016.

Such a yearly implementation of the initiative could be carried out till the next International Conference on Human Resource Development that France proposes to welcome in 2018.

We encourage all States concerned by the challenge of capacity-building to consider participating in the global effort to facilitate the exchange of nuclear knowledge and expertise as well as training in the field of nuclear energy, and therefore to join the Capacity-building Initiative proposed by France.

Annex

Possible actions to be launched

<i>Pillar</i>	<i>Designation</i>
HRD	<p>France intends to hold an IAEA technical Meeting on Human resource Development by the end of 2015;</p> <p>France proposes to host the third International Conference on HRD in 2018</p>
EDUCATION & TRAINING	<p>Need Self-Assessment: To assist countries to develop and maintain sustainable nuclear education and training programmes which are based on assessments of their needs and existing resources and encouraging Member States to make use, as appropriate, of IAEA services such as the IAEA Education and Training Review Service (ETRES), the Systematic Assessment of Regulatory Competence Needs for Regulatory Bodies of Nuclear Facilities (SARCON) and of the IAEA Integrated Data Base for Nuclear Education.</p> <p>To promote the participation in the IAEA Coordinated Research Project (CRP) on Innovations in Nuclear Education.</p> <p>To develop programmes for outreach from universities and R&D organizations towards society and schools.</p> <p>To encourage Member States Universities to adhere to the IAEA's initiative of an International Nuclear Management Academy (INMA): a project to provide master's degree programmes focusing on management aspects in the nuclear field.</p> <p>To promote the use of postgraduate courses such as the Basic Professional Training Course on Nuclear Safety (BPTC) and the Regulatory Control Book.</p> <p>To promote practical learning, sustainable knowledge development, train the trainer initiatives, e-learning, etc.:</p> <ul style="list-style-type: none"> • “Train the trainers” programmes directly implemented in the recipient countries increase the efficiency of Education and Training, by multiplying, locally, the human resources to train workers/operators/managers in various fields of the nuclear energy sector (safety, radioprotection, operation, maintenance, dismantling, waste management, etc.). They also reinforce domestic Education and Training capacities. Therefore, fostering partnerships among volunteered Universities or training institutions to develop “Train the trainers” programmes in a complementary and cooperative way would help address the challenges of increasing demands of capacity-building in newcomer countries deploying nuclear power programmes. In France, for instance, the International Institute of Nuclear Energy (I2EN) is the entry point for international cooperation with French E&T stakeholders in the nuclear field. I2EN fosters partnerships between French and newcomer Universities and help them implement nuclear engineering programmes and “train the trainers” programmes. It publishes a

Pillar Designation

handbook offering a selection of first-class academic programmes and providing key information to help understand the French academic system.

Education and training programmes can also benefit from the use of newly developed information technologies (e.g. “virtually improved reality”, e-learning tools, distance-learning processes). For instance, the IAEA’s Internet Reactor Laboratory (IRL) project is a cost-effective way to educate groups of students in research reactor physics, thanks to the Internet, by using hard- and soft-wares installed in a research reactor in a host state, and using video conference equipment in guest institutions. Students can interact with the operators of the reactor control room to conduct experiments, by asking them to change reactor settings, and seeing real-time display changes of the reactor’s control room. Such IRL projects should be encouraged. The French Nuclear Institute for Science and Technology (INSTN) will provide a virtual access to the Saclay ISIS pool research reactor to students from countries that do not run such a facility.

Levering extra budgetary funds to provide yearly Education and Training grants to young scientists, under the aegis of the IAEA’s Technical Cooperation Programme, could maintain the attractiveness of the nuclear sector, in times when students are more easily attracted by economics curricula.

Vocational training programmes, delivering initial, continuing and advanced nuclear training materials, just-in-time technical training or hands-on training complementing theoretical training with full scope simulators, mock-ups and heavy component workshops, are key assets to meet newly identified skill gaps. A few of these vocational training programmes already exist but they should be encouraged regionally.

KNOWLEDGE MANAGEMENT

To create a forum for knowledge management information exchange or encourage Member States to use the IAEA’s CLP4NET and CONNECT platforms in this regard as well as global knowledge networks in safety and security within the Global Nuclear Safety and Security Network (GNSSN).

To promote the integration of knowledge management practices/activities from the beginning of the nuclear infrastructure projects/programmes.

To promote the IAEA assistance in the development of the NKM programmes through KM maturity assessment services for nuclear organizations (KMAV for operating organizations, R&D organizations, Regulatory Bodies).

Encourage Member States Universities to adhere to the initiative launched by the IAEA’s Nuclear Knowledge Management Section to create an International Nuclear Management Academy (INMA): a project to provide master’s degree programmes focusing on management aspects in the nuclear field and allow students to follow “à la carte” curricula in various INMA partner Universities.

Pillar Designation

KNOWLEDGE NETWORK

Member States often require access to research reactor (RR) facilities typically to conduct nuclear R&D projects and/or to educate and train their young nuclear scientists, engineers and technicians (in various domains such as RR operation, nuclear safety or RR maintenance). Accessing RR facilities can present significant challenges for newcomers countries, because if access to such nuclear infrastructure is available at various research organizations and/or universities, is often both expensive and cannot be realized quickly. The “IAEA designated International Centre based of Research Reactor” (ICERR) is intended to help countries gain timely access to relevant nuclear infrastructure based on RRs and their ancillary facilities. Some RR facilities in experienced countries gave established long-standing nuclear R&D and capacity-building programmes at regional or international levels. Newcomer countries could benefit from the direct use of these facilities which they have established and adopted to operate their facilities, and from continued and/or expanded international collaboration to more fully exploit their infrastructure. Therefore countries possessing such RR facilities and skills should be encouraged to join the IAEA’s ICERR project.

To develop partnership between knowledge networks and experienced nuclear organizations that can support capacity-building activities with experts, tools or training programmes. For example, within the GNSSN, the regional networks in Asian (ANSN), Africa (FNRBA), Arab countries (ANNuR) develop over 80 capacity-building activities per year, based on regional needs, and use expertise from partner organizations in countries with significant experience in nuclear technologies.

To support the activities of the regional networks on nuclear education and training (ANENT, LANENT, AFRA-NEST).
