INTERSESSIONAL PANEL OF THE UNITED NATIONS COMMISSION ON SCIENCE AND TECHNOLOGY FOR DEVELOPMENT (CSTD)

Lisbon, Portugal
6-7 November 2023

Contribution by IAEA

to the CSTD 2023-2024 priority theme on "Global cooperation in science, technology and innovation for development"

PRIORITY THEME 2: Global cooperation in science, technology and innovation for development

United Nations Commission on Science and Technology for Development (CSTD)

To whom it may concern

The 26th CSTD annual session selected "Global cooperation in science, technology and innovation for development" as one of the priority themes for its 27th session (2023-24 period). This theme addresses SDG 17 "Strengthen the means of implementation and revitalize the Global Partnership for Sustainable Development" at the 2030 Agenda.

Although the contribution of science, technology and innovation (STI) to the achievement of other sustainable development goals (SDGs) is discussed in every session of the CSTD, SDG 17 itself has not been specifically addressed for several years in the Commission. Interaction among CSTD members has resulted in several pilot programmes for international collaboration in STI. However, there is a need to consider from a broad strategic perspective the question of international collaboration in STI, including its digital dimensions. Under this priority theme the Commission could discuss the status of global STI cooperation (including coordination and funding) in knowledge creation and dissemination, the diffusion and sharing of technology and alternative modes of technology creation and distribution such as open-source approaches.

Under this theme, the Commission will examine how STI organizations at the global and regional levels collaborate better to scale up their impact on key development challenges; how to ensure that the international STI agenda is aligned with the development priorities of the Global South and includes adequate mechanisms for cooperation and sharing; and finally what could be the role of the CSTD in coordinating and imparting directionality to international STI collaboration and technology sharing.

The CSTD secretariat is in the process of drafting an issues paper on the theme to be presented at the CSTD inter-sessional panel meeting to be held in the second half of October 2023 in Portugal. In this context, we would like to solicit inputs from international organizations, UN entities and agencies, and regional commissions on this theme. We would be grateful if you could kindly answer the following questions based on your organization's work at the global, regional, and/or national levels:

1. What STI cooperative mechanism(s) at global or regional levels has your organization initiated or joined in?
2. To what extent the existing cooperation programmes are aligned with the development priorities of participating developing countries?
3. What are the main outcomes of such mechanism(s)? And what are the impacts of the resultant cooperation on participating countries? Pls. include the gender dimension.
4. What are the main difficulties your organization has encountered or is facing when implementing the cooperation mechanisms?
5. In respect of achieving the objectives and goals, what are the factors contributing to the success or failure of the cooperation mechanism(s) in which your organization has joined?
6. What cooperation could your organization propose to CSTD in coordinating and imparting directionality to international STI collaboration and technology sharing?

Please indicate contact person(s) responsible for projects/policies and international collaboration in this context in case we need clarification on the inputs.

Please send your responses and any further inputs on the theme to the CSTD secretariat (stdev@unctad.org) by **15 August 2023**. We look forward to receiving your valuable inputs.

Sincere regards,

CSTD secretariat

1. ***What STI cooperative mechanism(s) at global or regional levels has your organization initiated or joined in?***

- Several cooperative mechanisms have been put in place over the years to ensure the provision of sustainable STI support to Member States in relation to development needs. Examples include:
    - The African Regional Cooperative Agreement for Research, Development and Training related to Nuclear Science and Technology (AFRA), which entered into force on 4 April 1990, provides a framework for African Member States to intensify their collaboration through programmes and projects focused on the specific shared needs of its parties. Its activities cover a wide range of peaceful applications of nuclear science and technology that contribute to the achievement of national and regional development priorities.
    - The Regional Cooperative Agreement for Research, Development and Training Related to Nuclear Science and Technology for Asia and the Pacific (RCA) was first established in 1972 to intensify collaboration through programmes and projects focused on the specific shared needs of its parties and to promote and coordinate cooperative research, development, and training projects in nuclear science and technology;
    - The Regional Cooperation Agreement for the Promotion of Nuclear Science and Technology in Latin America and the Caribbean (ARCAL), established in 1984, provides a framework for Member State collaboration to address key development priorities in the region, focusing on pressing needs related to food security, human health, environment, energy, industry and radiological safety;
    - The Cooperative Agreement for Arab States in Asia for Research, Development and Training related to Nuclear Science and Technology (ARASIA) entered into force on 29 July 2002, promotes and coordinates activities for training, research, development and applications of nuclear science and technology.
- Special initiatives are launched to tackle in a coherent and comprehensive manner the support to be provided to specific regions. This is the case, for instance, of the Sub Regional Approach to the Pacific Islands (SAPI) initiative, a programmatic and cooperative approach that seeks to upscale good practices for the increased uptake of capacity building for delivering results of scale. SAPI seeks to establish the core national human resource and subsequently institutional capacities to enable Pacific Islands to implement the identified national sectoral priorities for increased resilience of the Pacific societies and economies through the peaceful utilization of nuclear science and technology. Ultimately, SAPI aims to establish sub-regional resource centres in the Islands for exchange of knowledge and continuous learning, whereby linking these to mature knowledge hubs for advancing their already acquired expertise.

- The IAEA is using laboratories network such as the Zoonotic Disease Integrated Action (ZODIAC) National Laboratories network, the Veterinary Laboratory (VETLab) network, the Analytical Laboratories for the Measurement of Environmental Radioactivity (ALMERA) network, or the joint IAEA/WHO Network of Secondary Standard Dosimetry Laboratories, to name a few, to ensure that laboratories across the world apply nuclear techniques and measurements in agreement with internationally agreed standards. Networking mechanisms are also at the core of the work of the IAEA, including the IAEA's flagship initiatives addressing global challenges such as prevention of zoonotic diseases (ZODIAC), plastic pollution (NUTEC Plastics), access to cancer care (Rays of Hope) and the assessment of freshwater resources (Global Water Analysis Laboratory, GloWAL Network).
- The IAEA designated International Centre based on Research Reactors (ICERRs) scheme is intended to help IAEA Member States gain timely access to relevant nuclear infrastructure based on research reactors (RRs) to achieve their capacity building and R&D objectives. ICERRs are organizations which make their RRs, ancillary facilities, and resources available to organizations and institutions of IAEA Member States through bilateral arrangements, facilitated by the IAEA. The timely development of necessary capabilities and infrastructure often requires access to research reactor (RR) facilities. Delays or limited access to these facilities presents significant challenges to interested Member States. For interested parties, ICERRs provide an opportunity to access RR capabilities sooner and, possibly, at a lower cost. The ICERR scheme also enhances the utilization of existing RR and associated facilities, effectively contributing to the development and deployment of innovative nuclear technologies. Currently there are 7 ICERRs in different regions of the world.
- The IAEA maintains a number of international networks, whose main goal is to strengthen international cooperation and dialogue on nuclear technologies, facilitate cooperation between network participants, and help them share experience and expertise. Examples include the IAEA CONNECT platform, an online environment that hosts a wide range of IAEA's networks that brings together professionals and experts from IAEA and its Member States to facilitate the sharing of information and capacity building while offering a centralized resource hub in their topical areas. The networks cover topics such as nuclear energy capacity building, low level waste disposal, disused sealed radioactive sources, predisposal, Innovation to Support Operating Nuclear Power Plants, Life Management of Nuclear Power Plants and many others.
- The Agency also enters into agreements with global and regional networks and organizations to enhance cooperation in various areas related to the IAEA's mandate to enhance capacity of Member States, enable deeper information exchange and contribute to development. For

example, the Agency concluded Practical Arrangements with the International Youth Nuclear Congress in the area of nuclear science and technology, Memorandum of Understanding with the Arab Atomic Energy Agency in the area of strengthening nuclear power programme infrastructure, nuclear safety, security and application, and a Memorandum of Understanding with the Latin American Energy Organization on cooperation in the area of energy.

2. To what extent the existing cooperation programmes are aligned with the development priorities of participating developing countries?

The IAEA supports its Member States in the development context primarily through its Technical Cooperation programme, which is based on the so-called "central criterion": ownership. Project and programmes can only be developed and approved if there is a strong, formal commitment by the recipient country/es to undertake the endeavour/s.

In addition, the Country Programme Framework (CPF) is a tool designed by the IAEA to define mutually agreed priority development needs and interests to be supported through technical cooperation activities. A CPF reflects national development plans and priorities, country specific analyses and lessons learned from past cooperation, taking into consideration the Sustainable Development Goals, as appropriate. This ensures that the application of nuclear technologies is integrated with existing development initiatives and plans, and supports the identification of areas where such technologies might be usefully deployed. A CPF generally covers a period of four to six years.

Within the context of the Regional Cooperative frameworks, regular meetings are taking place to define the foci of multi-year planning programmes. For instance, a taskforce meeting of the AFRA took place in July 2023 to define the strategy for the period 2024-2028, aligning the IAEA regional programme for Africa, the African Union's Agenda 2063 and the 2030 Agenda.

With regards to research and development, the IAEA operates Coordinated Research Projects (CRPs). These projects are devised based upon development needs of Member States where nuclear sciences and applications have a comparative advantage; each project targets a specific research and development aspect (such as development, validation, standard operating procedures, pilot testing of a given method) and involves 10-15 researchers from developed and developing countries. At the moment the IAEA is managing about 100 CRPs per year in the field of nuclear sciences and applications, representing a network of about 1000-1500 scientists, over and above the IAEA specialized staff.

About 30 countries, including many developing countries, are considering or embarking on new nuclear power programmes to diversify their energy mix. A nuclear power programme requires a long-

term commitment and a national nuclear infrastructure that provides governmental, legal, regulatory, institutional, managerial, technological, human resource, industrial and stakeholder support throughout its life cycle. When countries proceed with this option, the IAEA is ready to support them through a variety of activities and services to do so safely, securely and sustainably. A key coordination mechanism for this IAEA support is the Integrated Work Plan (IWP); this plan, jointly developed by the IAEA and the nuclear newcomer country, is a strategic planning framework that defines the IAEA's integrated activities to support the country's nuclear power infrastructure development.

The Country Nuclear Power Profiles (CNPP) provide background information on the status and development of nuclear power programmes of Member States. The CNPP's main objectives are to consolidate information on the nuclear power infrastructure and developments in participating countries, and serve as a resource in effective planning, decision making and implementation of nuclear power programmes that lead to the safe and economical operations of nuclear power plants.

The CNPP summarizes organizational and industrial aspects of nuclear power programmes and provides information about the relevant legislative, regulatory and international framework in each country. Statistical data about nuclear plant operations, energy and electricity use are drawn from national contributions and the IAEA's Power Reactor Information System (PRIS), IAEA's Energy Economic Data Base (EEDB) and World Development Indicators (WDI) of the World Bank. The CNPP website is updated on an annual basis, with a complementary publication providing a high-level overview of programmes in participating Member States.

The IAEA Platform on Small Modular Reactors (SMRs) and their Applications (SMR Platform) coordinates the Agency's activities in this field and provides a 'one stop shop' for Member States and other stakeholders. The SMR Platform offers expertise from the entire Agency, encompassing all aspects relevant to the development, early deployment, and oversight of SMRs and their applications. Within the SMR Platform, the IAEA has developed the SMR Coordination and Resource Portal for Information Exchange, Outreach and Networking to provide an overview of all Agency resources, service and activities on SMRs and their applications, facilitating exchange of information and experience among Member States.

The Agency also conducts peer review services to provide assistance with assessment or evaluation of the status and/or performance of a programme, processes, practices and/or capabilities with respect to a topic or particular area based on specific IAEA reference publications, identified good practices and individual expertise. There are 8 peer review services offered in the area of nuclear energy covering various aspects of nuclear power programmes and research reactors from nuclear fuel cycle's front end to decommissioning.

3. What are the main outcomes of such mechanism(s)? And what are the impacts of the resultant cooperation on participating countries?

The cooperative mechanisms are a key instrument to guarantee sustainability of results and ensure continuous support among Member States. All the mechanisms highlighted are based on strong South-South and Triangular Cooperation principles.

Utilising such cooperative approaches will guarantee a higher impact for the results of projects and programmes delivering capacity building or transferring technology that provides solution to specific problems (such as, for instance, cancer care, clean energy transition using nuclear power). In other cases, when the scope of the use of the nuclear science and technology is to provide data (such as, for instance, on the presence of microplastics in marine organisms, or the quality of water), the use of cooperative approaches enables harmonisation of data for informed decision making while reducing the technical gaps between developed and developing countries.

While developing international research cooperation and contributing to the advancement of nuclear sciences and applications, the CRP mechanism helps building research and development capacity at national level that is critical for the sustainable use of these techniques for socio-economic development.

4. What are the main difficulties your organization has encountered or is facing when implementing the cooperation mechanisms?

Still too often the potential of the nuclear science and technology in areas such as food safety, food security, climate change adaptation and mitigation, water resource management, fight against pollution, human and animal health, clean energy transition is not widely known. This could be a factor preventing the formulation of comprehensive projects and programmes that could bring together several forms of science and technology to tackle a common goal. Furthermore, the results of some of the cooperation projects require scaling up, which goes beyond the mandate of the IAEA and the resource available to it.

Availability of resources, including human resources, can also represent a challenge.

5. ***In respect of achieving the objectives and goals, what are the factors contributing to the success or failure of the cooperation mechanism(s) in which your organization has joined?***

- Engagement of all stakeholders from the inception phase;
- Ownership of the project/programme by the recipient country/es;
- Enhanced capacity to guarantee sustainability of efforts;
- Good understanding of the potential for complementarity of action among different technologies;
- Buy in/investment of the private sector.

6. ***What cooperation could your organization propose to CSTD in coordinating and imparting directionality to international STI collaboration and technology sharing?***

- Raise awareness about the potential of nuclear science and technologies in complementing other STI to enable progress towards the SDGs;
- Maximize the technical networks managed by the IAEA (for example the VETLab Network was pivotal to the successful delivery of equipment and diagnostic kits at the onset of the COVID-19 pandemic; the ALMERA network was used to monitor ocean radioactivity following the Fukushima Daiichi accident).