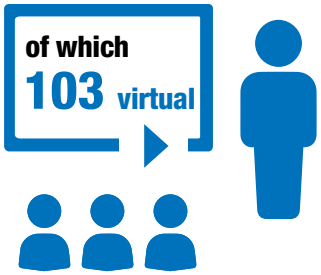
Management of Technical Cooperation for Development

146
countries and territories receiving support through the Agency's technical cooperation programme

including **34** least developed countries

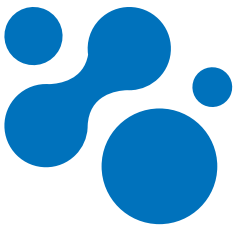
119
regional and interregional training courses



Technical Cooperation Fund

€89.6 million
target for voluntary contributions

€85.3 million received
95.2% rate of attainment



4 imPACT
review missions

743
fellows and scientific visitors, of which
11 virtual

2898
training course participants, of which
2526 virtual

2021

973
active projects

603
projects closed or in closure at the end of 2021

116 Country Programme Frameworks valid

2320
purchase orders issued

value of purchase orders issued
€64.2 million

Management of Technical Cooperation for Development

Objective

To develop and implement a need-based, responsive technical cooperation programme in an effective and efficient manner, and thus to strengthen technical capacities of Member States in the peaceful application and safe use of nuclear technologies for sustainable development.

The Technical Cooperation Programme

Programme delivery

The technical cooperation programme is the Agency's major vehicle for transferring nuclear technology and building capacity in nuclear applications in Member States. It supports national efforts to achieve development priorities, including the targets underpinning the Sustainable Development Goals (SDGs), and encourages cooperation between Member States and with partners.

The main areas of Agency technical cooperation in 2021 were health and nutrition, food and agriculture, and nuclear knowledge development and management (Fig. 1).

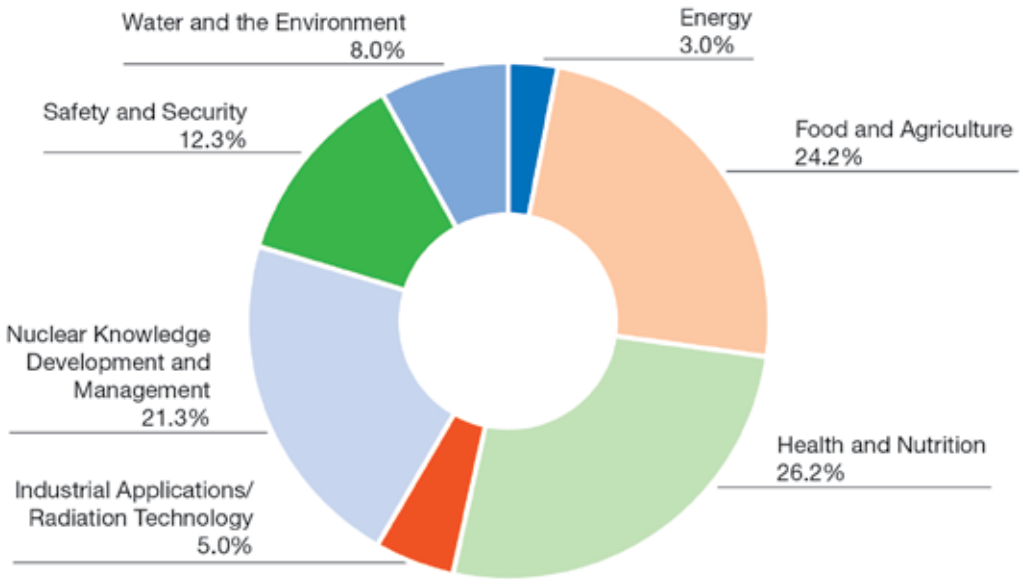


FIG. 1. Technical cooperation programme disbursements (actuals) by technical field for 2021. (Percentages do not add up to 100% owing to rounding.)

Financial highlights

Payments to the 2021 Technical Cooperation Fund totalled €86.4 million (including assessed programme cost arrears, National Participation Costs and miscellaneous income), against the target of €89.6 million. The rate of attainment on payments at the end of 2021 reached 95.2% (Fig. 2). The Technical Cooperation Fund implementation rate was 84.1%.

FIG.2. Trends in the rate of attainment, 2012–2021.

Country Programme Frameworks and Revised Supplementary Agreements

The number of valid Country Programme Frameworks (CPFs) reached 116 by the end of 2021.

The total number of Revised Supplementary Agreements Concerning the Provision of Technical Assistance by the International Atomic Energy Agency was 142.

18 CPFs were signed in 2021

Burundi	Madagascar	Palau	Slovakia
Czech Republic	Malawi	Portugal	United Arab Emirates
Djibouti	Mali	Saint Vincent and the Grenadines	Uzbekistan
Egypt	Marshall Islands	Singapore	Zambia
Ghana	Niger		

Regional Cooperative Agreements and Regional Programming

Africa

Technical cooperation projects under the African Regional Co-operative Agreement for Research, Development and Training Related to Nuclear Science and Technology (AFRA) continued to support the training of a new generation of African scientists who are applying nuclear science and technology for Africa's development.

AFRA State Parties finalized the design of 19 regional technical cooperation projects for the 2022–2023 programme cycle. These will contribute to the implementation of the AFRA Regional Strategic Cooperative Framework for 2019–2023.

Participants at the 32nd AFRA Technical Working Group Meeting (TWGM) in July discussed the performance of the AFRA programme and made recommendations to improve

delivery and effectiveness. AFRA State Parties were invited to develop a human resource development plan for nuclear science and technology, linked to national development plans and CPFs.

Participants at the 32nd Meeting of AFRA Representatives in September endorsed the recommendations of the 32nd AFRA TWGM, and encouraged AFRA State Parties to identify more training centres in the region that could be used to meet the growing training needs of the region. Participants also approved the AFRA Annual Report for 2020, and the composition of the new AFRA management committees, 60% of which is female.

Asia and the Pacific

The 2024–2029 Regional Programme Framework for the Regional Co-operative Agreement for Research, Development and Training Related to Nuclear Science and Technology (RCA) for the Asia and the Pacific region was approved at the 43rd Meeting of National RCA Representatives in April. Socioeconomic impact assessments of the RCA radiotherapy and non-destructive testing programmes, covering a 20-year period, have been prepared.

The Board of Representatives of the Co-operative Agreement for Arab States in Asia for Research, Development and Training related to Nuclear Science and Technology (ARASIA) adopted a mechanism for the selection of new Chairpersons, which will be incorporated in the ARASIA Guidelines and Operating Rules. A mechanism for the designation of ARASIA regional resource centres through the signature of Memoranda of Understanding has also been agreed, with the intention of promoting regional collaboration for capacity building, human resource development and the exchange of best practices. The ARASIA-designated regional resource centres for secondary standards dosimetry and for nuclear medicine have been supporting the implementation of ARASIA technical cooperation projects, optimizing the use of regional capabilities and enhancing capacity building and cooperation among ARASIA State Parties.

As a result of the Practical Arrangements signed with the Association of Southeast Asian Nations in 2019, regional projects on emergency preparedness and response, agricultural value chain improvement and the protection of cultural heritage objects were developed for the 2022–2023 technical cooperation cycle.

Agency experts and medical staff discuss radiotherapy during a visit to Tashkent City Oncology Centre, Uzbekistan.

Europe

Technical cooperation activities in Europe were carried out in close collaboration with Member States, and in alignment with the Europe Regional Strategy, the Europe Regional Profile and the priorities identified in individual CPFs. Training events and expert missions were held both in person and on-line. More than 200 requisitions for procurement of equipment were processed to support priority infrastructure upgrades.

In March, National Liaison Officers (NLOs) and National Liaison Assistants (NLAs) participated in a biennial meeting at which the regional proposals for the 2020–2022 technical cooperation cycle were discussed and prioritized, and 15 new regional projects and 78 national projects were submitted for the approval of the Agency's Board of Governors in November.

At the annual NLO meeting, participants agreed to begin work to update the Europe Regional Profile. The exercise will define common needs and priorities in the region that could be addressed using nuclear technologies, and will guide the development of regional projects in the medium term. A working group with Member State representatives was established to lead the revision, and a draft has been prepared which will be finalized in 2022.

Latin America and the Caribbean

In a milestone for the Caribbean region, a Steering Committee was established for the Regional Strategic Framework (RSF) for Technical Cooperation with IAEA–CARICOM Member States, with the participation of NLOs, NLAs and regional organizations. The Steering Committee will monitor progress in the implementation of the RSF through the technical cooperation programme towards the achievement of the stated regional priorities.

The States party to the Regional Co-operation Agreement for the Promotion of Nuclear Science and Technology in Latin America and the Caribbean (ARCAL) and the Agency have supported the establishment of a new regional chapter of Women in Nuclear (WiN) for Latin America and the Caribbean, which was inaugurated at a side event during the 65th regular session of the Agency's General Conference. The new WiN chapter will support the equal participation of women in nuclear science and technology by promoting their contribution to technical, scientific and leadership roles in the field.

Dominique Mouillot, President of WiN Global, speaking at the WiN ARCAL side event at the Agency's General Conference.

Programme of Action for Cancer Therapy (PACT)

ImPACT (integrated missions of PACT) Review missions were conducted jointly with the International Agency for Research on Cancer (IARC) and the World Health Organization (WHO) in the Democratic Republic of the Congo, Iraq, Nepal and Uruguay, while follow-up reviews to support implementation were conducted in Honduras and Jamaica. Reviews were initiated in Colombia, the Syrian Arab Republic and Uzbekistan. PACT facilitated support to Sri Lanka to prepare a radiotherapy plan.

Workshops and webinars supported the sharing of Member States' good practices on cancer control efforts, with a view to strengthening South–South cooperation on cancer control. At a donor roundtable in June, key supporters and advocates of the Agency's work on cancer discussed ongoing activities and outstanding funding needs.

Ten countries began receiving expert advisory support from the Agency, IARC and WHO to develop comprehensive national cancer control plans (NCCPs). In one country, the three organizations contributed to a mid-term review of the NCCP. Five countries received technical assistance to develop bankable documents. Under the Women's Cancers Partnership Initiative with the Islamic Development Bank (IsDB), a bankable document from Uzbekistan was approved by the IsDB for financing in the amount of approximately €71.2 million. A bankable document from Chad developed with Agency technical assistance was approved by the Kuwait Fund for Arab Economic Development for financing in the amount of €19.6 million.

Experts from the Agency, IARC and WHO reviewed Uruguay's cancer services to provide advice to the Government on tackling the country's growing cancer burden.

Strengthening the Quality of the Technical Cooperation Programme

In 2021, the Agency reviewed the projects designed and proposed for the 2022–2023 technical cooperation programme, using a country-portfolio approach that emphasized the links between technical cooperation project design and CPFs to align planning and design and reinforce monitoring.

The submission rate of Project Progress Assessment Reports (PPARs) for the 2020 reporting period increased to 82%, up from 71% in the preceding year. The submission of PPARs provides an opportunity to record project progress towards achieving outputs and outcomes.

Knowledge management and training were improved in 2021: processes for staff induction, orientation, handover and peer knowledge sharing were enhanced. To support effective technical cooperation procurement, guidance for counterparts and end users, describing their roles and responsibilities in the procurement process, was issued.

Outreach and Communication

Over 170 web stories on technical cooperation were published. Social media channels remained an important cost-free means of communicating on a wide range of Agency development activities, and new outreach materials were issued, including *The IAEA Technical Cooperation Programme: Selected Highlights 2020*.

Two virtual seminars on technical cooperation were held for the diplomatic communities in Berlin, Brussels, Geneva and Paris, and in New York. The seminars aimed to raise awareness of the technical cooperation programme and its contribution to Member State development priorities, including achievement of the SDGs.

Four technical cooperation side events were organized during the 65th regular session of the General Conference: 'Enhancing Human Resource Development in Nuclear Science and Technology', 'The Technical Cooperation Programme in Asia and the Pacific: Major Contribution to Development', 'Developing Capacity for the Wider Use of Stable Isotope Techniques for Source Attribution of Greenhouse Gases in the Atmosphere', and 'Inauguration of the Women in Nuclear ARCAL Regional Chapter'.

Technical Cooperation outreach in 2021

172 Agency web articles on technical cooperation

7082 @IAEATC Twitter followers and
464 tweets posted (up from 360 in 2020)

2254 @iaeapact Twitter followers and
409 tweets

4356 LinkedIn followers

1682 LinkedIn TC Alumni Group members

Cooperation with the United Nations System

In January, the Agency held a side event entitled 'Nuclear Science and Technology for Climate Change Adaptation' at the Climate Adaptation Summit 2021, and engaged extensively through side events and social media outreach during the 26th session of the Conference of the Parties to the United Nations Framework Convention on Climate Change in November in Glasgow, United Kingdom.

The Agency organized side events at the United Nations Multi-stakeholder Forum on Science, Technology and Innovation for the SDGs ('From COVID-19 Emergency Response to Integrated Action to Address Zoonotic Diseases') and at the United Nations High-Level Political Forum on Sustainable Development ('Nuclear Science and Technology in Support of Integrated Actions to Enhance Countries Post-Pandemic Recovery'). Together with the World Food Programme and the United Nations Population Fund, the Agency took part in a side event at the 76th session of the United Nations General Assembly on COVID-19 response and approaches to strengthen health systems.

The Agency participated in the United Nations Department of Economic and Social Affairs (UNDESA) Second Open Call for SDG Good Practices, Success Stories and Lessons Learned, submitting seven SDG Good Practices related to the Agency's support to Member States in a variety of areas. All seven SDG Good Practices are now available on the UNDESA website.

Partnership Agreements and Practical Arrangements

The Agency concluded several new partnerships related to technical cooperation in 2021, with the Global Plastic Action Partnership (GPAP), the World Meteorological Organization (WMO), the China International Development Cooperation Agency (CIDCA), the Pakistan Atomic Energy Commission (PAEC), the City Cancer Challenge (C/Can) and the Spanish Society of Radiological Protection (SEPR). One existing partnership, with Enresa, was extended, with the aim of building on the results achieved and continuing joint work in the area of radioactive waste management.

The GPAP brings together governments, businesses and civil society to translate commitments into meaningful action at global and national levels to free the world from plastic waste and pollution. As an affiliate member, the Agency will collaborate with GPAP on the operationalization of the Nuclear Technology for Controlling Plastic Pollution (NUTEC Plastics) initiative.

An agreement between WMO and the Agency was finalized in 2021 and signed in January 2022. The two organizations pledged to work together in combating the effects of climate change and pollution in the framework of interregional technical cooperation project 'Developing Capacity Towards the Wider Use of Stable Isotopic Techniques for Source Attribution of Greenhouse Gases in the Atmosphere'.

The Agency joined forces with the CIDCA to scale up action to support developing countries in the achievement of the SDGs, and to strengthen South–South and triangular cooperation. The agreement is also expected to support the implementation of NUTEC Plastics and the Zoonotic Disease Integrated Action (ZODIAC) initiatives.

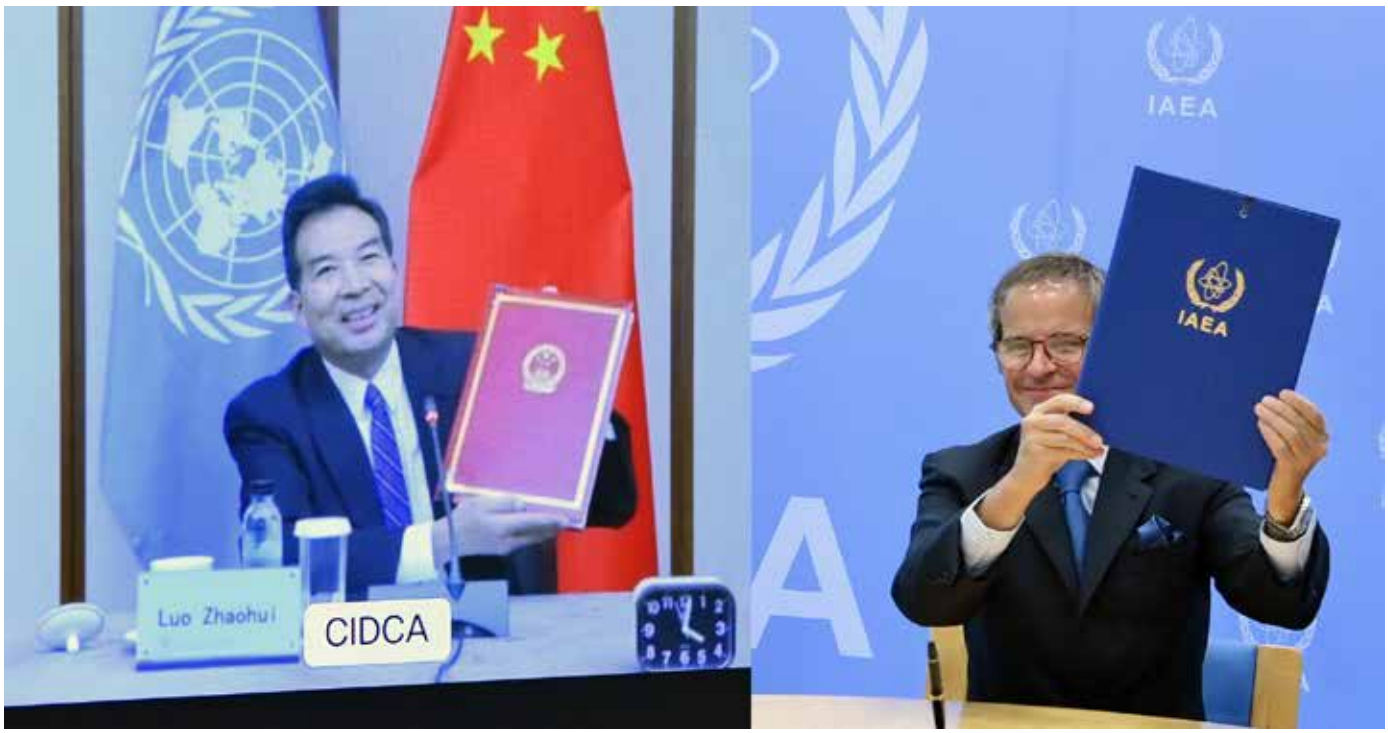
The Agency and the PAEC signed Practical Arrangements that will enable regulators and users of nuclear technology from Africa and Asia and the Pacific to benefit from PAEC's long-standing experience in managing nuclear power and nuclear technology projects.

The Agency and C/Can entered into partnership for the benefit of cancer patients in cities in low and middle income countries, focusing on improving access to quality radiation medicine.

Practical Arrangements were signed with the SEPR to enhance cooperation in radiological protection.

Activities and actions under existing agreements

Two joint regional projects on food safety and climate resilient agriculture have been developed under existing Practical Arrangements between the Agency and the United Nations Industrial Development Organization. Efforts are ongoing to mobilize resources for both projects.



A Memorandum of Understanding with the CIDCA, the first of its kind between the Agency and a national development or aid institute, was signed on 14 October.

The Practical Arrangements for triangular cooperation signed between Cambodia, the Lao People's Democratic Republic and Viet Nam supported virtual training events organized by Viet Nam for Cambodian institutions on radiation protection and safety, the industrial application of radiation processing and non-destructive testing. The Arrangements also supported fellowships in Viet Nam for trainees from the Lao People's Democratic Republic.

Through imPACT Reviews, NCCP advisory support and follow-ups to cancer assessments, the Agency works with IARC and WHO to address cancer comprehensively. During the annual consultation between the three agencies, efforts to increase synergies in cancer control assessments, streamline data collection and collaborate on resource mobilization efforts were advanced. The Agency, through PACT, continued to work with the Global Access to Cancer Care Foundation, the Union for International Cancer Control and the Joint United Nations Programme on HIV/AIDS to implement existing partnerships.

Legislative Assistance

The Agency continued to provide legislative assistance to Member States through workshops, missions and meetings to raise awareness, advise and train on developing and revising national legislation and adhering to and implementing the relevant international legal instruments. Seven Member States received country specific bilateral legislative assistance through written comments and advice on drafting national nuclear legislation. As an on-line alternative to some in-person activities and as a follow-up to reviews of legislation, 12 virtual activities on different aspects of nuclear law were held for Armenia, Botswana, Colombia, Côte d'Ivoire, Croatia, Indonesia, Jordan, Mali, Paraguay, Sri Lanka, Türkiye and Viet Nam. In addition, two targeted virtual workshops on nuclear law provided diplomats and officials from permanent missions located in Berlin, Brussels, Geneva, Paris and New York with a high-level overview of international and national nuclear law and the Agency's role in the development and implementation of nuclear law including assistance provided through the legislative assistance programme. Further,

three regional and sub-regional workshops on nuclear law were held for English-speaking Member States in Africa and in Latin America and the Caribbean, and for French-speaking Member States in Africa.

Owing to COVID-19 related restrictions, the 2021 session of the annual Nuclear Law Institute interregional training event had to be postponed until 2022. Building on a series of interactive webinars on nuclear law held in 2021, the Agency launched a new series of webinars focused on topical issues in nuclear law. During 2021, planning was under way for the Agency's First International Conference on Nuclear Law: The Global Debate, which is scheduled to take place at Headquarters in 2022.

Treaty Event

The annual Treaty Event took place during the 65th regular session of the General Conference, providing Member States with an additional opportunity to deposit their instruments of ratification, acceptance, or approval of, or of accession to, the multilateral treaties deposited with the Director General. The event focused on the multilateral treaties relating to nuclear safety and security and to civil liability for nuclear damage.

CASE STUDY

Improved Aquifer Management in Namibia

Groundwater provides half of all drinking water worldwide. The impact of climate change on groundwater sources severely impacts the availability and quality of water in many countries, including Namibia. With a drought emergency declared in 2019 and increasingly extreme weather conditions in recent years, annual rainfall may no longer be sufficient to replenish groundwater resources, according to experts. The growing influx of people living in and moving to Namibia's capital, Windhoek, as well as to coastal cities, is contributing to the country's struggle to maintain water supplies.

The Agency, Namibia's Ministry of Agriculture, Water and Land Reform, and Germany's Federal Institute for Geosciences and Natural Resources have collaborated to investigate Namibia's water resources, in order to protect them and ensure that water supplies are sufficient all-year-round. The project uses isotopes which reveal information about the nature, history and flow of water, enabling an assessment of water variability in aquifers.

"Using isotopes to assess our groundwater resources is of extreme importance for maintaining reliable sources of water throughout the country," said Anna Kaupuko David, a hydrogeologist at Namibia's Ministry of Agriculture, Water and Land Reform. "If we suffer from a drought, the Windhoek aquifer becomes our emergency water supply for the city and can last at least three years. However, it is unclear how using the aquifer in this way would impact its future."

Namibia, the driest African country south of the Sahara Desert, is prone to droughts and suffers from limited freshwater resources.

Analysing the evolution of the country's rain distribution during the rainy summer season and the dry winter season through isotopes has indicated how the availability of groundwater can be altered in cases of drought due to climate change. Through this improved knowledge of groundwater dynamics, experts in Namibia can manage water resources better and avoid water emergencies such as the 2019 drought.

An on-line training course launched in May 2021 helped participants to understand how isotopes can be used to accurately assess and manage groundwater. "The training session taught us how to plan our field trips and collect samples of stable isotopes, as well as considerations and equipment needed to collect good quality samples for analysis," said Kaupuko David.

The study began by taking samples from the Kuiseb aquifer, a groundwater source that is under extreme stress from supplying water to the growing cities of Walvis Bay and Swakopmund. Results from these samples will be used to predict the future impact of climate change on national groundwater resources and to guide protection and governance activities.

"The use of isotopes is an area of great importance in adapting to climate change. Through technical assistance and targeted capacity building, the Agency is continuously building partnerships and bridges to coordinate responses to drought emergencies and to ensure that countries are able to manage water resources in a sustainable way," said Anna Grigoryan, the Agency's Programme Management Officer coordinating activities in Namibia.

CASE STUDY

Global Support for Nuclear-derived COVID-19 Testing Equipment, Supplies and Training

At the request of governments from all over the world, the Agency has delivered COVID-19 testing support and equipment to 305 laboratories in 129 countries and territories for the rapid and accurate detection of the disease. The deliveries began in 2020 and continued in 2021, with additional funding of approximately €3.5 million allotted and further countries such as Samoa and Suriname receiving support.

"The impact of our work to save lives and livelihoods has helped millions of people so far. By helping countries in need through providing necessary equipment, we have helped protect the wider international community," said the Agency's Director General, Rafael Mariano Grossi.

The Agency's assistance helps countries boost their use of real time reverse transcription–polymerase chain reaction (RT–PCR) tests – the most accurate and widely used method to detect specific genetic material from pathogens, including viruses. PCR is a nuclear-derived method whose use has been supported by the Agency, in collaboration with the Food and Agriculture Organization of the United Nations (FAO), for detecting animal viruses for decades.

The COVID-19 assistance is the biggest emergency operation in the Agency's history. Agency assistance is delivered through an interregional technical cooperation project

The Agency is dispatching equipment to countries and territories around the world to enable them to use a nuclear-derived technique to rapidly detect the coronavirus that causes COVID-19. (Photograph courtesy of the Scientific Research Organisation of Samoa.)

established as part of the 2020–2021 technical cooperation programme, designed to respond to countries' needs in the event of disease outbreaks, emergencies and disasters. Along with equipment, the Agency is providing testing reagents and consumables to laboratories to perform RT–PCR tests. Items include biosafety supplies, such as personal protective equipment and laboratory cabinets to ensure the safe handling, storage and analysis of collected samples.

The Agency is also providing technical guidance and advice for health and laboratory professionals through webinars and videos on-line. Topics covered include guidance on establishing molecular diagnostic laboratories, assessment of required equipment, and quality control measures to ensure samples are appropriately collected, stored and analysed.

Additionally, through a COVID-19-related webinar for health care providers at nuclear medicine and radiology facilities, the Agency helped health professionals adjust their standard operating procedures and minimize the risks of infection from the virus among patients, staff and the public.

During 2021, the Agency, through the Joint FAO/IAEA Centre of Nuclear Techniques in Food and Agriculture, provided guidance and information on COVID-19 detection to medical and veterinary laboratories, including standard operating procedures to identify the virus in line with World Health Organization (WHO) guidelines. The Agency is also part of the WHO-led COVID-19 Crisis Management Team, comprising 14 United Nations entities.