

**International Atomic Energy Agency (IAEA)**  
**IAEA Input to 2021 SG report on oceans and the law of the sea (RES 76/72)**

**Second part**

The International Atomic Energy Agency (IAEA), through its Marine Environment Laboratories in Monaco, continues to provide support to its Member States to implement and develop nuclear and nuclear-derived tools and techniques for monitoring coastal and marine environments. The IAEA also provides guidance based on its Safety Standards for the regulatory control of releases of radioactive effluents into the marine environment, for the environmental monitoring and surveillance of nuclear facilities and for the assessment of radiological impacts on members of the public and the marine flora and fauna. Furthermore, the IAEA collates and shares data on radioactive discharges to the marine environment and on the results of environmental monitoring of nuclear facilities in order to provide oversight and to underpin assessments of radiological impacts. Through this work, the IAEA supports international frameworks and conventions that support conservation and sustainable use of coastal and marine resources.

The IAEA is the only organization in the UN system with marine laboratories. Through these laboratories it supports its Member States to address a range of marine environmental issues, including relevant nationally identified targets under SDG 13 (Climate Action), SDG 14 (Life Below Water) and the SAMOA Pathway. The IAEA assists its Member States in better understanding, monitoring, and protecting the marine environment, addressing microplastics, ocean acidification, deoxygenation, pollution (e.g. persistent organic pollutants, hazardous trace elements, radionuclides, and marine biotoxins), sustainable aquaculture, and sea level rise.

In 2021, the IAEA launched a new initiative, NUTEC Plastics – NUclear TEChnology for Controlling Plastic Pollution to assist the IAEA Member States in integrating nuclear techniques in their efforts to address challenges of plastic pollution. NUTEC Plastics supports research, development, capacity building and implementation of nuclear techniques to address upstream and downstream aspects of plastic pollution. Upstream by reducing plastic waste volumes by using radiation technologies to improve plastic recycling methods and to develop bio-based alternatives to single use petroleum-based plastics. Downstream by better understanding the abundance and impact of marine plastic pollution.

Through its Ocean Acidification-International Coordination Centre (OA-ICC), the IAEA recently became an official partner of the UN Decade of Ocean Science for Sustainable Development.

The IAEA is supporting its Member States in their work towards the implementation of the 2030 Agenda with a focus on specific SDG targets, including 14.1 on pollution, 14.1.b on plastic pollution, and 14.3 on ocean acidification. The IAEA also supports Member States in fulfilling their obligations under relevant global Conventions, including the Stockholm Convention on Persistent Organic Pollutants, the Minamata Convention on Mercury, and the Basel Convention to set controls on the transboundary movements of hazardous wastes.

**Related to §§ 10, 11, 12, 13, 14, 15 of resolution 76/72.**

The IAEA through its Marine Environment Laboratories build capacity in its Member States to address a range of issues affecting the marine environment, including Seafood Safety, Marine Plastics, and Climate Change. Several mechanisms are used, including the IAEA Technical Cooperation programme (TCP), Coordinated Research Projects (CRPs), and Peaceful Uses Initiative (PUI) projects.

Through capacity building projects, the IAEA Marine Environment Laboratories support developing Member States to address and mitigate their most pressing coastal and marine challenges using nuclear and isotopic techniques, and to enhance their expertise and capability to develop science-based strategies to address UN SDG 13 and 14. Currently, 74 national, regional and interregional projects are active, with participation from 114 Member States including 21 Small Islands Developing States (SIDS).

Since its inception in 2012, the Ocean Acidification International Coordination Centre (OA-ICC) and its global partners have been involved in more than 900 capacity building opportunities with 800 scientists from more than 100 Member States. These efforts are helping Member States to build, strengthen, and maintain human expertise and institutional capacities to define national needs, to make informed decisions on action plans and measures to protect the oceans, to deliver sustainable ecosystem services, and to ensure sustainable socio-economic development.

The IAEA continues to coordinate the Analytical Laboratories for the Measurement of Environmental Radioactivity (ALMERA) network, a collaboration of 195 analytical laboratories from 90 countries that work together to encourage and support standardization and validation of radioanalytical methods. The network is supported through proficiency tests, interlaboratory comparisons, training, and coordination. The capacity of network laboratories to report timely and reliable measurement results in the event of a radiological or nuclear emergency is thus enhanced and maintained.

In addition, the IAEA Marine Environment Laboratories are assisting the Barcelona Convention UN Environment Mediterranean Action Plan (MAP) Programme for the Assessment and Control of Marine Pollution in the Mediterranean (MED POL). Bi-annual training courses are provided to experts in laboratories in MED POL member countries (the 20 countries bordering the Mediterranean that are Contracting Parties to the Barcelona Convention), on the determination of trace metals and organic contaminants. Two e-learning training modules on sampling and on instrumental techniques for monitoring of trace elements and organic contaminants in marine environment were also developed and provided to these laboratories.

Technical evaluations, specifically tailored to each individual laboratory participating in the IAEA Proficiency Tests organised in 2020, have also been provided. These communicate key findings on each laboratory's performance and aspects to address in relation to measurement quality. Additionally in 2021, the IAEA organised mission visits to two national laboratories to assess their current monitoring capacities.

**Related to §§ 198, 205, 357 of resolution 76/72.**

Since 2014, under a project entitled 'Marine Monitoring: Confidence Building and Data Quality Assurance', that was initiated as a follow-up activity to recommendations related to the decommissioning of the Fukushima Daiichi nuclear power plant in Japan, the IAEA Marine Environment Laboratories have conducted 11 interlaboratory comparisons (ILC) based on sampling missions to collect seawater, sediment and fish samples undertaken jointly with Japanese scientists. The results of these ILCs confirm that the Japanese sampling methods are consistent with relevant methodological standards and best practice. The results also demonstrate a consistently high level of accuracy and reliability by Japanese laboratories involved in the analyses of radionuclides in marine samples. In response to a request for assistance from

Japan, the IAEA has formed a task force to conduct a review that will assess the Government of Japan's plan to discharge Advanced Liquid Processing System (ALPS) treated water against relevant IAEA safety standards. The review started in September 2021. The IAEA's work on the plan will take place before, during and after its implementation.

The IAEA Environment Laboratories continued working closely with UNEP within the framework of several conventions including the Minamata Convention on Mercury, the Stockholm Convention on Persistent Organic Pollutants, and the Barcelona Convention UN Environment Mediterranean Action Plan (MAP) Programme for the Assessment and Control of Marine Pollution in the Mediterranean (MED POL). A formal agreement exists with the latter for capacity building and quality assurance of monitoring data, obtained by laboratories in the Contracting Parties. Harmonised methodologies for monitoring and determination of trace elements and organic contaminants in marine environment were provided by the IAEA to the designated monitoring laboratories as a part of the IAEA-UNEP Barcelona Convention MED POL formal cooperation. In line with the UNEP MED POL Programme of work adopted by COP21, nine Monitoring Guidelines for the harmonised implementation of the Integrated Monitoring and Assessment Programme in Mediterranean countries were prepared by the IAEA in collaboration with the UNEP MED POL Programme.

Cooperation between the IAEA and the UNEP Minamata Convention Secretariat, specifically for evaluating the effectiveness of its implementation with respect to the marine environment has been intensified during the past two years. The IAEA is a member of the UNEP Mercury Partnership Initiative.

The IAEA has also continued to provide analytical quality control services through the production of certified reference materials and the organization of interlaboratory comparison exercises and proficiency tests. This has assisted Member States in producing verified, quality-assured data on the levels of inorganic and organic hazardous contaminants in diverse marine samples. This is essential for accurately assessing the status and trends of these pollutants in coastal and marine environments and for facilitating comparisons of pollution monitoring data worldwide. The IAEA also provided analytical quality control services for the measurement of radionuclides in marine samples, supporting capacity for monitoring and assessment of marine radioactivity in routine and emergency situations.

The IAEA is supporting the work of OSPAR's Radioactive Substances Committee (OSPAR-RSC) and that of the Contracting Parties of the OSPAR (Oslo-Paris) Convention for the Protection of the Marine Environment of the North-East Atlantic in the areas of analytical quality assurance of marine radioactivity monitoring data and marine environmental radioactivity database development.

Through its Marine Environment Laboratories in Monaco, the IAEA continues to support the Helsinki Commission's Expert Group on Monitoring of Radioactive Substances in the Baltic Sea (HELCOM MORS EG) and the Contracting Parties to the Helsinki Convention on the Protection of the Marine Environment of the Baltic Sea Area. The IAEA provides analytical quality support for the Baltic marine environmental radioactivity monitoring programme and disseminates the results through IAEA's MARIS database. The HELCOM-MORS EG collaborates in the production and characterization of IAEA reference materials of marine origin, which are subsequently made generally available to laboratories in all the IAEA's Member States.

The IAEA is the lead sponsoring agency of a new Working Group on Climate Change and Greenhouse Gas Related Impacts on Contaminants in the Ocean, co-sponsored by UNEP, IOC-UNESCO, WMO and IMO within the framework of the Group of Experts for the Scientific Aspects of Marine Pollution (GESAMP). The Working Group is critically reviewing existing knowledge on the effects of climate change on the behaviour of radioactive and non-radioactive contaminants in coastal and open ocean environments and will issue recommendations for future research.

**Related to §§ 222, 224, 225, 226 of resolution 76/72.**

Through its recent initiative ‘Nuclear Technology for Controlling Plastic Pollution (NUTEC Plastics)’, the IAEA is assisting Member States in integrating nuclear and isotopic techniques into their efforts to address plastic pollution. NUTEC Plastics builds on the IAEA’s work addressing plastic pollution through recycling using radiation technology and marine monitoring using isotopic tracing techniques. NUTEC Plastics is closely aligned with other UN organizations tackling this problem including the United Nations Environment Programme (UNEP) and the Food and Agriculture Organization of the United Nations (FAO) and will contribute to global efforts and initiatives. The IAEA’s NUTEC Plastics will accelerate the development of nuclear and isotopic techniques for assessing the abundance, distribution and characteristics of marine plastics in order to better understand their origin, transport, fate and impact. Included is the establishment of harmonized, standardized protocols to identify microplastics in environmental samples, state-of-the-art analytical techniques that are in line with best practice, and training for scientists and technicians.

Twenty-two member states have strengthened their national capacities to establish microplastics monitoring programs in coastal areas. The data produced is helping decision-makers to design pollution control policies and, consequently, to meet SDG14 targets.

**Related to §§ 245 of resolution 76/72.**

The IAEA is providing support to its Member States for oil spill response by building capacity and assessing impacts related to the accidental discharge of hydrocarbons into the marine environment. In collaboration with OSINet, the Oil Spill Identification Network of experts, the IAEA has developed new analytical methods for identifying the potential source of contaminants following an oil spill. Through the procurement of laboratory equipment and training of staff, the Agency is helping laboratories in its Member States to enhance their capacity to monitor the effects of the oil spill and hazardous contaminants in the marine environment and to assess potential toxicological impacts.

Upon the request of the Government of Sri Lanka in May 2021, the IAEA provided emergency assistance to this Member State to address the environmental consequences of an accidental chemical spill that had occurred close to its coast.

**Related to §§ 208, 209, 212 of resolution 76/72.**

The IAEA provides technical support to its Member States to address climate and ocean change impacts including ocean acidification, pollution (e.g. persistent organic pollutants, hazardous trace elements, radionuclides, and marine biotoxins), and deoxygenation.

**Related to §§ 22, 23, 216, 217, 218, 219, 220, 221, 281, 284 of resolution 76/72.**

Since 2012, the International Atomic Energy Agency (IAEA) has hosted the Ocean Acidification-International Coordination Centre (OA-ICC), which facilitates, promotes, and communicates on this subject, including through targeted research activities that advance knowledge of ocean acidification impacts. The OA-ICC co-organizes or participates in several high-level symposia or events every year and with its global partners has been involved in more than 900 capacity building opportunities with 800 scientists from more than 100 Member States.

In collaboration with several partners, the OA-ICC co-organized a training course on ocean acidification in March 2022 in Fiskebäckskil, Sweden and provided early career scientists with the knowledge necessary for measuring and manipulating seawater carbonate chemistry, setting up pertinent experiments, avoiding typical pitfalls and ensuring comparability with other studies. The OA-ICC also co-organized a consultancy meeting on “Designing Climate Adaptation Pathways for Atoll Islands” during Monaco Ocean Week in March 2022. This event provided a platform for experts to come together and discuss how to design climate adaptation pathways for atoll islands around the globe, taking into account both adaptation and mitigation.

The IAEA is co-focal lead of the UN Communities of Ocean Action on Ocean Acidification, a process to facilitate progress on more than 250 Voluntary Commitments that have been submitted by various stakeholders across the globe on SDG 14.3. The Community of Ocean Action on Ocean Acidification is directly aligned with the goals and objectives of the UN Decade of Ocean Science for Sustainable Development (2021-2030).

The IAEA Marine Environment Laboratories advance scientific knowledge on the capacity of both open ocean areas and coastal vegetated ecosystems (mangroves, saltmarshes, and seagrasses) in sequestering organic carbon, known as Blue Carbon, to regulate climate so that Member States can contribute towards nature-based solutions and adaptation strategies to future climate change impacts.

**Related to §§ 24 of resolution 76/72.**

The IAEA supports its Member States by providing technical expertise on the processes and mechanisms that may lead to marine biodiversity loss, such as pollution, climate and ocean change impacts. Research and development efforts focus on the effects of multiple stressors, such as ocean acidification and deleterious trace elements on the biological response in marine species. Such research helps Member States determine the vulnerability of oceanic resources, such as coral reef habitats and important seafood species, and thus can help evaluate the potential biological and socio-economic impacts of changes in ecosystems and ecosystem services (sustainable food security). Through its work on Blue Carbon, the IAEA Marine Environment Laboratories contribute by stimulating coastal vegetated ecosystem restoration and their biodiversity.

**Related to §§ 335 of resolution 76/72.**

As part of the Subregional Approach to the Pacific Islands (SAPI) for Fiji, Marshall Islands, Palau, Papua New Guinea, Samoa and Vanuatu, the IAEA is supporting the development in the areas of water resources and coastal zone management. This is in line with the need recognised in the SAMOA Pathway requirement to support Member States in developing institutional and human capacities for the effective and sustainable implementation of integrated management of water resources and related ecosystems. The project building capacity in isotopic and complementary techniques to tackle the integrated management of water resources and coastal ecosystems. The project is also encouraging and supporting education, training and development of networks and partnerships among SIDS and with regional and international collaborators in relevant topical areas.

**Related to §§361 of resolution 76/72.**

The IAEA is a member of the UN-Oceans mechanisms. The IAEA attends coordination meetings and contributes to holding joint Ocean events and outreach activities to strengthen UN coordinated action for Ocean conservation.

**Related to §§ 360 of resolution 76/72.**

## IAEA

The IAEA, through its Marine Environment Laboratories contributes to effective coordination between UN Agencies through its participation in the Environment Management Group (EMG). The IAEA attends the annual Senior Officials Meeting and the EMG Mid-Term Technical Segment. The IAEA is also an active member of the Consultative Process on a Pollution-Free Planet, the EMG Task Team on Marine Litters and Microplastics, and the EMG Issue Management Group on Biodiversity.