Integrated Action Plan

NUTEC Plastics Joint Working Group

as of 30 May 2022

Contents

Acronyms

Name	Acronym
International Atomic Energy Agency	IAEA
United Nations	UN
NUclear **TEC**hnology for Controlling Plastic Pollution	NUTEC Plastics
Joint Working Group	JWG
IAEA Technical Cooperation Programme	TCP
IAEA Department of Technical Cooperation Division for Asia and the Pacific	TCAP
IAEA Department of Technical Cooperation Division for Europe	TCEU
IAEA Department of Technical Cooperation Division for Africa	TCAF
IAEA Technical Cooperation Division for Latin America and the Caribbean	TCLAC
IAEA Department of Nuclear Science and Applications	NA
IAEA NA Division of IAEA Marine Environment Laboratories	NAML
IAEA NA Division of Physical and Chemical Sciences	NAPC
Extra Budgetary Resources	EB
Peaceful Uses Initiative	PUI
UN Environment Programme	UNEP
Group of Twenty	G20
UN Economic and Social Commission for Asia and the Pacific	UNESCAP
UN Industrial Development Organization	UNIDO
UNEP Mediterranean Action Plan	UNEP/MAP
Programme for the Assessment and Control of Marine Pollution in the Mediterranean	MED POL
Intergovernmental Oceanographic Commission of UNESCO	IOC-UNESCO
Global Plastic Action Partnership	GPAP
Joint Group of Experts on the Scientific Aspects of Marine Environmental Protection	GESAMP
Association of Southeast Asian Nations	ASEAN
Environmental Management Group	EMG

Background

In 2020, the IAEA launched, **NU**clear **TEC**hnology for Controlling Plastic Pollution (**NUTEC** Plastics), aimed to highlight the unique contributions of nuclear technology to the global, regional, and national actions for the solution of plastic pollution. The IAEA partners with various stakeholders to develop and mainstream these new solutions, using its existing delivery mechanisms for both research and development and building capacity in its Member States to tackle this global problem. NUTEC Plastics focus is two-pronged: a) to enhance global understanding of the abundance and impact of marine plastic pollution; and b) to enhance plastic recycling to complement conventional practices and production of sustainable alternatives to petroleum-based plastics through the application of radiation techniques. NUTEC Plastics projects, as peaceful uses initiatives (PUI), coordinated research projects (CRP), and national and regional technical cooperation (TC) projects, and dedicated activities address nuclear solutions to global plastics pollution challenges. A Joint Working Group (JWG) with members from the Departments of Nuclear Sciences and Applications and Technical Cooperation was formed to coordinate delivery of NUTEC Plastics projects and activities harmonize collaboration and optimize impact. This document describes the JWG's **Integrated Action Plan** for NUTEC Plastics delivery.

The JWG's **Integrated Action Plan for NUTEC Plastics** has three major areas of action: **Action 1**: Implementation of activities for the assessment, planning and establishment of a pilot plant(s) for plastic waste recycling, **Action 2**: Marine microplastic monitoring and assessment, and **Action 3**: NUTEC Plastics Outreach and Partnership Building. Details of the upstream ACTION 1 part of NUTEC Plastics are detailed in the link to ANNEX 1 found on page 12 of this document and a summary of its status in May 2022 on page 13. Details of the downstream part (ACTION 2), monitoring and impact assessment of microplastics, are summarised in ANNEX 2 (link page 12 and summary of May 2022 status on page 14). A framework as well as a list of activities focused on dissemination and partnerships is curated by TC and NA and included in ANNEX 3/3a. The NUTEC Plastics extra-budgetary resource is briefly outlined in the ANNEX 4. ANNEX 5 lists TC projects related to NUTEC Plastics.

This is intended to be a living document, meaning that the ANNEXES are embedded as links, which open the ANNEX document as its most recent update. These ANNEXES are found in a JWG internal SharePoint site accessible to JWG members, as the working document that is continually updated to track progression and impact.

The IAEA NUTEC Plastics Implementation Plan

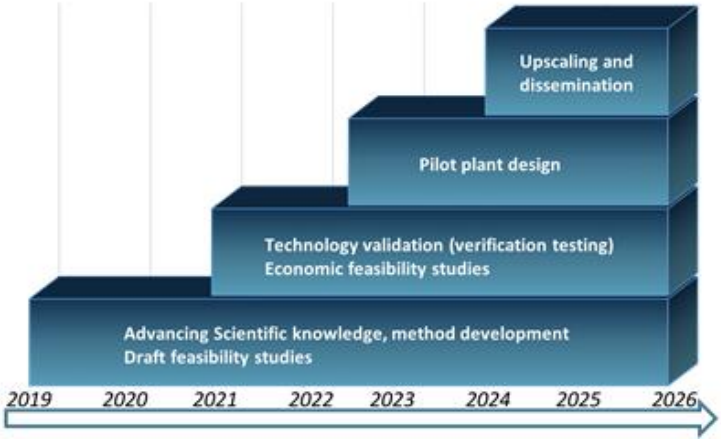
The IAEA NUTEC Plastics initiative supports its Member States in its two-pronged (upstream/downstream) approach, which complements national and regional efforts through the following three actions. The upstream component targets reducing global plastic waste volumes using radiation technologies. This is done in two ways: by producing bio-based single use plastic products and by innovating plastic waste recycling. This document only covers activities related to innovating plastic recycling.

Action 1: Implementation of activities for the assessment, planning and establishment of a pilot plant(s) for plastic waste recycling.

Action 1 supports the development of a pilot plant (or plants) using nuclear technology for innovating plastic waste recycling in a Member State(s) by 2025.

Action 1's four-staged approach involves Stage 1: capacity building, Stage 2: verification of proof of concept and economic feasibility, Stage 3: Pilot plant build and operation of irradiation-assisted plastic recycling plant(s), and Stage 4: ultimate upscaling to commercialisation in partnership.

Upstream activities in application of radiation technologies to innovate plastic recycling: stages, timelines, and targeted outcomes



To achieve this, activities are planned with the following main <u>outputs</u>:

Stage 1. – A pipeline of skilled work force prepared for regional cooperation
- Member States' proposals for pilot plastic recycling plants developed in the form of draft feasibility studies
- Guidelines/Guidance document for setting up inline irradiation facilities at a polymer recycling site

Stage 2. – Validated technology and financial feasibility for implementation of a pilot plant(s)

Stage 3. – Pilot plant design for case studies proposed by Member States, build and operation

Stage 4. – Technological readiness of radiation assisted plastic recycling at a level 7 or higher for case studies developed and ready for handover for upscaling to a demonstration plant and ultimate commercialisation

Note that this strategic, staged approach is intended as a rolling plan, that is periodically updated with results. Those updated results, in turn, allow and guide increasing the granularity of the planning of subsequent stages. The status of the stages in Action 1 are found in the link to ANNEX 1.

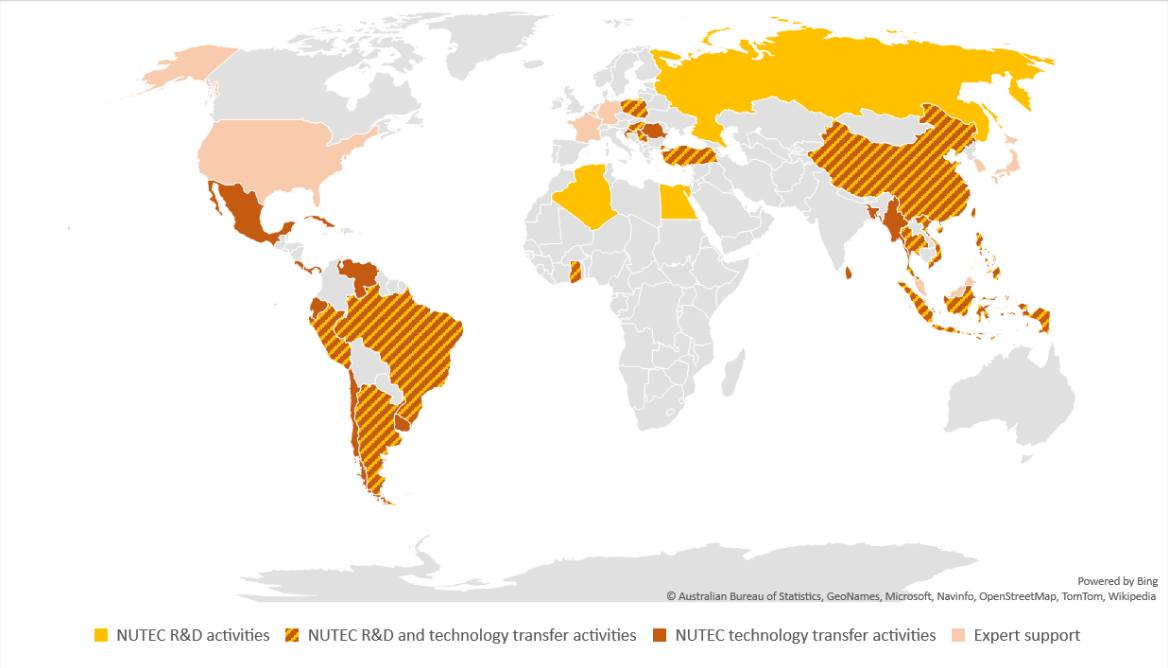
Projects currently under implementation (May 2022) towards the objectives of Action 1 are as follows:

- TCAP: One national project (INS1031) 'Using Radiation to Mitigate Plastic Waste – Nuclear Technology for Reducing Plastic Pollution' supports institutions in Indonesia to reduce the amount of plastic waste through an integrated recycling system; and one regional project (RAS1024) 'Reutilizing and Recycling Polymeric Waste through Radiation Modification for the Production of Industrial Goods' provides support to Bangladesh, China, Indonesia, Malaysia, Myanmar, Philippines, Thailand, Viet Nam and Sri Lanka, Indonesia, Malaysia, Philippines, and Thailand to strengthen regional capabilities in the application of radiation technology for industrial, health-care and environmental applications.
- TCAF: One national project in Ghana (GHA1015) 'Using Nuclear Technology for Managing Plastic Waste' which promotes radioisotopes and radiation technology for industrial, health-care and environmental applications, and one regional project (RAF1010) 'Reutilizing and Recycling Polymeric Waste Through Radiation Modification for the Production of Industrial Goods' supports the acceleration in the transition towards a circular plastic economy by adopting and applying nuclear science and technology solutions to Kenya, Morocco, and South Africa.
- TCLAC: Part of a national project in Argentina (ARG1029) 'Implementation of Radiation Technology Using Electron Beam for Industry and Environmental Applications' which aims to mitigate environmental contamination produced by industrial and domestic liquids effluents and generate value-added products in various sectors, and a new regional project (RLA1020) 'Promoting Radiation Technology in Natural and Synthetic Polymers for the Development of New Products, with Emphasis on Waste Recovery, supporting Argentina, Brazil, Bolivia, Chile, Colombia, Costa Rica, Cuba, Mexico, Panama, Uruguay, and Venezuela to contribute to the reduction of the environmental impact of natural and synthetic polymer wastes using irradiation techniques. TCEU: one ongoing regional project (RER1021) 'Enhancing the Use of Radiation Technologies in Industry and Environment' has included NUTEC Plastics Stage 1 and 2 activities contributing to improving human health, keeping a cleaner environment, and developing advanced materials through the extended and qualified use of radiation technologies starting in 2021 for institutions in Croatia, Hungary, Romania, Poland, and Turkey. For these 5 Member States and others, thru TCEU project RER1021, TC

has provided support for awareness raising, capacity building in general and specifically for the feasibility report preparation (in the form of 1 regional training course held together with TCAP over 4 months). No TC funds for hardware/equipment have been provided.

- NAPC: "Recycling of Polymer Waste for Structural and Non-Structural Materials by using Ionizing Radiation" (a NUTEC Plastics CRP F23036) with the overall objective to perform coordinated, applied research and development to demonstrate feasibility and optimised scale-up of plastic waste recycling using radiation technologies in the following countries: Algeria, Argentina, Brazil, China, Croatia, Egypt, Ghana, Hungary, Indonesia, Malaysia, Peru, Philippines, Poland, Russian Federation, Serbia, Thailand, Turkey, Vietnam

Fig 1. NUTEC recycling by irradiation R&D and technology transfer activities



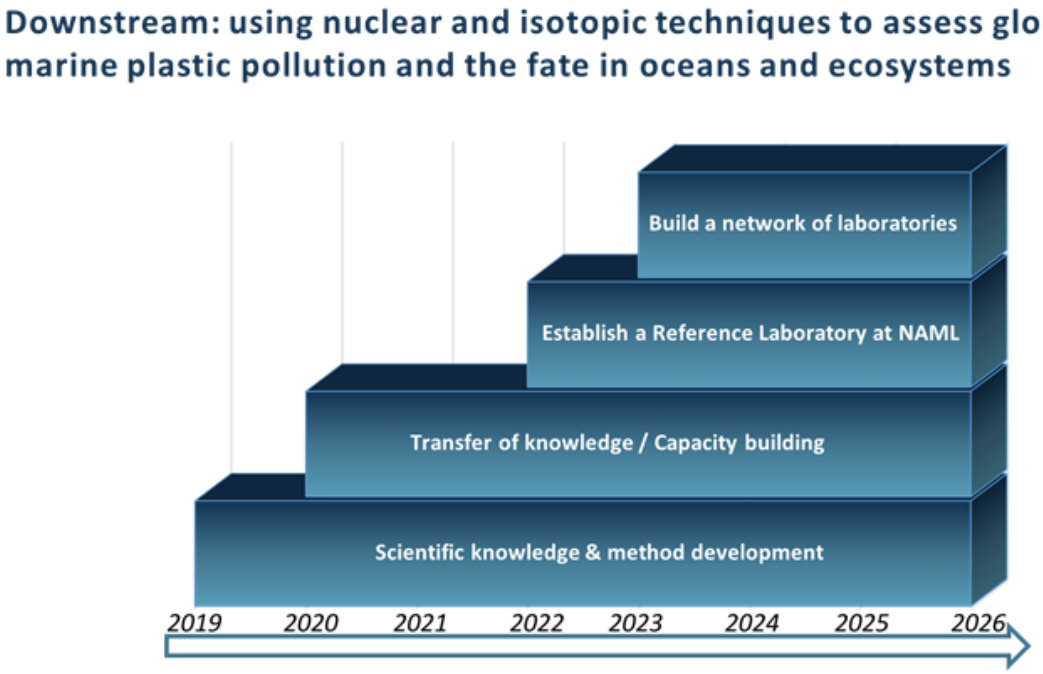
*Status as of May 2022

Action 2: Marine microplastic monitoring and assessment.

Action 2 supports the establishment, by 2026, of a Global NUTEC Plastics Monitoring Network of 50 specialized laboratories worldwide (**NUTEC Marine Plastic Monitoring Laboratories**), located in Member States capable of assessing the risks that marine microplastics pose to their ecosystems and livelihoods, supporting the development of global policies and actions for the sustainability of the seas and oceans in all 4 regions.

The IAEA Marine Environment Laboratories in Monaco will serve as a global reference laboratory and scientific-technical support in marine plastic pollution monitoring for the NUTEC Marine Plastic Monitoring Laboratories. IAEA Marine Environmental Laboratories in Monaco will enhance capabilities, instrumentation and expertise in the characterization and quantification of marine microplastics.

Action 2's four-staged approach involves 1: Capacity building, Stage 2: Strengthening IAEA Laboratory, Stage 3: Filling knowledge Gaps, and Stage 4: Global Network



To achieve this, activities are planned with the following main outputs

Stage 1: Guidelines/guidance documents for monitoring microplastics using nuclear and isotopic techniques.

Member States implement marine plastics monitoring programs according to harmonized and validated protocols for reporting on SDG 14 (NUTEC Marine Plastics Monitoring Laboratories with equipment, appropriate protocols and trained staff established)

Stage 2: International Reference Laboratory is established at NAML to support Member States in marine plastics monitoring and research.

Stage 3: Member States have information and knowledge on sources, distribution, trends, transport, bioaccumulation and their impacts on biodiversity and food to ensure sustainable development.

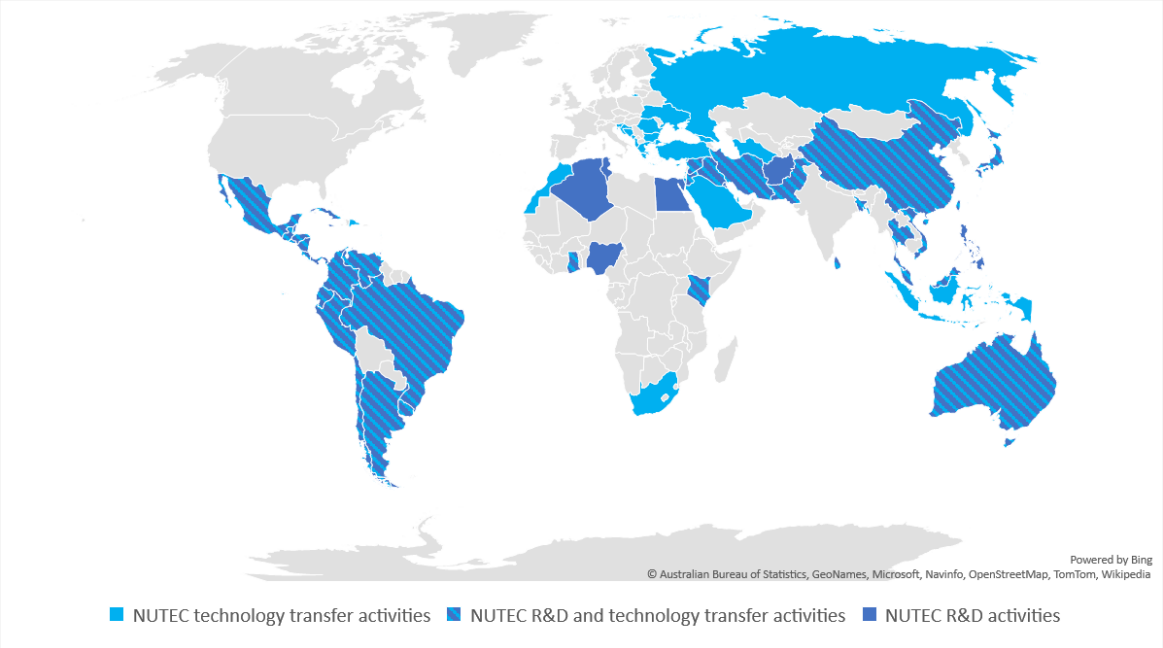
Stage 4: Global network of marine laboratories for monitoring and assessing the impact of marine plastic pollution.

To implement Action 2, a results-based approach with continuous adjustments and improvements have been followed. The harmonization and phased implementation allow to integrate the activities into national, regional and interregional project cycles. The current and updated status of the Action 2 phases can be found in ANNEX 2.

Projects currently under implementation (May 2022) towards the objectives of Action 2 are as follows:

- TCAP: 1 Regional NUTEC TC Project (RAS7038) supporting 19 countries: Bangladesh, China, Indonesia, Iran, Iraq, Israel, Jordan, Japan, Kuwait, Malaysia, Pakistan, Palestine, Philippines, Qatar, Saudi Arabia, Sri Lanka, Syria, Thailand, and Viet Nam. RAS7038 project is aimed at building capacity for microplastics monitoring in the region to support the development of policies, regulations, standards as well as SDG14.
- TCAF: a national project in Ghana (GHA1015), and a regional (RAF1010) project providing support also to Kenya, Morocco, and South Africa. NUTEC TC regional projects for capacity building in microplastics monitoring are needed in this region.
- TCLAC: 7 national NUTEC Project (BRA7012, BRA7014, CUB7010, BZE7004, TRI7002, CHI7014 and ECU0009) and 2 regional NUTEC Project (RLA7025 and RLA0063), support laboratories in 22 countries: Antigua and Barbuda, Argentina, Belize, Brazil, Chile, Colombia, Costa Rica, Cuba, Dominica, Dominican Republic, Ecuador, El Salvador, Guatemala, Honduras, Jamaica, México, Nicaragua, Panamá, Peru, Trinidad and Tobago, Uruguay, and Venezuela. These projects are aimed at building capacity for microplastics monitoring in the region to support the development of policies, regulations, standards as well as SDG14. The REMARCO network coordinates regional actions and focuses its actions to implement SDG14 with other regional stakeholders (UNEP, Cartagena Convention, and IOC regional programs).
- TCEU: one regional project (RER7015) provides initial support to 14 countries: Albania, Bosnia and Herzegovina, Bulgaria, Croatia, Cyprus, Georgia, Greece, Montenegro, Romania, Russian Federation, Slovenia, Turkey, Turkmenistan, and Ukraine. NUTEC TC regional projects on microplastics monitoring are needed.
- NAML: Under RB Project 2000131 “Isotope tools for studying climate and environmental change” linked to Marine Environment Program, technologies for sampling and analysis of nano- and microplastics in marine ecosystems are developed and validated. These technologies are being transferred to Member States through TC NUTEC projects. PUI “Marine Plastics” and CRP K41019 "Applied radioecological tracers to assess coastal and marine ecosystem health" are conducting preliminary research on the behaviour and impacts of microplastics in the oceans.
- A new NUTEC CRP with the overall objective of carrying out research and development coordinated and to demonstrate the feasibility of nuclear and isotopic techniques in understanding microplastics in the oceans is being designed

Fig 2. NUTEC marine monitoring R&D and technology transfer activities



*Status as of May 2022

Action 3: NUTEC Plastics Outreach and Partnership Building

The transboundary nature of the plastic litter crisis requires a swift and coordinated multi-stakeholder response. As many organisations across the UN System, NGOs, and other relevant actors have initiated comprehensive action to solve this issue, it is of the upmost importance for the IAEA to reach out, engage in partnerships, and demonstrate the roles that nuclear technologies have in tackling plastic pollution in recycling and monitoring.

This will be achieved through Action 3 NUTEC Plastics Outreach and Partnership Building. Partnerships with and between governments, international organizations, civil society, academia, the private sector, and non-governmental organizations will be sought and nurtured to raise global awareness of the benefits that IAEA NUTEC Plastics offers in the nuclear-based technologies as part of the solution to plastic pollution challenges.

Additionally, investments are required to enable these innovative sustainable plastic management practices and the IAEA will seek partnership with international financial institutions and contribute with the scientific bases for required investments for the circular plastic economy to be effective.

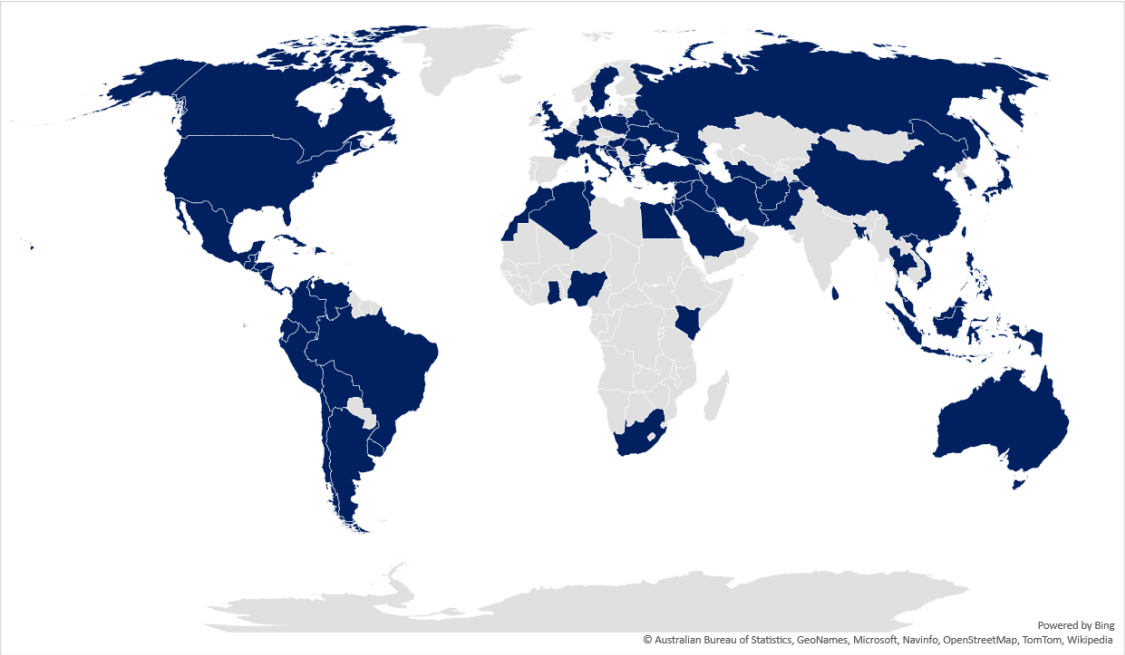
This Action 3 directly supports the core components of NUTEC Plastics, Actions 1 and 2. Action 3 has the following targets (ANNEX 3):

- Raising global awareness on the application of isotopic techniques for marine plastic monitoring and irradiation technologies in plastic irradiation via dedicated campaigns, such as webinars, Member State briefings, and liaising with decision makers, public, and scientific community in global, regional, or national fora.

- Technical and Strategic Partnership (public and private) will be established, making use of synergies with relevant initiatives at national, regional, and global level, in order to mainstream the IAEA NUTEC Plastics initiative.

- Financial Partnership (traditional and non-traditional) will be sought for complementary or supplementary support to relevant programmes undertaken by the IAEA Secretariat, particularly for strengthening laboratories delivering NUTEC Plastics activities, as well to Member States through the TC programmes, so that their national capabilities to tackle plastic pollution problems using nuclear technologies for monitoring and for recycling are significantly strengthened.

Fig 3. Countries participating in the NUTEC Plastics initiative



*Including donors/ *Status as of May 2022

ANNEXES **(Descriptor and links to living documents continuously updated)**

ANNEX 1 Results framework of the implementation of activities for establishing a pilot plant(s) for plastic waste recycling according to the strategic four-staged approach

ANNEX 2 Results framework of Marine microplastic monitoring and assessment, targeting establishing an operational Global Network of marine Laboratories for monitoring and impact assessment of marine plastic pollution

ANNEX 3 Results Framework of activities on outreach and partnerships

ANNEX 3a Status of implemented activities Outreach and Partnership Building

ANNEX 4 NUTEC Plastics Budget and list of extra-budgetary resources

ANNEX 5 TC projects related to NUTEC Plastics

ANNEX 6 NUTEC Progress Periodic Report

ANNEX 1

ACTION 1: Implementation of the Activities for Establishing a Pilot Plant(s) and proven technonolgy for plastics waste recycling in 4 stages (2021-2025)

OBJECTIVE: Improved Recycling and Production Methods Through the Application of Radiation Techniques to Complement Conventional Practices

STAGE 1	Objective: Build Capacity in Application of Radiation Technologies for Plastic Waste Recycling to Level of Existing Know-How		Implementation Timeline				
			2021	2022	2023	2024	2025
Substage	OUTPUT	ACTIVITIES					
S1.1	Pipeline of skilled work force and newcomers for regional cooperation	Capacity building activities for young researchers and newcomers in radiation technologies for plastic waste recycling					
S2.1	Model feasibility study and Member States' case studies for proposed pilot plastic recycling plants developed	Four month phased workshop, generating draft feasibility studies for a pilot plastic recycling plant(s)					
		Phase 1: Technology identification for target application and existing infrastructure will define process flowsheets					
		Phase 2: Irradiation system selection – required layout, power, safety, operation, and maintenance issues frame concept design draft					
		Phase 3: Microeconomic studies – projecting balance of market demand and product revenue to capital investment and operating costs					
		Phase 4: Macroeconomic feasibility, socioeconomic and technological benefits – identification of knowledge and financial gaps					
S3.1	Guidelines/Guidance document for setting up inline irradiation facilities for polymer recycling developed	Development and dissemination of guidelines for setting up inline irradiation facilities for polymer recycling					
STAGE 2	Objective: Fill knowledge and financial gaps through verifications studies to enable financial feasibility by supporting policies and/or production of higher value products to offset financial gaps						
S2.1	Validated technology and financial feasibility for implementation of pilot plant/s.	Validation tests to address "unknown and knowledge gaps" identified in stage 1 of the feasibility study on pilot projects (case studies) proposed by Member States					
S2.2	Economic feasibility of validated technology	Dialogue with stakeholders to fill identified financial gaps in both investment and operation costs					
STAGE 3	Objective: Translation of results from Stages 1&2: support to Member State(s) to adjust the advanced engineering design of their targeted pilot plant(s) and ultimately build and operate a pilot plastic recylcing plant						
S3.1	Pilot plant design proposed by Member States (pilot countries) developed and implemented	Support and guidance to Pilot Countries to develop advanced engineering design of targeted pilot plant(s) and its implementation (construction, commissioning and operation)					
S3.2		Technology transfer, dissemination, and partnership development					
STAGE 4	Objective: Technology of pilot plant brought to a readiness level >7, so that commercial interest is wakened						
S4	UPSCALING AND DISSEMINATION of technology TRL>7 or higher	Capture of the experience gained in construction and operation of the pilot plant(s) and lessons learned made available to all Member States - advancement of technology to a readiness level for commercialhand-over for demonstration plant development					

*as of May 2022

ANNEX 2							
ACTION 2: Marine microplastic monitoring and assessment (2021-2025)							
Objective: Enhanced global understanding of the abundance and impact of marine plastic pollution.							
OUTCOME: A Global NUTEC Plastics Monitoring Network of specialized laboratories in Member States able to assess risks posed by marine plastics to their ecosystems and livelihoods, consisting of 50 NUTEC laboratories worldwide located in all 4 regions.							
STAGE 1	**Objective: Harmonize protocols and build capacity in member states for monitoring of marine plastics in the ocean**		**Implementation Timeline**				
Substage	**OUTPUT**	**ACTIVITIES**	**2021**	**2022**	**2023**	**2024**	**2025**
S1.1	Guidelines/guidance documents for monitoring microplastics using nuclear and isotopic techniques.	Expert group work for the development, validation, harmonization, and dissemination of protocols for sampling and analysis of marine plastics (Workshops, training courses, consultants, experts). NAML (RB Project 2000131, PIU and CRP)- National and regional TC NUTEC project.					
S.1.2	Member States implement marine plastics monitoring programs according to harmonized and validated protocols for reporting on SDG 14	Capacity building in NUTEC Plastics Monitoring Laboratories using a package of nuclear techniques developed by NAML (sampling kits, laser vibration spectroscopy, mass spectrometry, radiotracers and radiochronology). TC NUTEC Project and NAML.					
S2	**Objective: Establish an International Reference Laboratory**						
S2.1	International Reference Laboratory is established at NAML to support Member States in marine plastics monitoring and research.	Develop a High-Level Analytical Techniques Platform for plastics studies at NAML. Improve, update and enhance capabilities for the quantification of micro and nano plastics in the marine environment (acquisition of equipment and support of EB Staff, JPO and Consultants.)					
S3	**Objective: Enhance scientific understanding of the impact of marine plastic**						
S3.1	Information and knowledge on sources, distribution, trends, transport, bioaccumulation and their impacts on biodiversity and food to ensure sustainable development.	Development and dissemination of results obtained from coordinated research with Member States on sources, distribution, trends, transport, bioaccumulation and their impacts on biodiversity and food to ensure sustainable development. NAML: new NUTEC CRP, PUI Marine Plastic and TC NUTEC projects.					
S4	**Objective: Build a NUTEC Global Network**						
S4.1	NUTEC Global Network of Marine Laboratories for monitoring and assessing the impact of marine plastic pollution.	Establishment of operational NUTEC Regional Laboratories. Develop coordination mechanisms for NUTEC plastics monitoring laboratories worldwide.					
		NUTEC Marine Global Platform with database, knowledge, and best practices for microplastics monitoring.					
		Global report on status and trends of plastics pollution in seas and oceans.					

ANNEX 3a

ANNEX 3						
ACTION 3: NUTEC Plastics Outreach and Partnership Building						
		Implementation Timeline				
OUTCOMES	**ACTIVITIES**	**2021**	**2022**	**2023**	**2024**	**2025**
Global Awareness Raised on the Benefits of the Application of Nuclear Based Techniques for Marine Plastic Monitoring and Plastic Recycling	**I. NUTEC awareness raising: Targeted Outreach to a range of stakeholders, including Decision Makers, public, sister UN organisations and the Scientific Community**					
	Regional roundtables conducted and follow-up actions developed	**TCAP-TCAF - TCLAC-TCEU**				
	II. Communication and Outreach Material - Publication of four outreach reference documents on NUTEC Plastics in IAEA web	1) NUTEC FLYER 2) NUTEC BROCHURE 3) ROUNDTABLE SUMMARY (TCAP)	NUTEC Portal			
Technical and Strategic Partnerships Established	**I. Representation at global fora and major scientific events in the area of plastic monitoring and plastic reuse and recycling**	- Inclusion of IAEA in G20 Report for the first time, follow-up actions for the G20 Summit - 7th Multi-Stakeholder Forum on STI for the SDGs VIRTUAL				
	IAEA GC Side Event on NUTEC Plastics					
	II. Targeted Outreach to Decision Makers and Scientific Community					
	UNESCO - IAEA collaboration in the UNESCO Ocean Data and Information Network for Africa					
	Workshops with UNEP LAC planned to improve monitoring capacities of marine laboratories					
	IAEA (DG) attend the 2022 UN Ocean Conference					
	Participation in IOC-UNESCO Group of Experts on Scientific Aspects of Marine Environmental Protection					
	Updating MoU and Letter of Agreements with UNEP/MAP for Mediterranean Action Plan					
	DIRs NAPC and NAML named by the DG as Agency focal points for the new Environmental Management Group (EMG) Consultative Process on a Pollution-Free Planet					
	NAML participation in Marine Litters and Microplastics Task Team of the UNEMG led by UNEP					
	Regional WS on Harmonization of Monitoring Strategy and Analysis of Micro Plastics Pollution in the LAC Coastal Zones					
	Launch of the Guidelines for radiation assisted polymer recycling for Member States					
	Member State Briefings					
	III. Targeted Outreach to Decision Makers in Public and Private Sector - National Stakeholder Meetings with pilot countries to promote awareness on potential nuclear applications and contribution of NST to address plastic pollution					
Financial Parnerships Established	**I. Identification of partners (public and private) interested in contributing to improve marine laboratories monitoring capacities**					
	High level meeting to present projects to selected countries and partners. Definition of national programs and commitments, co-financing and in-kind contributions - Identification of MS interested in improving their marine monitoring capacities - IAEA proposal for partnership with the Khaled bin Sultan Living Oceans Foundation on NUTEC Plastics					
	II. Identification of partners (public and private) interested in investing in irradiation facilities to complement existing recycling methods					
	Multi stakeholder's consultation meetings to jointly identify technological gaps that could be addressed by radiation technology for closing the loop of the circular plastic economy - Identification of MS interested in improving their plastics irradiation capacities and applications - Support and coordination of UNIDO Ghana plastics project in support to GH-NPAP and partially funded through the GEF programme					
	Public/private partnerships for validation and upscaling of the irradiation technology in recycling - Follow up from Regional Workshops on the Technical-Economic Feasibility Studies to Implement Radiation Technology for the Recycling of Polymer Waste					
	Bilateral presentations and discussion to secure funding					

*as of May 2022

Annex 3a

Status of activities Outreach and Partnership Building

The following have been achieved for the time period May 2021- March 2022:

I. Global Awareness:

- Four regional roundtables engaging Member States, industry, international organizations, academia, and civil society in a dialogue on how to address global plastic pollution with a particular focus on the contribution nuclear technologies can make. These roundtable dialogues led to new insights, new partnerships, and the development of follow up actions as well as increased mobilized extra budgetary (EB) resources, from Japan, South Korea, the USA and Sweden (ANNEX 4).
- Publication of three outreach reference documents on NUTEC Plastics in IAEA web: 1) FLYER: NUTEC Plastics — A nuclear solution to plastic pollution 2) BROCHURE: NUclear TEChnology for Controlling Plastic Pollution; 3) ROUNDTABLE SUMMARY: For Asia and the Pacific Region

II. Technical and Strategic Partnership

- 62 countries requested assistance from IAEA through the TC programme for support in solving the plastic pollution problem under NUTEC Plastics; in response, 19 national and regional projects across all regions were approved by Board.
- 8 MS are presently being supported in the initial assessment and planning for the potential future establishment of pilot plant(s) for plastic waste recycling: Argentina, Brazil, Ghana, Indonesia, Malaysia, Mexico, Philippines, and Romania.
- Inclusion of IAEA in G20 Report for the first time, follow-up actions progressing with the follow-up actions for the G20 Summit: 2022 in Indonesia – initial discussions with the Prime Minister of Indonesia. Joined the GPAP and participated in the Regional Coordination Working Groups for Southeast and South Asia Region, LA, Africa. The JWG aims to bring regional expertise together to catalyse greater scale and impact.
- TCAP attended the UNEP Sea of Solutions Virtual 2021 Event
- Participation in ESCAP 4th Asia Pacific Day for the Ocean by NAML on Oct 27th,
- Participation in ASEAN organized by the Centre for Southeast Asian Studies on science-based policy -making and on Sea of Solutions
- Memorandum of Understanding and Letter of Agreements signed by UNEP/MAP and the IAEA in 1975 and ongoing for capacity building activities for the designated Mediterranean Action Plan - Programme for the Assessment and Control of Pollution in the Mediterranean Region
- IAEA NAML act as Regional Analytical Centre for UNEP/MAP - MED POL (Mediterranean Action Plan - Programme for the Assessment and Control of Pollution in the Mediterranean Region).

1995 – on going, the signature of new letter of agreement for 2022/2023 on Capacity building activities for the designated MEDPOL monitoring Laboratories

- NAML and NAPC are members of the Consultative Process to prepare a UN system-wide approach on a Pollution-Free Planet as the UN Secretary General requested the Executive Director of UNEP to unite efforts across the UN system. The 1st meeting of was held on 15 Feb 2022 and a core working group was created

- NAML is a member of the Marine Litters and Microplastics Task Team of the UN Environment Management Group led by UNEP and attends regular coordination meetings to ensure synergies for the marine environment

- Participation in the Intergovernmental Oceanographic Commission of UNESCO (IOC-UNESCO) Group of Experts on the Scientific Aspects of Marine Environmental Protection (GESAMP)

- Consultations underway with UNESCO for IAEA collaboration through the implementation of the NUTEC regional project RAF1010 in the UNESCO Ocean Data and Information Network for Africa

III. Financial Partnership

- Support and coordination in the implementation of UNIDO Ghana plastics project in support to Ghana's National Plastic Action Partnership and partially funded through the Global Environmental Facility programme
- About a total of Euro 1,8 million has been pledged and implemented from Japan, US, Sweden, ROK (details in Annex 4)

- Euro 21 million has been approved for the TC project cycle 2021-2024 through national and regional projects with Member States in 4 regions.

- A total amount of Euro 11 million represented as footnote/a remains to be funded

Ongoing and Planned Activities:

- IAEA proposal for partnership with the Khaled bin Sultan Living Oceans Foundation on NUTEC Plastics
- National Stakeholder Meetings in Indonesia, Philippines, and Malaysia. As pilot countries, the stakeholders' meetings involving Government Agencies, Industry, partners, and counterparts at operational levels will enable the promotion of awareness on the potential applications and contribution of nuclear science and technology to address plastic pollution, engage with decision makers, and promote partnerships for an integrated, coordinated, and solution-oriented approach.

- TCAP continues to participate in the World Economic Forum's South Asia Regional Coordination Working Group
- Invitation to IAEA Director General to attend the 2022 UN Ocean Conference to be held in Portugal
- Participation in activities with the UN Environment Programme (UNEP) under the following:
    - Regional Seas Programmes
    - Clean Seas Campaign
    - Global Partnership on Marine Litter
    - Consultations underway with UNEP Regional Office for Africa to contribute to the implementation of the NUTEC regional project (RAF1010) to enhance Member States capacities in plastic monitoring Workshops with UNEP LAC and other regional strategic partners to support improved monitoring capacities of marine laboratories. Planned for 4Q2022 and 4Q2024 provided EBT contributions are available.
    - Regional workshop on Harmonization of Monitoring Strategy and Analysis of Micro Plastics Pollution in the Latin-American and Caribbean Coastal Zones, in Support of SDG 14 (Panama, 25-29 July 2022)
    - GW^2I
    - DIRs NAPC and NAML named by the DG as Agency focal points for the Core Working Group on Plastic Pollution of the Environmental Management Group (EMG) Consultative Process on a Pollution-Free Planet

ANNEX 4

NUTEC Plastics Extra-Budgetary Resources as of May 2022

NUTEC Resources Mobilization

Donor	TC	NAPC	NAML	Total
Japan1	290 000	160 000	0	450 000
Japan2	400 000	0	150 000	550 000
Korea	40 661	100 000	0	140 661
Sweden	29 071	50 000	120 000	199 071
United States	107 981	875 000	0	982 981
Australia	430 000	165 000	275 000	870 000
Grand Total	**1 297 713**	**1 350 000**	**545 000**	**3 192 713**

ANNEX 5

TC Projects Related to NUTEC Plastics

No.	Depa	Region	Country	Project Code	Project Cate	Type	Status	Project Title	FOA	Start Year	End Year	Est. Du	Budget(€) TC	TCF Budget	Footnote/a
1	TC	Africa	Regional Africa	RAF1010	TC Regional	Regional	Open	Nuclear Technology for contr	FOA 18	2022	2024	3	718 700	718 700	-
2	TC	Africa	Ghana	GHA1015	TC National	National	Open	Using nuclear technology in r	FOA 18	2022	2024	3	56 490	-	56 490
3	TC	Asia and the Pacifi	Regional Asia &	RAS1024	TC Regional	Regional	Open	Reutilizing and Recycling Pol	FOA 18	2020	2023	4	1 047 100	973 600	73 500
4	TC	Asia and the Pacifi	Indonesia	INS1031	TC National	National	Open	Nuclear Technology for Plast	FOA 18	2022	2024	3	2 209 270	221 030	1 988 240
5	TC	Asia and the Pacifi	Philippines	PHI1021	TC National	National	Open	Strengthening National Capa	FOA 18	2022	2024	3	202 560	202 560	-
6	TC	Asia and the Pacifi	Regional Asia &	RAS0080	TC Regional	Regional	Open	Promoting Self-Reliance and	FOA 18	2018	2020	3	30 000	30 000	-
7	TC	Europe	Regional Europ	RER1021	TC Regional	Regional	Open	Enhancing the Use of Radiati	FOA 18	2020	2023	4	668 680	668 680	-
8	TC	Latin America & th	Argentina	ARG1029	TC National	National	Open	Implementation of Radiation	FOA 18	2020	2022	3	300 570	229 740	70 830
9	TC	Latin America & th	Regional Latin A	RLA1020	TC Regional	Regional	Open	Radiation technology in natu	FOA 18	2022	2024	3	5 411 485	553 035	4 858 450
10	TC	Europe	Regional Europ	RER7015	TC Regional	Regional	Open	Enhancing Coastal Managem	FOA 17	2021	2023	3	1 337 400	1 337 400	-
11	TC	Asia and the Pacifi	Regional Asia &	RAS7038	TC Regional	Regional	Open	Monitoring of the Marine Env	FOA 17	2022	2024	3	2 609 070	892 800	1 716 270
12	TC	Latin America & th	Brazil	BRA7012	TC National	National	Open	Applying Nuclear Techniques	FOA 17	2020	2022	3	495 276	493 776	1 500
13	TC	Latin America & th	Cuba	CUB7010	TC National	National	Open	Improving National Capacitie	FOA 17	2020	2021	2	417 070	363 070	54 000
14	TC	Latin America & th	Regional Latin A	RLA7025	TC Regional	Regional	Open	Strengthening Capacities in N	FOA 17	2020	2023	4	1 326 827	955 327	371 500
15	TC	Latin America & th	Belize	BZE7004	TC National	National	Open	Strengthened national capac	FOA 17	2022	2024	3	389 746	269 746	120 000
16	TC	Latin America & th	Brazil	BRA7014	TC National	National	Open	Applying nuclear and stable i	FOA 17	2022	2024	3	410 730	311 320	99 410
17	TC	Latin America & th	Trinidad and To	TRI7002	TC National	National	Open	Strengthening National Capa	FOA 17	2022	2024	3	469 668	339 556	130 112
18	TC	Latin America & th	Chile	CHI7014	TC National	National	Open	Application of validated nucl	FOA 17	2022	2024	3	338 990	308 990	30 000
19	TC	Latin America & th	Regional Latin A	RLA0063	TC Regional	Regional	Open	Using Nuclear Techniques for	FOA 17	2020	2022	3	351 840	271 840	80 000
20	TC	Latin America & th	Ecuador	ECU0009	TC National	National	Open	Strengthening Human Resou	FOA 17	2020	2023	4	267 800	217 880	49 920

Footnote: Figures presented in this table include budget planned to implement all activities under these projects, however NUTEC activities are, in some cases, only a fraction of envisaged activities in the listed projects