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Nuclear Cooperation for Development

by

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The Role and Responsibilities of the International Atomic Energy Agency

The IAEA is an independent intergovernmental, science- and technology-based organization that reports regularly to the UN General Assembly. The sphere of IAEA's work extends to three core competencies: technology, safety, and verification. At present the Agency has 137 member states and employs 2,173 professional and support staff in six departments: Nuclear Energy, Nuclear Security, Safeguards, Nuclear Sciences and Applications, Technical Cooperation, and Management. The Agency also has three international laboratories and research centres and 132 active co-ordinated research projects involving over 2,000 research contracts and agreements; 54 intergovernmental and non-governmental organizations worldwide have formal agreements and arrangements with the Agency.

The IAEA serves as a global forum for scientific and technical cooperation for the peaceful use of nuclear technology. Its annual budget is about US$ 353 million, of which 23 % is used by the Department of Technical Cooperation (TC). For over 40 years it has supported technology transfer activities to help build capacity in developing countries to use nuclear science and technology. The TC fund has US$ 73 million at its disposal for about 800 projects in 100 member states, both national and regional, of which 21 % are human health related, 18 % safety rela-

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ted and 17 % in the area of food and agriculture. The remaining 44 % is in the fields of physical and chemical applications, water resources, human resource development and capacity building, nuclear science, nuclear power, nuclear fuel cycle and radioactive waste management technologies, and security of nuclear material.

The national projects are linked to national development priorities and require a clear government commitment for their approval. Priority is given to those national projects that produce a tangible and sustainable socio-economic impact and support an enabling environment for the use of nuclear technologies. Member states are encouraged to enhance strategic planning for the nuclear sector, and their institutions are encouraged to develop "markets" or "clients" for their products and services.

Regional projects aim to develop a regional base for expert services and host institutions, to support centres of reference for technical and managerial leadership, and to foster South-South cooperation by — inter alia — concluding formal agreements with local institutions to implement regional activities. Intergovernmental agreements [1]* — for which the IAEA acts as technical secretariat — cover research, development and training and provide opportunities for cooperation among counterpart organizations.

The centres of reference — Regional Resource Units or Centres (RRCs) — are science and technology institutions with comparative advantages in experience, expertise or infrastructure, which exercise a leadership role for projects in given thematic areas and provide technical and management services to other institutions in the region at a nominal fee. In Asia there are for example the Bone Bank at Singapore National University for training of instructors on the distance learning package in tissue banking; the Marine Science Institute in Manila, Philippines, on harmful algae bloom toxins; the Analytical Laboratory in PINSTECH, Pakistan, for analysis of environmental samples; and the Malaysian Institute of Nuclear Research & Technology (MINT) for fellowship training of pre-disposal treatment of solid and liquid low-level radioactive materials.

Technical cooperation works under a two-year programming cycle requiring efficient rules and procedures, and timeliness and relevance of project outputs. The main modalities of delivery are four: expert services, training, fellowships, and equipment. The Agency's strategic directions are aimed at :

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* The number in brackets [ ] refers to the note, p. 55.

— Strengthening of self-reliance and sustainability of counterpart organizations ;
— Building partnerships with development organizations ;
— Result-based tangible benefits for targeted population groups ;
— Developing competence in the technology marketplace ;
— Fostering technical cooperation among developing countries.

Moving from Technology Transfer to Knowledge Transfer and Sharing

While the more developed countries play a leading role in the social-political-economic shift associated with globalization, the developing countries are facing a watershed of challenges in this new era of global integration and economic restructuring, which in many cases is overwhelming the capacities of their institutions. The knowledge intensive nature of national development in the 21st century requires governments to invest heavily in research and development. It also requires national authorities to work differently by integrating the resources of the public sector, private sector, academic sector and non-governmental organizations.

In the past few years there have been numerous discussions about knowledge management, with increasing emphasis on the extent to which an organization captures, utilizes and transfers its knowledge and experience and the direct impact it has on national development.

Preserving the intellectual capital, transferring knowledge and experience, and encouraging continual learning are the essential activities for technology- and science-based organizations in the coming decades. For organizations like the IAEA, this means that we must be capable of fostering and sharing intellectual capital to stimulate innovative new ideas and approaches to underpin the competitive sustainability of the national nuclear institutions.

Recent experience at IAEA substantiates that most project and programme objectives are better achieved by developing capacity to create knowledge than by just developing technical skills. In other words, the competencies required for expected performance call for more stable institutions and a pool of human resources with broader or more in-depth understanding than can be realistically expected from training. If longer-term programme objectives are adopted, it follows that longer-term strategies for training and learning are required. For the IAEA, this has

implications on the duration, scope, nature and setting for technical cooperation activities. For instance, isotope hydrology is gaining prominence as a long-term TC programme priority. Conventional training in isotope hydrology techniques may provide the skill to sample, analyse or even model the results of data collection, but not necessarily the understanding needed to meet national water resource management requirements that call for judgement on matters of data relevance or the exploitation of cognitive opportunities. In these instances, understanding the broader context of isotope analysis and possessing the competence to judge options requires a more holistic approach of longer duration or intensity.

How Can the Agency Support the Role of Academies as Science Brokers for Development ?

Within the framework of our technical cooperation activities, we are now actively collaborating with over 1,930 national counterpart institutes and other institutions involved in research, education and training, or providing host support for fellows or scientific visitors in the various nuclear-related fields. In the next few years we plan to undertake a global survey to register and assess the scientific and technical competencies and capacities of such institutions existing in developing countries. One expected outcome of this assessment that might be of common purpose for scientific academies is the identification of institutes that are not just interested receivers but capable of advancing science and technology for development by assuming greater technical and management responsibility for key applications of nuclear science and technology in human health and nutrition, natural resource management, environmental management, soil fertility and animal production, to name but a few.

Conclusion

Globalization and the market economy present increasing difficulties for national scientific and technical organizations as they attempt to make choices about how to respond and allocate their scarce resources. This challenge is particularly acute for scientific and technical institutes in developing countries that need to face "options" as to what actions and strategies are appropriate for their particular objectives. As mentioned

before, knowledge networks are gaining importance as key actors for national development and as an essential element of international cooperation — this is particularly so in the nuclear sciences. The academic and scientific communities around the world are also under increasing pressure to better meet the demands of this new knowledge and information-intensive global community.

There is a need for a new approach to cooperation that takes into account the current transformations and that is grounded in a systemic analysis of local realities, including the knowledge, education and learning requirements for the information age. Scientific academies can play an important and vital role in facilitating this new knowledge-based approach to international cooperation for development by helping to bridge between the various stakeholders of today's globalized but fragmented knowledge society.

NOTE

[1] African Regional Agreement for Research, Development and Training related to Nuclear Science and Technology among African member states (AFRA) ; Regional Agreement for the Promotion of Nuclear Science and Technology in Latin America and the Caribbean (ARCAL) ; Regional Agreement (RCA) for East Asia and the Pacific ; Agreement for Arab States in Asia for Research, Development and Training related to Nuclear Science and Technology (ARASIA).