

Major Programme 2 – NUCLEAR TECHNIQUES FOR DEVELOPMENT AND ENVIRONMENTAL PROTECTION

Introduction

The Rio Declaration on Environment and Development adopted in 1992 calls for co-operation among States to strengthen national capacity building for sustainable development by improving scientific understanding through exchanges of scientific and technological knowledge, and by enhancing the development, adaptation, diffusion and transfer of technologies, including new and innovative technologies. Nuclear and isotope techniques, appropriately integrated with other technologies and adapted to individual sectors of development, help address many of the current and emerging needs earmarked for priority action by Member States in the action plan (Agenda 21) of the United Nations Conference on Environment and Development, the Agency's General Conference resolutions and Board of Governor decisions. These include the need to enhance agricultural productivity and food security, improve human health, increase the availability of drinking water supplies and protect the marine and terrestrial environments.

The Major Programme on Nuclear Techniques for Development and Environmental Protection aims to further enhance the contribution of nuclear sciences and applications to sustainable development objectives by strengthening national research and development (R&D) capacities. It provides an opportunity to Member States, particularly developing countries, to fully participate in global and regional research and information exchange, hence increasing the number of Member States benefiting from the use of nuclear techniques in their national development programmes and projects, strengthening the capacity of national scientific and technical institutions to use nuclear techniques, and increasing the use of Agency norms, procedures and services for the application of nuclear techniques in national programmes.

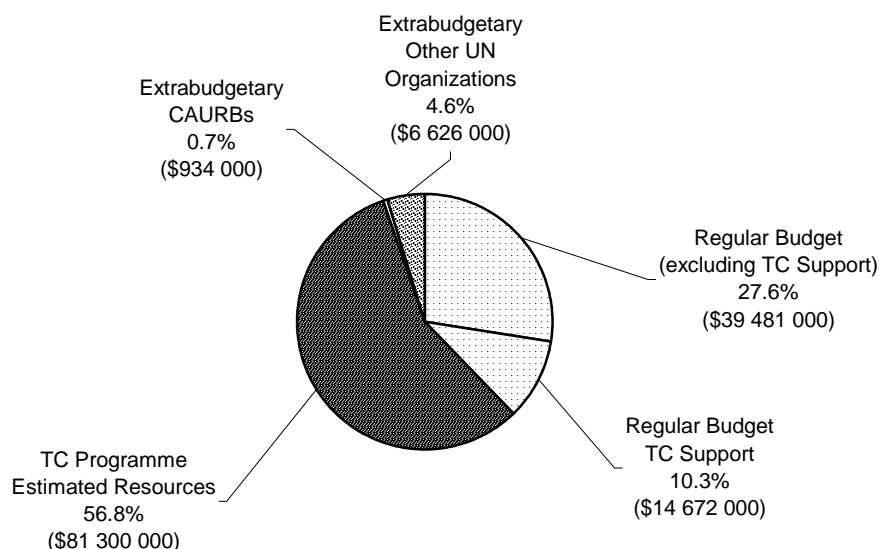
This major programme provides the core scientific and technical support to Member States for non-power applications as mandated by Articles II and III of the Agency's Statute and as described in the technology pillar of the Agency's Medium Term Strategy for 2001–2005. It will seek to better respond to Member State needs, thus contributing to sustainable development, through a continuing adaptation and focusing of its programmes in food and agriculture, human health, water resources, protection of the marine and terrestrial environments, and physical and chemical applications. Co-operation and partnership with United Nations organizations, particularly FAO, UNEP, IOC (UNESCO), WHO and WMO, will be a hallmark of these efforts.

A unique feature of this major programme is the experimental contributions provided by the IAEA Laboratories (Seibersdorf and Vienna) and the Monaco Laboratory (IAEA-MEL).

Objective

To integrate nuclear techniques, where they have a competitive advantage, into development programmes designed to meet basic human needs, and to protect the marine and terrestrial environment from pollutants, particularly radioactive pollutants.

Total Resources for Nuclear Techniques for Development and Environmental Protection in 2002–2003 (including the TC Programme)



The total resources for implementation for Major Programme 2 amount to \$143 013 000 for the biennium. The regular budget constitutes \$54 153 000, almost 38% of this amount (at 2002 prices). The regular budget annual figures (at 2001 prices) show a decrease of \$59 000 for 2002 and a decrease of \$47 000 for 2003 compared with the adjusted budget for 2001.

\$14.7 million of regular budget funding (including laboratory costs) or 10.3% of total resources will be used to support TC programming worth \$81.3 million in Nuclear Techniques for Development and Environmental Protection during formulation and implementation of TC projects, or as an actual contribution to the Programme itself through provision of expert services.

Extrabudgetary funds expected amount to \$7 560 000 or around 5.3% of total funds for implementation. This amount comprises \$934 000 for CAURBs (0.7% of total resources), and \$6 626 000 for activities supported by other United Nations organizations. There is a further \$1.6 million for CAURBs for which there is no funding available from any source.

More detailed data on the regular budget proposals and extrabudgetary resources expected to be available are set out by subprogramme in the tables at the end of this major programme text. Details are also given there of the subprogramme funding required for CAURBs. For those CAURBs for which no funding is available, details of the outputs which will not be delivered or will be delayed or hindered are listed.

STRUCTURE OF MAJOR PROGRAMME 2

NUCLEAR TECHNIQUES FOR DEVELOPMENT AND ENVIRONMENTAL PROTECTION

Overall Management, Co-ordination and Common Activities

PROGRAMME E. FOOD AND AGRICULTURE

Subprogramme E.1. Soil and Water Management and Crop Nutrition

- Project E.1.01. Development of integrated plant nutrient and water management practices for increasing soil fertility and crop yields
- Project E.1.02. Development of soil management and conservation practices for sustainable crop production and environmental protection

Subprogramme E.2. Plant Breeding and Genetics

- Project E.2.01. Induced biodiversity for breeding crops with increased adaptability to drought, salinity and other constraints
- Project E.2.02. Identification, characterization and transfer of mutated genes

Subprogramme E.3. Animal Production and Health

- Project E.3.01. Technologies for integrated management of natural resources in small scale dairy production systems
- Project E.3.02. Technologies for reducing risks from transboundary livestock diseases and those of veterinary public health importance

Subprogramme E.4. Insect and Pest Control

- Project E.4.01. Improved procedures and capacities for risk assessment and management of major trade related insect pests of crops and biological control agents
- Project E.4.02. Enhanced risk assessment and management procedures for tsetse and screwworm flies through integration of the sterile insect technique in intervention campaigns

Subprogramme E.5. Food Quality and Safety

- Project E.5.01. International standards and guidelines on irradiation as a sanitary and phytosanitary treatment for food and agricultural commodities
- Project E.5.02. Analytical methods for risk analysis related to food safety and pesticide management

PROGRAMME F. HUMAN HEALTH

Subprogramme F.1. Nuclear Medicine

- Project F.1.01. Applying in vivo nuclear medicine procedures in the management of childhood diseases, cancer, coronary artery disease and degenerative disorders
- Project F.1.02. Therapeutic applications of unsealed radioactive sources in the management of liver cancer, thyroid cancer, rheumatoid arthritis and coronary artery disease
- Project F.1.03. Radiopharmacology and radionuclide based in vitro molecular methods for the diagnosis and management of infectious, neoplastic, metabolic, genetic and degenerative diseases
- Project F.1.04. Development, validation and application of various information and communication technology tools for patient care, teaching and research in nuclear medicine

Subprogramme F.2. Applied Radiation Biology and Radiotherapy

- Project F.2.01. Modification of radiation therapy using radiobiological knowledge
- Project F.2.02. Economics of radiation oncology
- Project F.2.03. Adaptation of radiation therapy protocols to local conditions
- Recurrent Project F.2.04. Improvement of radiotherapy in Member States through training and education

Subprogramme F.3. Dosimetry and Medical Radiation Physics

- Recurrent Project F.3.01. Network of Secondary Standard Dosimetry Laboratories
- Recurrent Project F.3.02. Quality assurance and dose audits to end-users
- Project F.3.03. Research and development in radiation dosimetry techniques
- Project F.3.04. Developments in radiotherapy physics quality assurance

Subprogramme F.4. Nutrition and Effects of Contaminants on Human Health

- Recurrent Project F.4.01. Applied human nutrition assessment and research using nuclear and isotopic techniques
- Recurrent Project F.4.02. Study of contaminants affecting human health by nuclear and related analytical techniques

PROGRAMME G. WATER RESOURCES

Subprogramme G.1. Isotope Methodologies for the Protection and Management of Surface Water, Groundwater and Geothermal Resources

- Project G.1.01. Development and transfer of isotope methodologies for groundwater management
- Project G.1.02. Assistance to Member States for development and management of geothermal resources
- Project G.1.03. Development of analytical tools for dam leakage and reservoir sedimentation
- Project G.1.04. Exchange of information, training and co-operation with international organizations in isotope hydrology

Subprogramme G.2. Reference Isotope Data and Analysis for Hydrologic Applications

- Project G.2.01. Collection and use of isotope data for precipitation and surface runoff
- Project G.2.02. Strengthening Member States capability for isotope measurements

PROGRAMME H. PROTECTION OF THE MARINE AND TERRESTRIAL ENVIRONMENTS

Subprogramme H.1. Measurement and Assessment of Radionuclides in the Marine Environment

- Project H.1.01. Worldwide marine radioactivity studies in oceans and seas
- Project H.1.02. Contamination studies in selected coastal zones
- Project H.1.03. Analytical quality control services for marine radioactivity studies
- Project H.1.04. Development of methods for analysis of low radionuclide concentrations in the marine environment

Subprogramme H.2. Transfer of Radionuclides in the Marine Environment

- Project H.2.01. Radionuclide behaviour and transfer processes
- Project H.2.02. Nuclear and isotopic applications to delineate carbon flux processes
- Project H.2.03. Radiotracer applications in marine ecotoxicological studies
- Project H.2.04. Impacts of naturally occurring and technologically enhanced radioactivity in coastal environments

Subprogramme H.3. Monitoring and Study of Marine Pollution

- Project H.3.01. Reference methods and analytical quality control services for marine pollution programmes
- Project H.3.02. Support for sustainable development in coastal regions and to the United Nations Inter-Agency Programme on Marine Pollution
- Project H.3.03. Nuclear techniques in studies of persistent organic pollutants, organometallic compounds and marine antifoulants in coastal environments
- Project H.3.04. Isotopic applications in non-radioactive marine contaminant studies

Subprogramme H.4. Measurement and Assessment of Radionuclides and Non-radioactive Pollutants in the Terrestrial Environment

- Recurrent Project H.4.01. Agency network of laboratories for measuring radionuclides in the terrestrial environment (ALMERA)
- Recurrent Project H.4.02. Measurement and assessment of terrestrial radioactivity at contaminated sites
- Project H.4.03. Identification and characterization of radioactive particles in the environment
- Project H.4.04. Development of new radioanalytical techniques for naturally occurring radionuclides in the terrestrial environment
- Project H.4.05. Measurement and assessment of non-radioactive pollutants in the terrestrial environment

PROGRAMME I. PHYSICAL AND CHEMICAL APPLICATIONS

Subprogramme I.1. Radiochemical Applications

- Project I.1.01. Radioisotope production for specific applications
- Project I.1.02. Development of educational modules in radiochemistry and radioanalytical procedures for toxicological important species
- Project I.1.03. Development of laboratory methodologies for the production of specific radiopharmaceuticals and radioimmunoassay kits
- Project I.1.04. Analytical quality control services

Subprogramme I.2. Radiation Processing, Radiography and Radiotracer Applications

- Project I.2.01. Radiotracers and sealed sources for mineral recovery optimization and flow pattern visualization
- Project I.2.02. Modification of polymers and remediation of drinking water and industrial wastewater
- Project I.2.03. Development of procedures and standard protocols for radiography techniques
- Project I.2.04. Application to landmine identification