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IAEA EMERGENCY ASSISTANCE TO MEMBER STATES

Report by the Director General

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IAEA Emergency Assistance to Member States

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Summary

- The IAEA technical cooperation (TC) programme is designed to meet the development needs of Member States. It is flexible, to allow it to respond to evolving or unforeseen Member State needs: for example, in emergency situations where nuclear science and technology can make a contribution.
- In addition to the challenges of the COVID-19 pandemic, several IAEA Member States have been affected by natural and manmade disasters over the past 12 months. Following requests for support, the IAEA has taken swift action to deploy assistance.
- Countries who suffered emergencies during this period and reached out to the IAEA for support include Ukraine in the aftermath of flooding, Mauritius after an oil spill, Lebanon following the explosion at the Port of Beirut, a number of countries in Latin America and the Caribbean in the aftermath of hurricanes Eta and Iota, Saint Vincent and Grenadines after the eruption of the La Soufrière volcano, and Mauritius and Sri Lanka following the sinking of cargo ships off their coasts. Aflatoxin contamination was also discovered in coconut oil imports in Sri Lanka.
- Over the past 12 months, multiple requests for advice related to the breakdown of food safety controls due to the pandemic disruptions were received; as well as for an outbreak of Mediterranean fruit fly detected near the Port of Manzanillo, Mexico.
- In addition, the Emergency Management Centre for Animal Health of the Food and Agriculture Organization of the United Nations (FAO) reached out to United Nations organizations, including the IAEA, for assistance following the outbreak of lumpy skin disease in Asia in 2019.
- The IAEA took swift action to respond to the immediate needs of the affected Member States, providing assistance in the fields of human health, animal health, plant pests, food safety, water resource management, marine environmental monitoring, and radiation safety.

IAEA Emergency Assistance to Member States

Report by the Director General

A. Introduction

1. The IAEA technical cooperation (TC) programme, through which the Agency transfers nuclear technology to Member States and builds their capacities in the peaceful use of nuclear science and technology, is designed to contribute to the development needs of Member States. It is also flexible, to allow it to respond to evolving or unforeseen Member State needs: for example, in emergency situations arising from natural disasters, outbreak of diseases or accidents, where nuclear science and technology can make a contribution. The TC programme support is channelled, as appropriate, through national, regional or interregional projects in order to facilitate smooth, efficient and effective delivery.

B. Background

2. Over the past year, in addition to the challenges of the COVID-19 pandemic, several IAEA Member States have been affected by natural and manmade disasters. Following requests for support from the affected countries, the IAEA has taken swift action to deploy assistance.

3. In June 2020, Ukraine requested IAEA support following heavy rain that triggered widespread floods. Ukraine's western regions (Ivano-Frankivsk, Chernivtsi, Zakarpattia, Ternopil and Lviv) were particularly affected, with fatalities and damage to infrastructure. More than 15 000 private and municipal buildings and facilities, including medical hospitals and institutions, were damaged or destroyed.

4. In July 2020, a cargo ship ran aground on Mauritius' coral reefs. It began to break apart in August 2020, releasing heavy bunker fuel into the Indian Ocean, and becoming the worst oil spill in Mauritius' history. The oil spill occurred near ecologically sensitive areas such as the Pointe d' Esny Wetlands (an international UNESCO Ramsar wetland site) and the Ile aux Aigrettes Nature Reserve, Blue Bay Marine Park, Mahebourg Fishing Reserves and other mangrove and coral atolls areas, damaging the biodiversity-rich marine ecosystems.

5. Also in August 2020, an explosion at the Port of Beirut, Lebanon, seriously damaged the port infrastructure, killing hundreds and injuring or rendering homeless many thousands.

6. In November 2020, the category 4 hurricanes Eta and Iota hit a number of countries in Latin America and the Caribbean, causing serious damage to livelihoods, property and infrastructure. All of Honduras was affected, particularly the provinces of Atlántida, Colón Cortés, and Yoro. Primary crops

such as banana and African palm were seriously affected, as well as the economically important coffee crop. Roads and bridges were damaged, and the livelihoods of millions of people suffered. Colombia's archipelago of San Andrés, Providencia and Santa Catalina also suffered, with infrastructure – particularly roads and hospitals – and agricultural production seriously affected. On the island of Providencia, 95% of the population was affected and 98% of the infrastructure was destroyed. In Guatemala, seven of the country's 22 provinces (Alta Verapaz, Izabal, Quiché, Huehuetenango, Petén, Zacapa and Chiquimula) were affected, and thousands were displaced. Flooding and landslides affected infrastructure and had a severe impact on agricultural production, and on the livelihood of the population. In Nicaragua, infrastructure was also severely affected, with damage to the road network and land transportation. Thousands of houses were either partially or completely destroyed. Health services were seriously affected.

7. The IAEA has received multiple requests from Member States for advice related to the breakdown of food safety controls due to COVID-19 restrictions and disruptions to human resources and supply chains. Several other Member States requested advice on the application of irradiation to control the SARS-CoV-2 virus.

8. In March 2021, consignments of coconut oil imported to Sri Lanka were discovered to be contaminated with aflatoxins. Some of the contaminated oil was suspected to have been released to the market before the contamination was discovered. Aflatoxins can cause liver damage and acute poisoning (aflatoxicosis) can be life threatening, causing jaundice, lethargy, nausea and death.



The eruption of the La Soufrière volcano caused widespread damage in Saint Vincent and the Grenadines. (Photo: Ministry of Foreign Affairs and Foreign Trade, Saint Vincent and the Grenadines)

9. In April 2021, the La Soufrière volcano in Saint Vincent and the Grenadines erupted, forcing thousands of people out of their homes, devastating livelihoods, and significantly affecting the environment in the Eastern Caribbean. Ashfall and pyroclastic flows damaged crops, livestock and potable water systems, affecting health and the livelihood of the population.

10. Also in April 2021, an outbreak of Mediterranean fruit fly was detected in Mexico near the port of Manzanillo in the state of Colima – the largest port on Mexico's Pacific coast. The establishment of this pest in Mexico would cause devastating damage to fruit and vegetable production and trade in the country and would threaten the horticultural industry. The National Plant Protection Organization of Mexico (SENASICA) took emergency action and requested assistance from the IAEA.

11. In May 2021, a container ship caught fire off the coast of Sri Lanka, 15 km from the main commercial harbour of Colombo, and sank, causing enormous environmental damage. The ship's cargo

included highly corrosive nitric acid, sodium hydroxide, bunker and gas oil, all of which leaked into the sea waters. Other lubricants, cosmetics and dangerous plastic pellets (nurdles) were washed ashore or surfaced in the ocean. The chemicals leaching from the vessel are a direct threat to corals, fish, turtles and other marine life, and the plastic detritus will persist in the marine environment for a long time, entering lagoons, and also being transported by prevailing currents to affect a large area in the region. Local fishermen are facing significant challenges to their livelihood, as fishing has been banned along at least 80 km of the coast.

12. In 2018, African Swine Fever entered Asia for the first time, followed in 2019 by lumpy skin disease. Both spread rapidly throughout 2020 and 2021. The Emergency Management Centre for Animal Health of the FAO reached out to UN organizations, including the IAEA, for assistance.

C. The IAEA response

13. Following requests for assistance from the Governments of the affected countries, the IAEA took immediate action, providing support according to the nature of the event and its consequences. Most of the assistance is being provided under the technical cooperation project INT0098 ‘Strengthening Capabilities of Member States in Building, Strengthening and Restoring Capacities and Services in Case of Outbreaks, Emergencies and Disasters’ which was approved by the Board of Governors at its meeting in November 2019 as part of the 2020–2021 technical cooperation (TC) programme cycle. Support has also been provided through relevant regular or extrabudgetary projects, as well as under relevant national and regional TC projects, where this assistance was in line with the objective of the projects to optimize resources and ensure a quick response.

14. IAEA assistance was provided in the thematic areas of human health, animal health, plant pests, food safety, water resource management, marine environmental monitoring, and radiation safety. The



The First Lady of Honduras and the Minister of Health receive mobile X-ray equipment from the IAEA.
(Photo: COPECO)

IAEA remains in close contact with the affected Member States and is working with them to plan mid- and long-term support through the TC programme to establish or strengthen national capacity in the nuclear techniques and applications that are relevant to their recovery efforts.



Hospital Nuevo Amanecer, Bilwi, Nicaragua. (Photo: NLO Office, Nicaragua)



Colombia's National Unit for Disaster Risk Management receives mobile digital X ray units provided by the IAEA after the hurricanes. (Photo: Ministry of Foreign Affairs, Colombia)

C.1. Health sector recovery

15. The health sectors in Colombia, Guatemala, Honduras, Nicaragua, Saint Vincent and the Grenadines and Ukraine were all affected by the natural disasters suffered by these countries. In some cases, hospitals were left without urgently needed diagnostic medical imaging capacities. The Agency procured medical diagnostic equipment, including mobile X-ray machines, for these Member States. A computed tomography scanner was procured to replace the one destroyed in Saint Vincent and the Grenadines – the only one in the country.

Member State	Natural disaster	Beneficiary institution
Colombia	Hurricanes Eta and Iota	Departmental Secretary of Health of the Archipelago San Andrés, Providencia and Santa Catalina: <ul style="list-style-type: none"> - Hospital Local de Providencia - Clarence Lynd Newball Memorial Hospital
Guatemala	Hurricanes Eta and Iota	Ministry of Public Health and Social Assistance (MSPAS): <ul style="list-style-type: none"> - Hospital El Progreso - Hospital Uspantan - Hospital Chiquimula
Honduras	Hurricanes Eta and Iota	Ministry of Health: <ul style="list-style-type: none"> - Hospital de San Lorenzo - Hospital de Roatán - Hospital de Yoro - Hospital de Tela
Nicaragua	Hurricanes Eta and Iota	Ministry of Health: <ul style="list-style-type: none"> - Hospital Nuevo Amanecer - Hospital Primario Oswaldo Padilla - Hospital Primario Pastor Jimenez
Saint Vincent and the Grenadines	Volcano eruption	Ministry of Health, Wellness and the Environment <ul style="list-style-type: none"> - Milton Carlo Memorial Hospital
Ukraine	Flooding	Solotvyno District Hospital

16. Additional support for COVID-19 testing was also provided to Saint Vincent and the Grenadines. More details on COVID-19 assistance delivered through the technical cooperation programme is covered in documents GOV/INF/2020/6, GOV/INF/2021/4 and GOV/2021/INF/33 - GC(65)/INF/7. An overview of all IAEA activities in 2020 related to the pandemic is given in documents GC(64)/INF/4, GC(64)/INF/5 and GC(64)/INF/6.

C.2. Animal health

17. Following the request of the FAO Emergency Management Centre for Animal Health regarding the outbreak of lumpy skin disease in Asia, the IAEA reached out to the nine affected countries in the region (Bangladesh, Bhutan, Cambodia, Indonesia, Myanmar, Nepal, Sri Lanka, Thailand and Viet Nam), eight of which are IAEA Member States. As of 28 June 2021, the IAEA has received requests for assistance from Bangladesh, Indonesia, Myanmar, Sri Lanka, Thailand and Viet Nam. Working with national authorities, the IAEA has identified the laboratories that require assistance in the form of a diagnostic package for the detection and characterization of the lumpy skin disease virus before the disease is evident, and antibodies, to determine past infection, as well as a genetic sequencing kit for differentiating between strains. This will support rapid diagnosis, and facilitate national efforts to take action quickly to contain the disease.

18. Outbreaks of lumpy skin disease are also threatening the Africa region, and Ghana, Mozambique and Tunisia requested emergency assistance from the IAEA. The assistance included the provision of serology and molecular diagnostic kits for the detection of the lumpy skin disease virus.

19. The IAEA also continued its support to countries in Africa and Asia for the diagnosis and control of African Swine Fever, providing molecular and serological equipment and reagents and one-on-one technical support to Cambodia, Lao PDR, Myanmar, Mongolia, Thailand and Viet Nam in Asia and Ethiopia, Democratic Republic of the Congo, and Mozambique in Africa.

C.3. Plant pests

20. The outbreak of the Mediterranean fruit fly in Colima, Mexico, posed a serious threat to the horticultural industry of Mexico and to the United States of America (the major importing country), valued at tens of billions of dollars per year. Upon request from the National Plant Protection Organization of Mexico, the IAEA supported an expert mission to review the eradication strategy and to evaluate the eradication actions that had been implemented. Based on the recommendations of the expert, it is expected that the IAEA will continue to support the eradication efforts, including with advice, through a Technical Advisory Committee and by supplying essential materials for pest surveys and population suppression.

C.4. Food safety

21. The IAEA collaborates with the FAO through the Joint FAO/IAEA Centre to provide support related to food emergencies and incidents.

22. Following the exposure of the Sri Lankan public to aflatoxin-contaminated coconut oil, the oil on the market had to be tested for aflatoxins. Sri Lanka's only laboratory accredited for testing aflatoxins in vegetable oils, the Food Safety and Quality Assurance Laboratory of the Faculty of Veterinary Sciences at Peradeniya, was initially established under an IAEA technical cooperation project. It continues to receive support from the IAEA and the Joint FAO/IAEA Centre. In response to the emergency, resources for analytical testing were provided through the TC programme together with advice from the Joint FAO/IAEA Centre. This enabled the conduct of necessary testing for aflatoxins to effectively control the exposure of the general population to aflatoxin-contaminated oil.

23. The IAEA responded to Member State needs related to the disruption of food safety systems due to COVID-19 through the Joint FAO/IAEA Centre. Virtual training material was developed, and two online training courses on food contaminant control were conducted in December 2020 and June 2021 with the support of the Peaceful Uses Initiative project, 'Enhancing Capacity in Member States for Rapid Response to Food Safety Incidents and Emergencies'. A further course on the application of rapid food safety testing technology is planned for August 2021.

C.5. Water resource management

24. The eruption of the La Soufrière volcano affected livelihoods in the northern part of the island of Saint Vincent, ruining crops and contaminating water reservoirs. The IAEA has provided laboratory and field equipment to the Central Water and Sewage Authority to strengthen the authority's capabilities in water quality analysis. Technical guidance and advice on analytical processes and water management systems were also provided. The IAEA will continue to liaise with national water authorities in the island of Saint Vincent with the goal of strengthening national technical capacities for improved water resource management.

C.6. Marine environment monitoring

25. Following the oil spill on the Southeast of Mauritius, the Permanent Mission of Mauritius requested emergency IAEA assistance to support short-, medium- and longer-term monitoring of post-spill contamination, as well as associated risk impacts on marine and coastal ecosystems. Agency support has focused on enhancing national capabilities for the establishment of a dedicated laboratory facility for oil spill monitoring and toxicity assessment. The Agency has provided targeted, nuclear-related technology to the Albion Fisheries Research Centre and National Environmental Laboratory to develop and implement a comprehensive post-spill long-term monitoring programme in the marine environment. Further expert missions and training are being organized to consolidate methodologies on the analysis of petroleum hydrocarbons. This will allow Mauritius to assess the status of the oil pollution and evaluate the environmental risk of the oil-derived toxic compounds in regard to valuable coral ecosystems and local seafood safety for human consumption.

26. The Government of Sri Lanka identified a number of essential needs following the sinking of the container ship off the coast of Colombo and the subsequent environmental damage. These included analytical instruments and accessories for environmental monitoring, including equipment for sampling and measurement. The Agency's on-going immediate intervention includes the provision of expert services to key national stakeholders engaged in the mitigation operations and the procurement of off-the-shelf equipment based on pressing pertinent local needs, as well as longer-term capacity building. This assistance is expected to meet the immediate need for the country to investigate, track and follow the contaminants from the sunken ship, develop and implement remedial strategies, and be better prepared in case of similar disasters in the future.

27. Agency support to Sri Lanka is focusing on enhancing national capabilities to conduct field investigations and on building analytical laboratory capacity. This will contribute significantly to the effective management of coastal and marine environments, utilizing nuclear and isotopic techniques. The support will benefit relevant authorities, such as the National Aquatic Resources Research and Development Agency, the Marine Environment Protection Authority, the Central Environmental Authority and the Sri Lanka Atomic Energy Board. Ongoing consultations with national authorities are identifying additional potential stakeholders, as well as areas of support such as monitoring where longer-term assistance will be required.

28. The Agency support is focusing on short-, medium- and longer-term monitoring of post-spill contamination and associated impact on marine and coastal ecosystems at risk. The assistance included the provision of analytical equipment to monitor organic compounds and expert advice in setting up its monitoring of post-spill contamination and assessment of impact on marine and coastal ecosystems.

C.7. Radiation safety assistance

29. The Prime Minister of Saint Vincent and the Grenadines requested the IAEA Director General to provide radiation monitors for the police force to support the detection of possible elevated radiation levels in the areas affected by the eruption of La Soufrière. The Agency provided personal radiation detection equipment to first responder institutions to enable the measurement of gamma and neutron levels. Surface contamination measuring equipment was also provided.

30. In response to Lebanon's request for assistance following the explosion in the Port of Beirut, the Agency arranged an assistance mission with the involvement of Member States registered in the IAEA's Response and Assistance Network in September 2020. The assistance mission, comprising four experts from Denmark and France and four Agency staff members, measured radiation levels at several locations and assessed the impact of the explosion on the safety and security of radioactive material and sources in hospitals, scrapyards and the Port of Beirut. In addition, environmental samples collected by Lebanese authorities were analysed in laboratories in France and Switzerland as part of the Agency assistance. These laboratories confirmed that there were no elevated radiation levels detected in the samples. For more details on the assistance provided to Lebanon, please refer to GOV/INF/2020/14.

D. Funding resources

31. Japan and the United States of America have provided generous extrabudgetary funding totalling €2.1 million in support of the IAEA response to emergency requests. These funds were supplemented with TC resources amounting to about €2.5 million.



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