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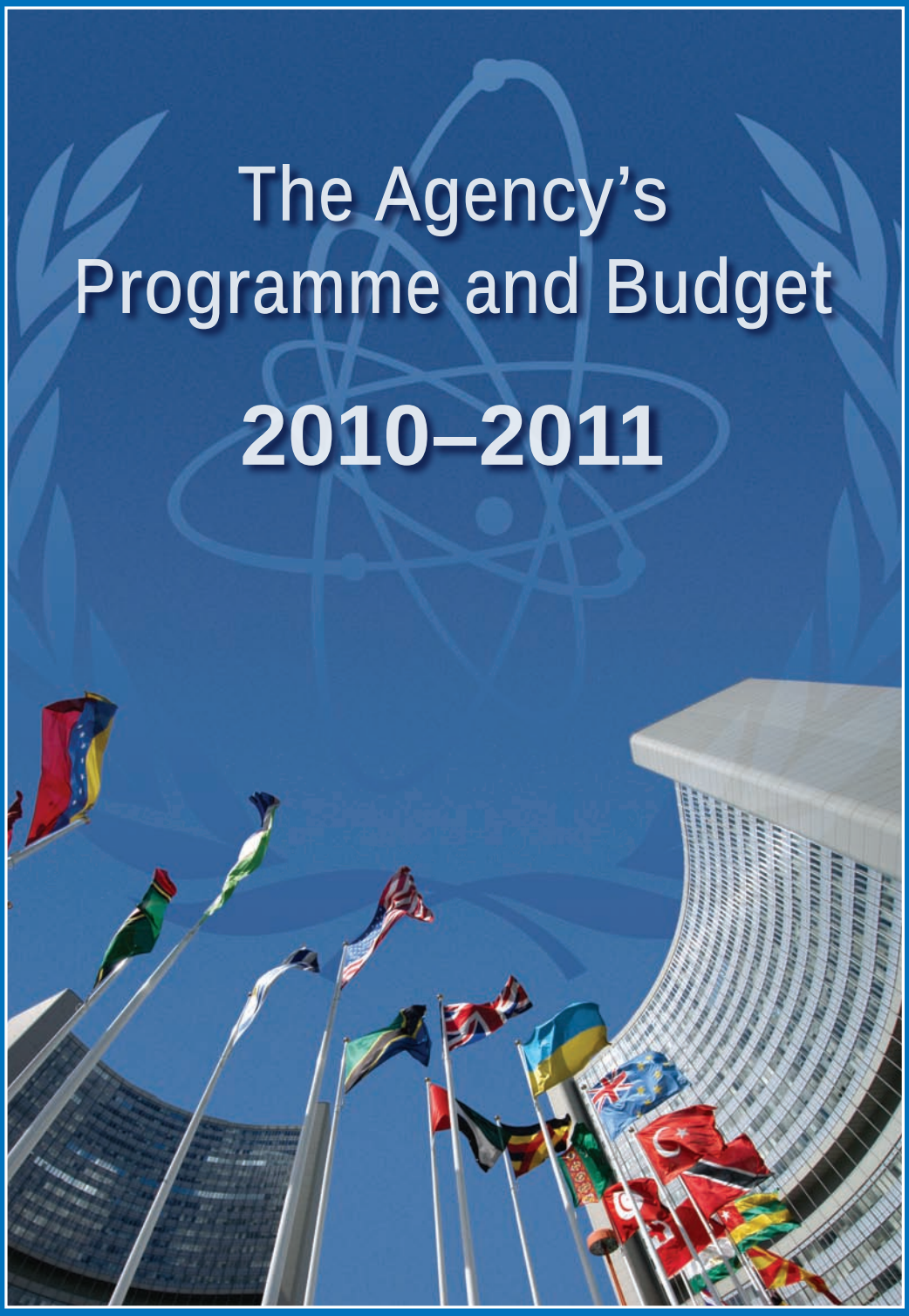
The Agency's Programme and Budget

2010–2011



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Contents

List of Acronyms

ACABQ	Advisory Committee on Administrative and Budgetary Questions (United Nations)
ADS	accelerator-driven systems
AIPS	Agency-wide Information System for Programme Support (IAEA)
AIPs	annual implementation plans
ALADDIN	A Labelled Atomic Data Interface (IAEA)
ALMERA	Analytical Laboratories for Measurement of Environmental Radioactivity (IAEA)
AP	additional protocol (Safeguards)
ARCAL	Co-operation Agreement for the Promotion of Nuclear Science and Technology in Latin America and the Caribbean
AU	African Union
AW-IPM	area-wide integrated pest management
BMS	Buildings Management Services (UNIDO)
BMSF	Buildings Management Special Fund (UNIDO)
BSS	International Basic Safety Standards for Protection against Ionizing Radiation and for the Safety of Radiation Sources (IAEA/FAO/ILO/ NEA/PAHO/WHO)
CA	complementary access
CANDIDE	Coordination Action on Nuclear Data for Industrial Development in Europe (EC)
CAURB	core activity unfunded in the Regular Budget (IAEA)
CCS	Committee on Common Services (Vienna International Centre)
CDF	calendar-day in the field
CDFV	calendar day in the field for verification (IAEA)
CGIAR	Consultative Group on International Agricultural Research (UNDP/FAO/World Bank)
CIF	Capital Investment Fund (CTBTO)
CLE	Clean Laboratory extension
CNS	Convention on Nuclear Safety
CPF	Country Programme Framework (Technical cooperation)
CPI	consumer price index
CPPNM	Convention on the Physical Protection of Nuclear Material
CRP	coordinated research project
CSA	comprehensive safeguards agreement
CSIA	compound specific isotope analysis
CSS	Commission on Safety Standards (IAEA)
CT	computed tomography
CTBTO	Comprehensive Nuclear-Test-Ban Treaty Organization
DEEP	Desalination Economic Evaluation Program (IAEA)
DIRATA	Database on Discharges of Radionuclides to Atmosphere and Aquatic Environment (IAEA)
DIV	design information verification (Safeguards)
ECAS	enhancing capabilities of the safeguards analytical services
ELISA	enzyme-linked immunosorbent assay
EMS	environmental monitoring system
ENATOM	Emergency Notification and Assistance Technical Operations Manual (IAEA)
EPR	emergency preparedness and response
EPREV	Emergency Preparedness Review (IAEA)
ERF	Equipment Replacement Fund (IAEA)
ERP	enterprise resource planning

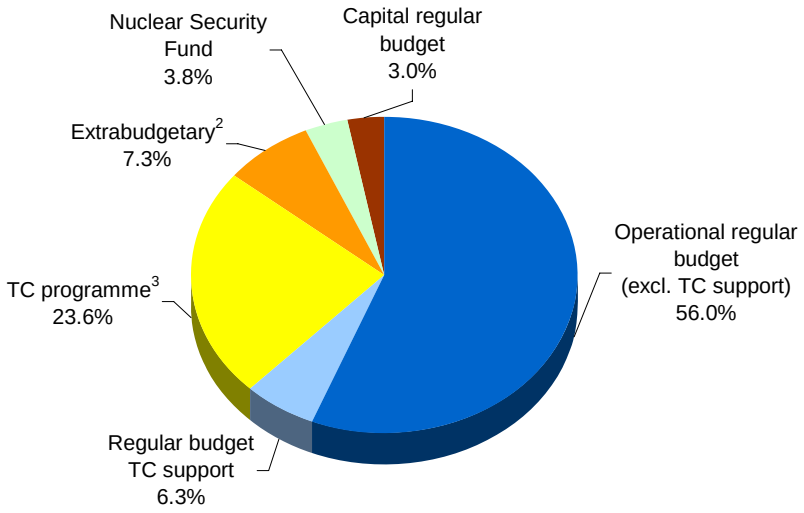
ETDE	Energy Technology Data Exchange (International Energy Agency)
FAO	Food and Agriculture Organization of the United Nations
FAWNI	freely accessible web-based nuclear information
FINAS	Fuel Incident Notification and Analysis System (NEA/IAEA)
FRN	fallout radionuclide
FTE	Full-Time Equivalent
GEF	Global Environment Facility
GHG	greenhouse gas
GIF	Generation IV International Forum
GIS	geographic information system
GNEP	Global Nuclear Energy Partnership (United States)
GNIP	Global Network of Isotopes in Precipitation (IAEA/WMO)
GTRI	Global Threat Reduction Initiative (United States)
HEU	high enriched uranium
HLCM	High-Level Committee on Management (United Nations)
HR	human resources
HTGR	high temperature gas cooled reactor
IACRNA	Inter-Agency Committee on Response to Nuclear Accidents (European Commission/FAO/IAEA/NEA/ OCHA/WHO/WMO)
IARC	International Agency for Research on Cancer (WHO)
IBANDL	Ion Beam Analysis Nuclear Data Library (IAEA)
ICARDA	International Centre for Agricultural Research in the Dry Areas
ICRP	International Commission on Radiological Protection
ICSC	International Civil Service Commission (United Nations)
ICT	information and communication technology
ICTP	International Centre for Theoretical Physics
IDEA	international dose external audits database
IEC	Incident and Emergency Centre (IAEA)
IFMIF	International Fusion Materials Irradiation Facility
IFRC	International Fusion Research Council
IHAN	Isotope Hydrology Analytical Network
ILO	International Labour Organization
ILRI	International Livestock Research Institute
IM	information management
IMO	International Maritime Organization
INDC	International Nuclear Data Committee (IAEA)
INES	International Nuclear and Radiological Event Scale (IAEA/NEA)
INIS	International Nuclear Information System (IAEA)
INPRO	International Project on Innovative Nuclear Reactors and Fuel Cycles (IAEA)
INRA	International Nuclear Regulators Association
INS	innovative nuclear energy system
INSAG	International Nuclear Safety Group (IAEA)
INSSP	Integrated Nuclear Security Support Plan (IAEA)
IPCC	Intergovernmental Panel on Climate Change (WMO/UNEP)
IPET	International Conference on Clinical PET and Molecular Medicine
IPPC	International Plant Protection Convention (FAO)
IPSAS	International Public Sector Accounting Standards
IRDF	International Reactor Dosimetry File
IRP	IAEA Safeguards Information System Re-engineering Project
IRRS	Integrated Regulatory Review Service (IAEA)

IRS	Incident Reporting System (IAEA/NEA)
IRSRR	Incident Reporting System for Research Reactors (IAEA)
ISE	integrated safeguards environment
ISIS	IAEA Safeguards Information System
ISSAS	IAEA SSAC Advisory Service
ISSC	International Seismic Safety Centre (IAEA)
IT	information technology
ITDB	Illicit Trafficking Database (IAEA)
ITER	International Thermonuclear Experimental Reactor
ITIL	IT Infrastructure Library
IUR	International Union of Radioecology
IWAVE	IAEA Water Availability Enhancement
JIIHP	Joint International Isotopes in Hydrology Programme (IAEA/UNESCO)
JMOX	Mixed Oxide Fuel Fabrication Plant in Japan
JPLAN	Joint Radiation Emergency Management Plan of the International Organizations
LDC	least developed country
LEU	low enriched uranium
LMIC	low and middle income country
LOCA	loss of coolant accident
MA	minor actinides
MARIS	Marine Information System (IAEA)
MCI	major capital investment
MCIF	Major Capital Investment Fund (IAEA)
MCIP	Major Capital Investment Plan
MDG	United Nations Millennium Development Goal
MOSCs	management and operational shared costs
MOX	mixed oxide
MPS	myocardial perfusion scintigraphy
MSSP	Member State Support Programme (Safeguards)
MTS	Medium Term Strategy
MUF	material unaccounted for
NCCP	national cancer control programme
NDA	non-destructive assay
NEWMDB	Net Enabled Waste Management Database (IAEA)
NIRS	National Institute of Radiological Sciences (Japan)
NKM	nuclear knowledge management
NML	Nuclear Materials Laboratory
NNWS	non-nuclear-weapon State
NPP	nuclear power plant
NPSG	Nuclear Power Support Group
NPT	Treaty on the Non-Proliferation of Nuclear Weapons
NSF	Nuclear Security Fund
NSP	Nuclear Security Plan
NUMDAB	Nuclear Medicine Database (IAEA)
NWAL	Network of Analytical Laboratories (Safeguards)
NWS	nuclear-weapon State
OECD	Organisation for Economic Co-operation and Development
OECD/NEA	OECD/Nuclear Energy Agency
OIE	World Organisation for Animal Health
OIOS	Office of Internal Oversight Services

OSART	Operational Safety Review Team (IAEA)
PAAT	Programme Against African Trypanosomiasis (FAO/WHO/IAEA/IBAR)
PACT	Programme of Action for Cancer Therapy (IAEA)
PAHO	Pan American Health Organization
PATTEC	Pan African Tsetse and Trypanosomiasis Eradication Campaign (IAEA/FAO/WHO)
PCC	Programme Coordination Committee (IAEA)
PDI	person-day of inspection
PET	positron emission tomography
PHWR	pressurized heavy water reactor
PIE	post-irradiation examination
PMDS	PACT Model Demonstration Sites
PRINCE	Projects in Controlled Environment (United Kingdom)
PRIS	Power Reactor Information System (IAEA)
PROSPER	Peer Review of Operational Safety Performance Experience (IAEA)
QA	quality assurance
QC	quality control
QMS	quality management system
QUANUM	Quality Assurance in Nuclear Medicine (IAEA)
QUATRO	Quality Assurance Team for Radiation Oncology (IAEA)
RAIS	Regulatory Authority Information System (IAEA)
RANET	Response Assistance Network (IAEA)
RASSC	Radiation Safety Standards Advisory Committee
RCM	Research Coordination Meeting (IAEA)
REPLIE	Response Plan for Incidents and Emergencies
RERTR	Reduced Enrichment for Research and Test Reactors (IAEA)
RIA	radioimmunoassay
RM	remote monitoring
RR	research reactors
RRIN	Research Reactor Information Network (IAEA)
RWfO	reimbursable work for others
RWM	radioactive waste management
SAGNA	Standing Advisory Group on Nuclear Applications (IAEA)
SAGNE	Standing Advisory Group on Nuclear Energy (IAEA)
SAGSI	Standing Advisory Group on Safeguards Implementation (IAEA)
SAL	Safeguards Analytical Laboratory
SER	State evaluation report (Safeguards)
SIR	Safeguards Implementation Report (IAEA)
SIT	sterile insect technique
SLA	State level safeguards approach (IAEA)
SMART	specific, measurable, achievable, relevant and time-bound
SMR	small and medium reactor
SOP	standard operating procedure
SPAR	Spent Fuel Performance Assessment and Research (IAEA CRP)
SPECT	single photon emission computed tomography
SQP	small quantities protocol
SSAC	State system of accounting for and control of nuclear material (Safeguards)
SSDL	secondary standards dosimetry laboratory
STEP	Sandwich Training Educational Programme (IAEA/ICTP)
STR	Safeguards Technical Report (IAEA)
TAD	transboundary animal disease

TC	technical cooperation
TCDC	technical cooperation among developing countries
TCF	Technical Cooperation Fund (IAEA)
TCP	technical cooperation programme
TECDOC	technical document
TLD	thermoluminescent dosimetry
TRANSSC	Transport Safety Standards Committee (IAEA)
TSO	technical support organization
TWG	technical working group
TWGRR	Technical Working Group on Research Reactors
UHS-SIMS	ultra-high sensitivity secondary ion mass spectrometer
UMS	unattended monitoring system
UNCED	United Nations Conference on Environment and Development
UNDAF	United Nations Development Assistance Framework
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNFPA	United Nations Population Fund
UNICEF	United Nations Children's Fund
UNIDO	United Nations Industrial Development Organization
UNJSPF	United Nations Joint Staff Pension Fund
UNOPS	United Nations Office for Project Services
UNSC	United Nations Security Council
UNSCEAR	United Nations Scientific Committee on the Effects of Atomic Radiation
UNSSS	United Nations Security and Safety Section (VIC)
VBOs	VIC-based organizations
VIC	Vienna International Centre
VOA	voluntary offer agreement (Safeguards)
VUCC	Virtual University for Cancer Control
WATEC	International Radioactive Waste Technical Committee (IAEA)
WCF	Working Capital Fund (IAEA)
WHO	World Health Organization
WMO	World Meteorological Organization
WSSD	World Summit on Sustainable Development (United Nations)
3E	energy economy environment

2010–2011[1] Total Resources at a Glance



- €315 million in 2010 and €321 million in 2011 for operational regular budget activities described in this document. This portion of the regular budget represents (before price adjustments) an increase of 4.6% in 2010 and a further increase of 1.8% in 2011. Additionally, the average price adjustment for 2010 is 2.7%.
- €0.1 million in 2010 and €30 million in 2011 for the *capital regular budget*, consisting of major infrastructure related projects or purchase of equipment and services that are not of an operational nature.
- €41 million in 2010 and €34 million in 2011 for *extrabudgetary* activities described in this document.
- €20 million in 2010 and €18 million in 2011 for the *Nuclear Security Fund* (NSF).
- €139 million in 2010 and €102 million in 2011 for the *technical cooperation programme*.

		2010 *at 2010 prices*	2011 *prelim. estimates at 2010 prices*	Total for biennium
Major Programmes	1. Nuclear Power, Fuel Cycle and Nuclear Science	31 790 659	32 228 913	64 019 572
	2. Nuclear Techniques for Development and Environmental Protection	36 551 831	37 054 722	73 606 553
	3. Nuclear Safety and Security	29 549 050	31 452 751	61 001 801
	4. Nuclear Verification	121 542 584	123 237 272	244 779 856
	5. Policy, Management and Administration Services	77 594 649	78 654 516	156 249 165
	6. Management of Technical Cooperation for Development	18 455 888	18 710 617	37 166 505
	Operational regular budget	315 484 661	321 338 791	636 823 452
	Capital regular budget	102 200	30 310 312	30 412 512
	Total Agency Programmes	**315 586 861**	**351 649 103**	**667 235 964**
	Extrabudgetary[2]	40 548 301	34 228 193	74 776 494
	Nuclear Security Fund	19 938 803	18 296 900	38 235 703
	Technical cooperation programme[3]	139 122 360	102 240 434	241 362 794
	Total Resources[4]	**515 196 325**	**506 414 630**	**1 021 610 955**

[1] Figures for 2011 are preliminary estimates.
[2] Includes all extrabudgetary resources except for the Nuclear Security Fund.
[3] 2010 figure reflects a large extrabudgetary contribution.
[4] Excludes unfunded CAURBs of €14.2 million for the biennium.

PART I

OVERVIEW

INTRODUCTION

1. For many years, the Director General has been forthright in stating his view that the Agency is significantly underfunded for the tasks that need to be performed and that Member States are expecting it to execute.

2. The world recognizes nuclear proliferation and terrorism as being among the gravest threats to international peace and security. Yet, as the Agency's verification obligations continue to grow there have not been corresponding funding increases. Further, its vital work on nuclear security is, to an unacceptable degree, reliant on insecure extrabudgetary contributions often tied to restrictive conditions.

3. At the same time, many of the rapidly increasing number of States contemplating the establishment of nuclear power programmes are depending on the Agency for advice and assistance in regard to safety, security and infrastructure development. Basic human needs in developing countries in health, water and food — areas where nuclear techniques are of proven benefit — are also growing and also demand priority attention. Yet, zero growth policies severely limit the available funding.

4. In addition, the absence to date of any comprehensive capital funding mechanism has meant that the Agency's infrastructure requirements have been repeatedly postponed — largely because they could not be included in the budget of any single year without creating significant increases over zero real growth.

5. These and other compelling justifications led the Secretariat to propose for the coming biennium significant increases in the operational part of the regular budget, and the addition of a major capital investment component. Following extensive analysis and consultations with Member States, the Board of Governors has agreed to an increase in the regular budget for 2010 above the 2009 level of €8.1 million or 2.7% (at 2009 prices).[5]

6. Of particular significance in the proposals for the 2010–2011 biennium are the following:

- Surging requirements for energy, uncertainty in the security of available supplies, concern about climate change and greater confidence stemming from improved nuclear power plant performance and safety records have led to some 60 Member States expressing interest in seeking support for considering nuclear power as a potential option in their energy mix. There is an anticipated rise of more than threefold in the number of technical cooperation projects in 2009–2011 focused on aspects related to the introduction of nuclear power. Increased demands from Member States for support in areas such as energy planning, nuclear law and regulations, safety culture, site selection, human resources development, knowledge management, plant management, public outreach, waste management and eventual decommissioning necessitate increases in a cross-section of Agency activities. In particular, greater support will also be given to the International Project on Innovative Nuclear Reactors and Fuel Cycles (INPRO). The proposed budget envisages for Major Programme 1 a resource increase of €2.7 million for 2010 (at 2009 prices).
- An essential part of the Agency's responsibilities is to promote and transfer nuclear technology to help in the vital task of 'meeting basic human needs' — alleviating hunger, providing access to water and improving health care. In the coming biennium it is proposed to increase, in particular, activities for work related to human health, including for cancer

[5] Reference: GOV/2009/52/Rev.1 "Proposal to the Board of Governors by the Vice-Chairman on the Programme and Budget for 2010–2011".

control (PACT), the security of food supplies for the millions of the world's hungry and the management of natural resources such as water and soil. The proposed increases to meet the delivery of the associated programmes are central to maintaining a balanced achievement of the Agency's overall statutory mandate "to accelerate and enlarge the contribution of atomic energy to peace, health, and prosperity throughout the world". The proposed budget envisages for Major Programme 2 a resource increase of €2.0 million for 2010 (at 2009 prices).

- The initiation of a move to provide a greater proportion of regular budget funding for nuclear safety and security. The growing interest in nuclear power and the desire for increased use of nuclear technologies for development raise the necessity of addressing the associated risks related to the safety and security of nuclear material and facilities. The proposed increases in the regular budget for the core areas of nuclear safety and security are aimed, inter alia, at ensuring stable and assured funding, as advised by Member States, so as to minimize the risks of excessive dependence on unpredictable and tied contributions. They will make it possible to enhance the Agency's work in supporting States to increase their levels of nuclear safety and security and improve their capabilities to respond to nuclear incidents and emergencies. The proposed budget envisages for Major Programme 3 a resource increase of €5.1 million for 2010 (at 2009 prices), of which €2.0 million are aimed at ensuring stable and assured funding to the Nuclear Security Programme.

- A move has been initiated towards information driven safeguards and the implementation of a non-discriminatory approach to safeguards implementation taking account of State specific factors, including the implementation of integrated safeguards where appropriate, that will enhance the effectiveness and efficiency of all relevant activities at the State and the facility level. The Agency will continue its efforts to enhance the credibility of safeguards conclusions. The increasing importance of capabilities to detect indicators of undeclared nuclear material and activities has been strongly reflected in all relevant activities. More specifically, throughout the biennium, the Agency will improve and intensify the development and/or acquisition of more effective information collection, analysis and evaluation tools. New technologies are being developed to enable inspectors to focus on other critical safeguards efforts. The Agency will continue to develop and implement inspection effort saving approaches involving unattended monitoring and surveillance systems, and approaches based on verification through short notice and unannounced inspections. This reflects the shift in the focus of safeguards implementation from verification of declared nuclear material at declared facilities to an information-driven system that aims at understanding and assessing the consistency of information on a State's nuclear programme as a whole. The safeguards analytical services provided by the Safeguards Analytical Laboratory (SAL) and the Network of Analytical Laboratories (NWAL) for nuclear material and environmental samples analyses will be strengthened through the project *Enhancing Capabilities of the Safeguards Analytical Services* (ECAS). The Agency is requesting the resources for this new project that is critical to maintain and further develop an effective and efficient analytical services verification system, in order to draw independent, impartial and timely safeguards conclusions. The proposed budget envisages for Major Programme 4 a resource increase of €1.2 million for 2010 (at 2009 prices).[6]

- A major undertaking reflected in these budget proposals is the Agency-wide Information System for Programme Support (AIPS). During the biennium, the first 'Plateau' of the

[6] This amount does not include funding for ECAS for which it is envisaged that funding will be provided, from 2010 onwards, from the Major Capital Investment Fund (MCIF).

project — Finance and Procurement — will be completed. This will involve considerable business process re-engineering and is expected to bring benefits in terms of more efficient and effective support to programme delivery. Work on the second Plateau — Human Resources and Programme and Project Management — will start during the biennium. It is expected that subsequent to the implementation of Plateau 2, Plateaus 3 and 4 (Meetings, Contacts, Travel and Transportation) will be initiated. While AIPS is very much a 'one-house' project, it will require strong leadership from Major Programme 5. The completion of Plateau 1 of the AIPS project will pave the way during the biennium for the introduction at the Agency of the International Public Sector Accounting Standards (IPSAS). Also reflected in these budget proposals are increases in resources towards covering additional staff security and safety measures mandated by the United Nations Safety and Security Services (UNSSS) as well as increases in resources needed to adequately fund the Agency's procurement services. The proposed budget envisages for Major Programme 5 a resource increase of the order of €0.8 million for 2010 (at 2009 prices).[7] This is to comply with the decision of the Board to cap the funding increase for this Major Programme at 1% of its 2009 value.[8] The implications are that only part of the total mandatory UNSSS requirements will be funded from the regular budget in 2010 and that – in order to accommodate it, along with increased funding for procurement services — a decrease in funding ranging between 1.1% and 1.8% was required for all other Major Programme 5 functions.

- The technical cooperation programme will face a number of challenges in the coming biennium. First and foremost is the challenge of consolidating the performance of recent years, while at the same time keeping pace with the increasing number of Member States and the growing scope of operations. The programme will also have to respond proactively to major challenges deriving from the changing scientific, environmental, financial and policy environment. The proposed budget envisages for Major Programme 6 a resource increase of €1.7 million for 2010 (at 2009 prices).[9]
- As one of the innovative features of these budget proposals, the Major Capital Investment Fund (MCIF) is a mechanism to fund the Agency's major infrastructure requirements, a transition to a more rational and workable system of capital budgeting. It provides an opportunity to meet such requirements that would otherwise face continued deferral. Under the MCIF, fund balances will remain available for use across biennia or until utilized. Such an approach will: (a) facilitate long term planning; (b) ensure that adequate funds are accumulated over a period of time so that they are available when needed; and (c) ensure that appropriations are managed in a manner that the amounts requested each year are more stable and predictable.
- The establishment of "austerity measures" has been mandated by the Board as indicated in paragraph 8 of GOV/2009/52/Rev.1 to reduce the funding envelope of the budget for the biennium. These measures will affect salaries (lapse factor), staff and non-staff travel, consultants and other costs. These measures are in addition to the Secretariat's efforts to maximize efficiency gains by continuous efforts at rationalization of resource allocation, and increased automation and simplification of processes in all areas of the Agency's work

[7] This amount does not include funding for the AIPS project for which it is envisaged that funding will be provided, from 2010 onwards, from the MCIF.

[8] Reference: GOV/2009/52/Rev.1 "Proposal to the Board of Governors by the Vice-Chairman on the Programme and Budget for 2010–2011".

[9] In its meeting on 3 August 2009, the Board also made several important decisions regarding the Technical Cooperation Fund as reflected in paragraphs 6 and 7 of GOV/2009/52/Rev.1.

without sacrificing effectiveness. Efficiency gains and process improvements are described in more detail below (paragraphs 22–28).

PROGRAMME DEVELOPMENT FRAMEWORK

Programme structure

7. As in previous biennia, the Agency's programme of work is divided into major programmes. Some of the major programmes cover scientific and technical fields. This is the case for:

- Major Programme 1. Nuclear Power, Fuel Cycle and Nuclear Science
- Major Programme 2. Nuclear Techniques for Development and Environmental Protection
- Major Programme 3. Nuclear Safety and Security
- Major Programme 4. Nuclear Verification

8. Other major programmes address managerial and administrative functions that provide the enabling environment to the scientific and technical programmes as well as to the technical cooperation (TC) programme. These are:

- Major Programme 5. Policy, Management and Administration Services
- Major Programme 6. Management of Technical Cooperation for Development

9. Because of the difference in the nature of the two types of major programmes, different programmatic hierarchies are used. The hierarchy used in the scientific and technical major programmes is: major programme, programme, subprogramme and project. The term *project* denotes a coherent cluster of activities that have an identifiable commencement date and an expected termination date. When the cluster of activities in a given group is repetitive in nature from one cycle to the next, the term *recurrent project* is used and hence no beginning and end dates are given.

10. With respect to the Major Programmes 5 and 6, the hierarchy used is: major programme, function and subfunction. Most activities contained in the subfunctions are necessary recurrent and continuous from one cycle to the other. Thus, an indication as to the duration of a subfunction is not applicable.

Follow-up on lessons learned

11. In the development of the 2010–2011 Programme and Budget, full account has been taken of the lessons learned contained in the:

- Programme Performance Report for 2006–2007 (GOV/2008/31);
- 2007 Programme Evaluation Report (GOV/INF/2008/3);
- Medium Term Strategy 2001–2005: Implementation Report (GOV/INF/2006/12);
- The Agency's Accounts for 2007 (GC(52)/11);
- Safeguards Implementation Report for 2007 (GOV/2008/14);
- Evaluation of Technical Cooperation Activities in 2008 (GOV/2008/56).

12. Lessons learned from reviews of different areas of the Agency's programme and recommendations of Standing Advisory Groups have also been taken into consideration, and details of the corresponding follow-up are provided in Part II under the respective programmes.

13. Lessons learned from the 2006–2007 programme performance assessment on programme formulation relate essentially to the design of performance parameters: objectives, outcomes and performance indicators. In this document, outcomes are directly linked to the programme objectives, which in turn are linked to the objectives of the Medium Term Strategy (MTS). Performance

indicators for which data can readily be measured have been selected and the corresponding baselines have been established.

Risk assessment

14. Risk management refers to the identification of potential influencing factors, both internal and external, which might impede the Agency's ability to deliver its outputs, to achieve its outcomes or meet its objectives.

15. The Agency has now introduced a structured and organization-wide approach for risk management. This approach focuses on identifying, assessing and responding to the risks relevant to all programmes and ensures that high risk areas are notified efficiently to senior management. In 2008 the Agency has implemented a training programme for managers and has prepared policy, guidelines and information technology (IT) supported tools.

Gender equality

16. The Agency is committed to gender equality. In conformity with General Conference Resolution GC(49)/RES/16.B, the Agency has furthered gender equality by including gender considerations, where appropriate, in the programmes and activities set out in this document, for example, in activities related to nutrition, nuclear medicine and Programme of Action for Cancer Therapy (PACT). In addition, special attention is being given to promoting women as experts, trainees and fellows.

Prioritization

17. Prioritization among competing activities is essential to the optimal allocation of resources during the planning phase of the programme and budget. Prioritization also ensures effective and efficient use of resources during the implementation phase.

18. The general prioritization factors applicable to all programmes are:

- Statutory responsibility and legal commitments;
- Decisions of the Policy-making Organs;
- Expressions of priority attached by Member States to various activities;
- Recommendations of standing and other review and advisory bodies;
- Conclusions and recommendations of evaluation panels.

19. In addition, specific criteria have been developed for within each programme. They can be found under the title "specific criteria for prioritization".

20. As in previous biennia, three levels of priorities have been established in each programme. Projects are assigned to one of the three levels, with priority 1 being the highest and representing projects that are most essential for the achievement of the Agency's mandate and strategic objectives.

21. Examples of the results of prioritization are the phasing out, completion or reduction of routine analytical services in isotope hydrology, the application of nuclear analytical techniques to investigate the authenticity of art objects, non-destructive testing, and sterile insect technique (SIT) activities related to the Mediterranean fruit fly and cactus moth, thus freeing funds for higher priority activities.

Efficiency gains and process improvements

22. Efficiencies and productivity improvements are continuously pursued by the Secretariat, not just in the administrative area. Efforts in this respect continue to be supported by the different functions of the Office of Internal Oversight Services: audit, programme evaluation and management services.

23. Efficiency gains have been achieved through streamlining that takes advantage of synergies within and in between programmes, for example, the joint activities on radiopharmaceuticals between (a) Human Health; and (b) Radioisotope Production and Radiation Technology; closer coordination with the nuclear safety area in delivering TC services on uranium exploration and production; identifying specific issues to plan and conduct peer reviews and advisory services in a coordinated and integrated manner in order to minimize redundancy or overlap; and increasing the productivity of training through distance learning, other web based media and regional training.

24. Gains have also been achieved through the streamlining of budgeting and accounting processes. The management and operational shared costs (MOSCs) of the Agency's laboratories were previously distributed over 24 projects, a number that has now been reduced to two. Further, contract administration for research contracts was previously distributed over 77 projects and now appears as only one project.

25. In the safeguards area, approaches based on unannounced inspections to verify transfers of spent fuel to interim dry storage were implemented at 16 power reactors and resulted in a saving of approximately 30% of inspection effort.

26. To support the streamlining of the programme and budget process, the Agency-wide software application has been improved for the preparation of the 2010–2011 proposals, eliminating the need for preparation, maintenance and compilation of individual databases throughout the Secretariat.

27. The Agency continues to pursue cost reductions in the area of travel, primarily through ongoing efforts to obtain better airline fares in the context of a rapidly changing travel market.

28. In 2008, the Secretariat strengthened its approach to efficiency gains by issuing new guidelines to managers on this topic. The actual achievements will be monitored and measured during the 2010–2011 implementation period and reported to Member States along with the programme performance report in 2012.

BUDGETARY FRAMEWORK

Budgetary presentation

29. The present document contains the following tables:

- Table 1: The Regular Budget — By Programme and Major Programme
- Table 2: The Regular Budget — Summary of Income
- Table 3(a)–3(b): Total Resource Requirements — By Programme and Major Programme
- Table 4(a): Operational Regular Budget — By Item of Expenditure
- Table 4(b): Capital Regular Budget — By Item of Expenditure
- Tables 5–10: Summary of Regular Budget Resources for each Major Programme
- Table 11: Capital Regular Budget Details
- Table 12: Major Capital Investment Plan

30. Table 1 compares the adjusted 2009 budget to the 2010 and 2011 budgetary proposals. Programme increases or decreases are shown for both years of the biennium, as are price adjustments for 2010.

31. Table 2 is a summary of the income expected in 2010 and 2011. It includes assessed contributions from Member States, income from reimbursable work for others and other miscellaneous income.

32. Tables 3(a) and 3(b) show all resources required to carry out the activities of the Agency for both years of the biennium, including: the regular budget (operational regular budget and capital regular

budget); extrabudgetary funds; the Nuclear Security Fund (NSF); unfunded activities, including core activities unfunded in the regular budget (CAURBs); and the technical cooperation (TC) programme.

33. Tables 4(a) and 4(b) show the budget estimates of the operational regular budget and of the capital regular budget, respectively, for 2010 and 2011 and the price adjustment for 2010 by item of expenditure.

34. Tables 5–10 compare the adjusted operational regular budget for 2009 with the 2010 and 2011 proposals for each major programme and subprogramme.

35. Table 11 shows capital regular budget details for 2010 and 2011.

36. Table 12 includes the Major Capital Investment Plan for the period 2010–2019.

37. In addition, tables showing the resource requirements for all projects under each major programme and details of CAURBs for which no funding is available are listed under the detailed narrative of each major programme, in Part II of this document.

Budget currency and exchange rate

38. The regular budget estimates for 2010–2011 have been prepared in euro, using a budget exchange rate of one euro to one US dollar. The same rate was used for the 2008 and 2009 approved budgets. While the functional currency for the regular budget is the euro, the currency for the TC programme is the US dollar. To make it possible to report the resources available to the Agency in one currency and to make comparisons with previous years, all dollar funds are expressed in euro at the budget exchange rate.

Core activities unfunded in the regular budget

39. As in previous biennia, recourse has been made to so-called *core activities unfunded in the regular budget (CAURBs)*. These are activities which either should be part of the Agency's regular budget programme if funding permitted, or which involve a degree of uncertainty as to whether they will be implemented and have therefore not been included as part of the regular budget. CAURBs comprise both activities expected to be financed from extrabudgetary funds ('extrabudgetary CAURBs'), and those for which no funding is currently foreseen ('unfunded CAURBs'). The latter have been included in the programme proposals to draw this situation to the attention of Member States with a view to attracting extrabudgetary funds. They are identified in the programme for adoption by the Board of Governors so that they may be implemented without further Board approval should such funds be received or regular budget savings materialize in the course of the biennium. Where such activities are not funded by extrabudgetary contributions or from savings, they will not be implemented. It should be noted that the amounts shown against CAURBs are indicative figures and do not represent 'ceilings'.

Major Capital Investment Fund

40. As mentioned in paragraph 6, a Major Capital Investment Fund (MCIF) is established as a Reserve Fund in accordance with Financial Regulation 4.06 to support major infrastructural investments. The purposes and limits of this Fund and the authority to incur expenditure are set out in paragraph 140 of this document.

Extrabudgetary funds

41. The Agency continues to rely on extrabudgetary funds received from Member States to carry out some of its activities. For 2010 and 2011, €38.4 million and €32.1 million are expected to be received respectively.[10]

Nuclear Security Fund

42. The Agency's Nuclear Security Plan for 2006–2009 emphasizes measures to establish and enhance the capabilities of States to prevent, interdict and respond to malicious acts involving nuclear and other radioactive material and their associated facilities. The follow-on to the present Plan covering 2010–2013 has been developed and will be submitted to the Board of Governors for approval in September 2009.

43. Since its inception, the ability of the Agency to implement the nuclear security programme has depended heavily on extrabudgetary contributions from Member States and organizations. In the 2008–2009 Programme and Budget, 93% of the Agency's expenditure on nuclear security is funded by extrabudgetary resources. The proposed increases in the regular budget for this core area will help to ensure stable and assured resources, as advised by Member States, so as to minimize the risks of excessive dependence on unpredictable and tied contributions. They will make it possible to enhance the Agency's work in supporting States to increase their levels of nuclear safety and security and improve their capabilities to respond to nuclear incidents and emergencies. To this end, proposed increases of €2.0 million for 2010 and an additional €1.5 million for 2011 are included in the regular budget. Given the high priority that Member States assign to nuclear security, and the urgent need to implement the nuclear security plan, voluntary funding will, nonetheless, continue to be vital in order to supplement regular budget funding. In 2010 and 2011, €19.9 million and €18.3 million respectively in extrabudgetary contributions are expected to be received for the Nuclear Security Fund.

Funds from other United Nations system organizations

44. The Agency cooperates with other United Nations system organizations such as FAO, IMO, UNDP, UNEP, UNESCO, UNFPA, UNOPS, UNSCEAR, WHO and WMO, as opportunities allow. Most of the relevant work planned for 2010 and 2011 is carried out under Major Programme 2 (Nuclear Techniques for Development and Environmental Protection). For 2010 and 2011, €2.2 million are expected to be received per year (see Tables 3(a) and 3(b)).

Human resources

45. In order to provide greater transparency in staffing reports to Member States and greater administrative efficiency, 'established' and 'medium term' posts will be combined in the future under one heading and medium term posts will be phased out. The number of posts will be a direct consequence of programmatic and budget priorities.

46. The post management system as well as the reporting of Human Resources information are being streamlined. Full-time equivalent (FTE) will become the standard measure of a staff's involvement in programmatic activities.[11] This concept is consistent with UN system-wide best practices in respect to the budgeting of human resources as it clearly identifies the direct link between staffing levels required and the proposed funding envelope of the Programme and Budget.

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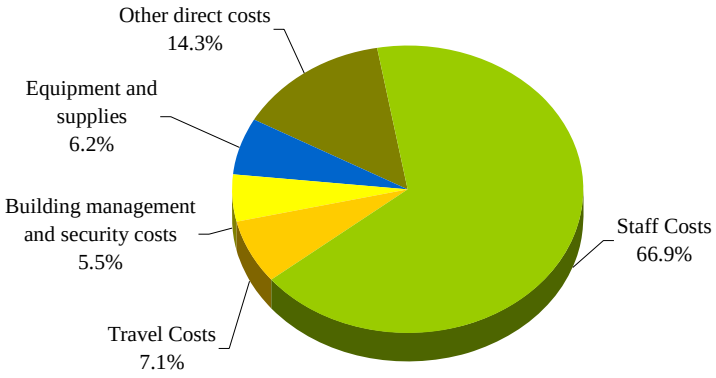
[10] Excluding extrabudgetary contributions to the Nuclear Security Fund and expected contributions from UN system organizations which are dealt with in more detail in paragraphs 42–44.

[11] An FTE of 1.0 means that the staff is equivalent to a full-time worker.

Major items of expenditure

47. The breakdown of the operational regular budget by item of expenditure is displayed in Table 4(a). Because some items of expenditure, e.g. staff costs, are included under "laboratory activities" and "shared costs", after taking this into account, the detailed breakdown by item of expenditure is the one provided in the chart below. Further relevant tables can be found in the Management Part.

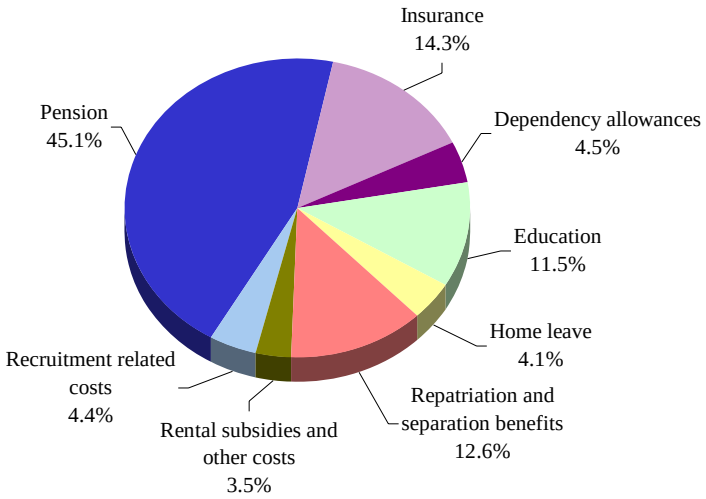
2010-2011 Regular Budget by Major Item of Expenditure



48. The increase of €7.3 million in staff costs for Agency Programmes for 2010 when compared with that for 2009, shown in Table 4(a), can be attributed to several factors. These include, inter alia, (a) implementation of new programmes and activities; and (b) regularization of posts. The areas mainly affected are Nuclear Safety and Security (Major Programme 3).

49. Included in the €7.3 million mentioned above is an increase of €2.3 million in common staff costs. These include pension contributions, insurance and employee benefits. They are estimated as a percentage of the projected salary costs. Based on experience in recent years, an amount equal to 45.5% of salary costs is required. The following shows the breakdown of the actual common staff costs in 2008:

2008 — Components of Common Staff Costs



50. The positive variances for *temporary assistance-short term* (P and GS) and *short term consultants/experts* reflect the increase in lapse for established posts mandated by the Board. The positive variance for *contracts* is largely offset by negative variances for *general operating costs* and *equipment leased* or *purchased*, which stem from a greater reliance on service contracts.

Technical adjustments

51. To permit meaningful comparison of the budget proposals of 2010–2011 with those of 2009, technical adjustments have been made to the approved 2009 regular budget figures, as detailed below.

52. The laboratory activities are considered a shared service (i.e. activities that appear as an item of expenditure at project level in the budgets of the users). One aspect of this shared service is Management and Operational Shared Costs (MOSCs), i.e. utility costs, maintenance costs, staff costs, etc. In previous budgets, MOSCs were charged to 24 projects. This has been reduced to two by charging MOSCs at the Major Programme level in Major Programmes 2 and 4 instead of at the project level. This methodology streamlines MOSC budgeting and simplifies implementation tracking. A technical adjustment was also made in 2009, including the transfer of €395 178 from Major Programme 1 to Major Programme 2.

53. Contract Administration Services is responsible for the administration of research contracts awarded by the Agency. Its budget has traditionally been treated as a shared service and distributed across 77 projects. The decision has now been taken to consider it a separate, identifiable project and activity within the budget with its own objective and planned outcomes, thereby reducing the projects to only one. A corresponding technical adjustment is being made in 2009, involving the transfer of €179 000, €80 000 and €3 000 from Major Programmes 1, 3 and 4 to Major Programme 2.

Reimbursable Work for Others

54. There is an increase in expected income from Reimbursable Work for Others (RWfO), resulting from the extension of the Agreement between UNIDO and the IAEA concerning the provision of Computer Services in 2010–2011. Additional income of €232 000 per year is expected by the Agency. Part of this income will be required to cover the cost in Major Programme 5, Policy, Management and

Administration Services, to fund the continuing service to UNIDO, and the remaining income will go to Miscellaneous Income and will eventually become part of any cash surplus.

Price adjustments

55. In calculating price adjustments, the Agency has, for many years, followed the policy of "semi-full budgeting", a methodology recognized by the United Nations and its various review bodies, including the Joint Inspection Unit. In this methodology, the trends and expectations for salaries and related expenditures — which depend on index movements and forecasts by the International Civil Service Commission — are taken into account. For all other items of expenditure, the actual increases recorded during the last year for which figures are available (in the present circumstances the year 2008 compared with 2007) are included in the price adjustments. The price adjustments appropriate for 2010 are indicated in Table 4(a), The Operational Regular Budget — by Item of Expenditure. As can be seen in this table, the proposed average price adjustment for 2010 is 2.7%. The adjustments, by individual item of expenditure, are applied to the budget proposals for 2010 at 2009 prices. Price adjustments for 2011, the second year of the biennium, will be submitted to the Governing Bodies in 2010, in the 2011 Budget Update document.

Staff costs

56. The principal cost elements that contribute to the price adjustments are staff costs. Details of the increases arising under this heading are given below.

Salaries

57. For the year 2010 Professional staff salaries, the price adjustment is based on cost trends over a three year time span. An adjustment of 3.4% is applied to the 2010 budget at 2009 prices, based on the sum of the factors (a) to (c) listed below, in compliance with UN Common System methodology:

1. The increase that was assumed for year 2008 in the budget for 2009 was 2.5%, based on a forecast of the International Civil Service Commission (ICSC). The actual increase for 2008 proved to be 1.3%; consequently, a reduction of 1.2% is required in 2010 for what actually occurred in 2008.
2. Based on the ICSC forecast that was available at the time, an increase of 1.9% was applied in the 2009 budget in respect of 2009. This increase was 4.8% and consequently an adjustment of 2.9% is required for this period in the 2010 budget.
3. Based on the most recent information supplied by the ICSC, an increase of 1.7% (2.5% prorated from 1 May 2010) is forecast for 2010.

58. In the case of General Service staff salaries, pay developments/projections for the same three years (2008–2010) are also taken into account but are based on the Austrian Consumer Price Index (CPI) and "Tariflohn" (the Austrian minimum salary scale adjustment factor).

59. An increase of 1.3% is applied to the 2010 budget at 2009 prices, to General Services salaries based on the sum of the factors listed below in (a) to (c).

a. For 2008, an increase of 1.9% was assumed in the 2009 budget; the actual increase was 1.4%. Consequently, a decrease of 0.5% is required for that year in 2010.
b. In the absence of definite data at the time concerning 2009, an increase of 0.3% in General Service salaries was assumed. Based on present indications, the increase is expected to be 1.8%. Consequently, a net upward adjustment of 1.5% for that year is applied.
c. For 2010, a projected increase of 0.3% (i.e. 2.0% prorated from 1 November 2010) is assumed.

Other items of expenditure

60. For items of expenditures other than staff costs, the actual increases that occurred in 2008 are applied to 2010. The increases which have been so applied are as follows:

Price adjustments

Items of expenditure	2008 budget adjustment %	2009 budget adjustment %	Proposed 2010 budget adjustment* %
Travel - staff	0.8	2.8	0.5
Travel non-staff	2.6	2.3	4.6
Interpretation	–	2.4	3.4
Representation and hospitality	2.0	2.7	4.3
Training	2.5	1.9	2.2
Equipment leased	3.8	2.4	2.2
Equipment purchased	2.4	2.1	3.8
Supplies and materials	4.0	2.7	4.1
General operating costs	3.6	2.8	2.1
Contracts	2.1	2.7	2.2
Short term consultants/experts	—	—	3.4
Research and technical contracts	3.2	2.5	2.2
Miscellaneous	2.0	2.0	2.2
VIC buildings management	—	—	2.0
VIC security services	—	—	1.7

* Price increase percentages in the tables of this document are rounded for presentation purposes.

Report on the Budget to the United Nations General Assembly

61. In accordance with Article XVI of the Agency's relationship agreement with the United Nations (INFCIRC/11, part I), the budget may be reviewed by the Advisory Committee on Administrative and Budgetary Questions (ACABQ), which would report on the administrative aspects thereof to the United Nations General Assembly.

LIST OF INTERNATIONAL CONFERENCES/SYMPOSIA

62. The following international conferences and symposia will be held in 2010–2011:

2010	2011
Major Programme 1 – Nuclear Power, Fuel Cycle and Nuclear Science	
• Human Resource Development for Introducing and Expanding Nuclear Power Programmes	
• International Conference on Management of Spent Fuel from Nuclear Power Reactors	
• 23rd Fusion Energy Conference	
Major Programme 2 – Nuclear Techniques for Development and Environmental Protection	
• Standards, Applications and Quality Assurance in Radiation Dosimetry	• Clinical PET and Molecular Nuclear Medicine (IPET-II-2011) - Trends in Clinical PET and Radiopharmaceutical Development
	• 13th International Symposium on Isotope Hydrology and the Use of Nuclear and Isotopic Tools to Study Climate Change
Major Programme 3 – Nuclear Safety and Security	
• Operational Safety Experience and Performance of NPPs and Fuel Cycle Facilities	• Transport Safety and Security: the Next Years of Transport – Creating a Safe, Secure and Sustainable Framework
• Challenges Faced by Technical and Scientific Support Organizations (TSO) in Enhancing Nuclear Safety and Security	
Major Programme 4 – Nuclear Verification	
• Preparing for Future Verification Challenges	
Cross-cutting conferences	
	• Research Reactors: Safe Management and Effective Utilization

I.1 Budgetary Requirements

by Programme and Major Programme

Table 1. The Regular Budget — By Programme and Major Programme

	Programme / Major Programme	2009 adjusted budget	2010 estimates at 2009 prices	Variance 2010 over 2009 €	Variance 2010 over 2009 %	2011 prelim. estimates at 2009 prices	Variance 2011 over 2010 €	Variance 2011 over 2010 %	Price Increase	**2010 estimates at 2010 prices**	**2011 prelim. estimates at 2010 prices**
1.	**Nuclear Power, Fuel Cycle and Nuclear Science**										
1.0.0.1	Overall Management, Coordination and Common Activities	907 374	1 027 244	119 870	13.2%	1 027 298	54	-	2.8%	**1 056 341**	**1 056 394**
1.1	Nuclear Power	5 639 176	6 480 000	840 824	14.9%	6 610 342	130 342	2.0%	3.1%	**6 683 614**	**6 818 594**
1.2	Nuclear Fuel Cycle and Materials Technologies	2 539 580	3 033 143	493 563	19.4%	3 099 473	66 330	2.2%	3.2%	**3 130 847**	**3 199 604**
1.3	Capacity Building and Nuclear Knowledge Maintenance for Sustainable Energy Development	10 389 099	10 908 599	519 500	5.0%	11 008 599	100 000	0.9%	2.9%	**11 226 453**	**11 330 191**
1.4	Nuclear Science	8 687 824	9 427 824	740 000	8.5%	9 553 824	126 000	1.3%	2.8%	**9 693 404**	**9 824 130**
	Major Programme 1	**28 163 053**	**30 876 810**	**2 713 757**	**9.6%**	**31 299 536**	**422 726**	**1.4%**	**3.0%**	**31 790 659**	**32 228 913**
2.	**Nuclear Techniques for Development and Environmental Protection**										
2.0.0.1	Overall Management, Coordination and Common Activities	4 136 548	4 399 398	262 850	6.4%	4 419 398	20 000	0.5%	2.4%	**4 502 838**	**4 524 161**
2.0.0.2	Management of the Coordinated Research Activities	672 718	672 780	62	-	672 780	-	-	2.3%	**688 359**	**688 341**
2.1	Food and Agriculture	10 559 536	10 899 536	340 000	3.2%	10 899 536	-	-	2.8%	**11 209 046**	**11 209 117**
2.2	Human Health	7 911 007	8 754 658	843 651	10.7%	9 041 947	287 289	3.3%	3.0%	**9 015 728**	**9 307 189**
2.3	Water Resources	3 268 978	3 201 978	(67 000)	(2.0%)	3 291 978	90 000	2.8%	2.8%	**3 291 307**	**3 386 254**
2.4	Environment	5 027 993	5 574 359	546 366	10.9%	5 668 933	94 574	1.7%	2.7%	**5 723 602**	**5 821 946**
2.5	Radioisotope Production and Radiation Technology	1 943 859	2 058 859	115 000	5.9%	2 053 859	(5 000)	(0.2%)	3.0%	**2 120 951**	**2 117 714**
	Major Programme 2	**33 520 639**	**35 561 568**	**2 040 929**	**6.1%**	**36 048 431**	**486 863**	**1.4%**	**2.8%**	**36 551 831**	**37 054 722**
3.	**Nuclear Safety and Security**										
3.0.0.1	Enhancing the Global Nuclear Safety and Security Regime	659 807	732 808	73 001	11.1%	727 487	(5 321)	(0.7%)	3.0%	**755 029**	**749 288**
3.0.0.2	Fostering Safety and Security Infrastructure and Improving Capacity Building	130 927	217 272	86 345	65.9%	221 988	4 716	2.2%	3.3%	**224 350**	**229 130**
3.0.0.3	Strengthening Communication and Knowledge Management	130 927	229 567	98 640	75.3%	232 042	2 475	1.1%	3.1%	**236 661**	**239 124**
3.1	Incident and Emergency Preparedness and Response	1 421 603	3 207 742	1 786 139	125.6%	3 611 710	403 968	12.6%	3.1%	**3 307 712**	**3 723 816**
3.2	Safety of Nuclear Installations	8 431 872	9 131 890	700 018	8.3%	9 097 966	(33 924)	(0.4%)	3.0%	**9 405 649**	**9 371 506**
3.3	Radiation and Transport Safety	5 380 467	5 550 504	170 037	3.2%	5 504 924	(45 580)	(0.8%)	2.9%	**5 710 816**	**5 663 449**
3.4	Management of Radioactive Waste	6 343 798	6 513 860	170 062	2.7%	6 537 784	23 924	0.4%	3.1%	**6 714 011**	**6 739 036**
3.5	Nuclear Security	1 102 469	3 100 000	1 997 531	181.2%	4 600 000	1 500 000	48.4%	3.1%	**3 194 822**	**4 737 402**
	Major Programme 3	**23 601 870**	**28 683 643**	**5 081 773**	**21.5%**	**30 533 901**	**1 850 258**	**6.5%**	**3.0%**	**29 549 050**	**31 452 751**
4.	**Nuclear Verification**										
4.0.0.1	Overall Management, Coordination and Common Activities	1 063 133	1 113 063	49 930	4.7%	1 112 937	(126)	-	3.1%	**1 148 036**	**1 147 904**
4.1	Safeguards	116 084 140	117 222 692	1 138 552	1.0%	118 842 919	1 620 227	1.4%	2.7%	**120 394 548**	**122 089 368**
	Major Programme 4	**117 147 273**	**118 335 755**	**1 188 482**	**1.0%**	**119 955 856**	**1 620 101**	**1.4%**	**2.7%**	**121 542 584**	**123 237 272**
5.	**Policy, Management and Administration Services**										
	Policy, Management and Administration Services	75 050 660	75 838 313	787 653	1.0%	76 876 593	1 038 280	1.4%	2.3%	**77 594 649**	**78 654 516**
	Major Programme 5	**75 050 660**	**75 838 313**	**787 653**	**1.0%**	**76 876 593**	**1 038 280**	**1.4%**	**2.3%**	**77 594 649**	**78 654 516**
6.	**Management of Technical Cooperation for Development**										
	Management of Technical Cooperation for Development	16 307 161	18 008 938	1 701 777	10.4%	18 255 493	246 555	1.4%	2.5%	**18 455 888**	**18 710 617**
	Major Programme 6	**16 307 161**	**18 008 938**	**1 701 777**	**10.4%**	**18 255 493**	**246 555**	**1.4%**	**2.5%**	**18 455 888**	**18 710 617**
	Operational regular budget	**293 790 656**	**307 305 027**	**13 514 371**	**4.6%**	**312 969 810**	**5 664 783**	**1.8%**	**2.7%**	**315 484 661**	**321 338 791**
	Major Capital Investment Funding Requirements a/										
1.	Nuclear Power, Fuel Cycle and Nuclear Science	51 050	-	(51 050)	(100.0%)	-	-	-	-	-	-
2.	Nuclear Techniques for Development and Environmental Protection	193 990	-	(193 990)	(100.0%)	1 155 000	1 155 000	-	3.8%	-	1 198 890
3.	Nuclear Safety and Security	112 310	-	(112 310)	(100.0%)	-	-	-	-	-	-
4.	Nuclear Verification	3 367 074	-	(3 367 074)	(100.0%)	15 500 000	15 500 000	-	2.5%	-	15 889 000
5.	Policy, Management and Administration Services	1 489 710	100 000	(1 389 710)	(93.3%)	12 850 000	12 750 000	n/a	2.2%	102 200	13 222 422
6.	Management of Technical Cooperation for Development	319 800	-	(319 800)	(100.0%)	-	-	-	-	-	-
	Capital regular budget	**5 533 934**	**100 000**	**(5 433 934)**	**(98.2%)**	**29 505 000**	**29 405 000**	**n/a**	**2.7%**	**102 200**	**30 310 312**
	Total Agency Programmes	**299 324 590**	**307 405 027**	**8 080 437**	**2.7%**	**342 474 810**	**35 069 783**	**11.4%**	**2.7%**	**315 586 861**	**351 649 103**
	Reimbursable Work for Others	2 523 046	2 748 701	225 655	8.9%	2 913 288	164 587	6.0%	1.9%	**2 801 848**	**2 971 226**
	Total Regular Budget	**301 847 636**	**310 153 728**	**8 306 092**	**2.8%**	**345 388 098**	**35 234 370**	**11.4%**	**2.7%**	**318 388 709**	**354 620 329**
	Less Miscellaneous Income										
	Reimbursable Work for Others	2 523 046	2 748 701	225 655	8.9%	2 913 288	164 587	6.0%	1.9%	**2 801 848**	**2 971 226**
	Other Miscellaneous Income	4 482 000	2 102 000	(2 380 000)	(53.1%)	2 802 000	700 000	33.3%	-	**2 102 000**	**2 802 000**
	Assessment on Member States	**294 842 590**	**305 303 027**	**10 460 437**	**3.5%**	**339 672 810**	**34 369 783**	**11.3%**	**2.7%**	**313 484 861**	**348 847 103**

a/ 2009 reflects "Essential Investments".

Table 2. The Regular Budget — Summary of Income

	2009 budget	2010 estimates at 2010 prices	Variance 2010 over 2009	2011 prelim. estimates at 2010 prices	Variance 2011 over 2010
Operational regular budget	289 308 656	313 382 661	24 074 005	318 536 791	5 154 130
Capital regular budget	5 533 934	102 200	(5 431 734)	30 310 312	30 208 112
Assessed contributions on Member States	**294 842 590**	**313 484 861**	**18 642 271**	**348 847 103**	**35 362 242**
Miscellaneous Income					
Reimbursable Work for Others					
Data processing services	-	232 046	232 046	232 046	-
Printing services	817 580	909 187	91 607	922 848	13 661
Medical services	798 729	820 175	21 446	820 173	(2)
Radiation protection and monitoring services	106 750	109 207	2 457	109 213	6
Translation services	284 652	181 805	(102 847)	339 427	157 622
Nuclear Fusion Journal	158 902	150 779	(8 123)	148 870	(1 909)
Other financial services	46 433	88 649	42 216	88 649	-
Laboratory services	250 000	250 000	-	250 000	-
Marine Environment Laboratory services	60 000	60 000	-	60 000	-
Subtotal Reimbursable Work for Others	**2 523 046**	**2 801 848**	**278 802**	**2 971 226**	**169 378**
Other					
Attributable to specific programmes					
INIS Products	45 000	20 000	(25 000)	20 000	-
Publications of the Agency - other	375 000	375 000	-	375 000	-
Laboratory income	240 000	200 000	(40 000)	200 000	-
Amounts recoverable under Safeguards agreements	300 000	185 000	(115 000)	185 000	-
Other Service income	2 000	2 000	-	2 000	-
Subtotal	962 000	782 000	(180 000)	782 000	-
Not attributable to specific programmes					
Investment and interest income	3 000 000	800 000	(2 200 000)	1 500 000	700 000
Gain (Loss) on exchange of currencies	-	-	-	-	-
Other	520 000	520 000	-	520 000	-
Subtotal	3 520 000	1 320 000	(2 200 000)	2 020 000	700 000
Subtotal Other	**4 482 000**	**2 102 000**	**(2 380 000)**	**2 802 000**	**700 000**
Total Miscellaneous Income	**7 005 046**	**4 903 848**	**(2 101 198)**	**5 773 226**	**869 378**
Total Regular Budget Income	**301 847 636**	**318 388 709**	**16 541 073**	**354 620 329**	**36 231 620**

Table 3(a). Total Resource Requirements for 2010 — By Programme and Major Programme

	Programme / Major Programme	Regular Budget		Extrabudgetary						Unfunded	
		Operational at 2010 prices	Capital at 2010 prices	Funds from UN Organizations	CAURBs	NSF	Capital	TC Programme	Total	Capital	CAURBs
1	**Nuclear Power, Fuel Cycle and Nuclear Science**										
1.0.0.1	Overall Management, Coordination and Common Activities	1 056 341	-	-	-	-	-	-	1 056 341	-	-
1.1	Nuclear Power	6 683 614	-	-	2 844 979	-	-	6 218 445	15 747 038	-	248 000
1.2	Nuclear Fuel Cycle and Materials Technologies	3 130 847	-	-	343 657	-	-	1 649 376	5 123 880	-	199 683
1.3	Capacity Building and Nuclear Knowledge Maintenance for Sustainable Energy Development	11 226 453	-	-	-	-	-	1 954 909	13 181 362	-	-
1.4	Nuclear Science	9 693 404	-	-	336 332	-	-	36 763 307	46 793 043	-	105 000
	Major Programme 1	31 790 659	-	-	3 524 968	-	-	46 586 037	81 901 664	-	552 683
2	**Nuclear Techniques for Development and Environmental Protection**										
2.0.0.1	Overall Management, Coordination and Common Activities	4 502 838	-	-	-	-	-	-	4 502 838	285 450	-
2.0.0.2	Management of the Coordinated Research Activities	688 359	-	-	-	-	-	-	688 359	-	-
2.1	Food and Agriculture	11 209 046	-	2 167 839	-	-	-	16 750 412	30 127 297	259 500	682 547
2.2	Human Health	9 015 728	-	-	1 096 273	-	-	28 324 094	38 436 095	-	575 000
2.3	Water Resources	3 291 307	-	-	-	-	-	3 044 686	6 335 993	-	-
2.4	Environment	5 723 602	-	-	321 404	-	-	3 865 558	9 910 564	290 640	316 000
2.5	Radioisotope Production and Radiation Technology	2 120 951	-	-	-	-	-	10 597 658	12 718 609	-	185 495
	Major Programme 2	36 551 831	-	2 167 839	1 417 677	-	-	62 582 408	102 719 755	835 590	1 759 042
3	**Nuclear Safety and Security**										
3.0.0.1	Enhancing the Global Nuclear Safety and Security Regime	755 029	-	-	178 568	-	-	-	933 597	-	-
3.0.0.2	Fostering Safety and Security Infrastructure and Improving Capacity Building	224 350	-	-	-	-	-	-	224 350	-	-
3.0.0.3	Strengthening Communication and Knowledge Management	236 661	-	-	3 862 939	-	-	-	4 099 600	-	-
3.1	Incident and Emergency Preparedness and Response	3 307 712	-	-	129 205	-	-	1 678 995	5 115 912	-	-
3.2	Safety of Nuclear Installations	9 405 649	-	-	4 591 884	-	-	8 335 911	22 333 444	-	244 987
3.3	Radiation and Transport Safety	5 710 816	-	-	940 000	-	-	9 216 470	15 867 286	-	-
3.4	Management of Radioactive Waste	6 714 011	-	-	1 358 492	-	-	10 217 873	18 290 376	-	230 364
3.5	Nuclear Security	3 194 822		-	-	19 875 940		-	23 070 762		-
	Major Programme 3	29 549 050	-	-	11 061 088	19 875 940	-	29 449 249	89 935 327	-	475 351
4	**Nuclear Verification**										
4.0.0.1	Overall Management, Coordination and Common Activities	1 148 036	-	-	-	-	-	-	1 148 036	-	-
4.1	Safeguards	120 394 548	-	-	15 719 809	-	6 000 000	-	142 114 357	785 058	259 000
	Major Programme 4	121 542 584	-	-	15 719 809	-	6 000 000	-	143 262 393	785 058	259 000
5	**Policy, Management and Administration Services**										
	Policy, Management and Administration Services	77 594 649	102 200	-	301 257	62 863	-	504 666	78 565 635	4 879 352	4 487 432
	Major Programme 5	77 594 649	102 200	-	301 257	62 863	-	504 666	78 565 635	4 879 352	4 487 432
6	**Management of Technical Cooperation for Development**										
	Management of Technical Cooperation for Development	18 455 888	-	-	355 663	-	-	-	18 811 551	-	-
	Major Programme 6	18 455 888	-	-	355 663	-	-	-	18 811 551	-	-
	Total Resources for Agency Programmes	315 484 661	102 200	2 167 839	32 380 462	19 938 803	6 000 000	139 122 360	515 196 325	6 500 000	7 533 508
	Reimbursable Work for Others	2 801 848	-	-	-	-	-	-	2 801 848		
	Total	318 286 509	102 200	2 167 839	32 380 462	19 938 803	6 000 000	139 122 360	517 998 173		
	Source of Funds										
	Assessment on Member States	313 382 661	102 200	-	-	-	-	-	313 484 861		
	Extrabudgetary Capital		-				6 000 000		6 000 000		
	Income from reimbursable work for others	2 801 848	-	-	-	-	-	-	2 801 848		
	Other miscellaneous income	2 102 000	-	-	-	-	-	-	2 102 000		
	Other UN organizations	-	-	2 167 839	-	-	-	400 000	2 567 839		
	Technical Cooperation Fund	-	-	-	-	-	-	83 722 360	83 722 360		
	Extrabudgetary Programme	-	-	-	32 380 462	19 938 803	-	55 000 000	107 319 265		
	Total	318 286 509	102 200	2 167 839	32 380 462	19 938 803	6 000 000	139 122 360	517 998 173		

Table 3(b). Total Resource Requirements for 2011 (preliminary estimates) — By Programme and Major Programme

	Programme / Major Programme	Regular Budget		Extrabudgetary						Unfunded	
		Operational at 2010 prices	Capital at 2010 prices	Funds from UN Organizations	CAURBs	NSF	Capital	TC Programme	Total	Capital	CAURBs
1	**Nuclear Power, Fuel Cycle and Nuclear Science**										
1.0.0.1	Overall Management, Coordination and Common Activities	1 056 394	-	-	-	-	-	-	1 056 394	-	-
1.1	Nuclear Power	6 818 594	-	-	2 838 979	-	-	5 425 374	15 082 947	-	281 000
1.2	Nuclear Fuel Cycle and Materials Technologies	3 199 604	-	-	343 657	-	-	2 436 021	5 979 282	-	209 683
1.3	Capacity Building and Nuclear Knowledge Maintenance for Sustainable Energy Development	11 330 191	-	-	-	-	-	1 687 540	13 017 731	-	-
1.4	Nuclear Science	9 824 130	-	-	308 332	-	-	5 741 564	15 874 026	-	-
	Major Programme 1	32 228 913	-	-	3 490 968	-	-	15 290 499	51 010 380	-	490 683
2	**Nuclear Techniques for Development and Environmental Protection**										
2.0.0.1	Overall Management, Coordination and Common Activities	4 524 161	285 450	-	-	-	-	-	4 809 611	-	-
2.0.0.2	Management of the Coordinated Research Activities	688 341	-	-	-	-	-	-	688 341	-	-
2.1	Food and Agriculture	11 209 117	653 940	2 167 839	-	-	-	13 931 005	27 961 901	-	702 547
2.2	Human Health	9 307 189	-	-	1 096 273	-	-	27 866 734	38 270 196	-	567 000
2.3	Water Resources	3 386 254	-	-	-	-	-	2 567 339	5 953 593	-	-
2.4	Environment	5 821 946	259 500	-	366 369	-	-	3 916 070	10 363 885	-	60 000
2.5	Radioisotope Production and Radiation Technology	2 117 714	-	-	-	-	-	11 131 903	13 249 617	-	185 495
	Major Programme 2	37 054 722	1 198 890	2 167 839	1 462 642	-	-	59 413 051	101 297 144	-	1 515 042
3	**Nuclear Safety and Security**										
3.0.0.1	Enhancing the Global Nuclear Safety and Security Regime	749 288	-	-	178 568	-	-	-	927 856	-	-
3.0.0.2	Fostering Safety and Security Infrastructure and Improving Capacity Building	229 130	-	-	-	-	-	-	229 130	-	-
3.0.0.3	Strengthening Communication and Knowledge Management	239 124	-	-	3 862 939	-	-	-	4 102 063	-	-
3.1	Incident and Emergency Preparedness and Response	3 723 816	-	-	129 205	-	-	2 537 922	6 390 943	-	-
3.2	Safety of Nuclear Installations	9 371 506	-	-	4 909 324	-	-	6 492 180	20 773 010	-	143 029
3.3	Radiation and Transport Safety	5 663 449	-	-	940 000	-	-	9 363 898	15 967 347	-	-
3.4	Management of Radioactive Waste	6 739 036	-	-	1 358 492	-	-	8 619 826	16 717 354	-	230 364
3.5	Nuclear Security	4 737 402		-	-	18 234 037		-	22 971 439		-
	Major Programme 3	31 452 751	-	-	11 378 528	18 234 037	-	27 013 826	88 079 142	-	373 393
4	**Nuclear Verification**										
4.0.0.1	Overall Management, Coordination and Common Activities	1 147 904	-	-	-	-	-	-	1 147 904	-	-
4.1	Safeguards	122 089 368	15 889 000	-	15 071 296	-	-	-	153 049 664	-	537 500
	Major Programme 4	123 237 272	15 889 000	-	15 071 296	-	-	-	154 197 568	-	537 500
5	**Policy, Management and Administration Services**										
	Policy, Management and Administration Services	78 654 516	13 222 422	-	301 257	62 863	-	523 058	92 764 116	-	3 767 396
	Major Programme 5	78 654 516	13 222 422	-	301 257	62 863	-	523 058	92 764 116	-	3 767 396
6	**Management of Technical Cooperation for Development**										
	Management of Technical Cooperation for Development	18 710 617	-	-	355 663	-	-	-	19 066 280	-	-
	Major Programme 6	18 710 617	-	-	355 663	-	-	-	19 066 280	-	-
	Total Resources for Agency Programmes	321 338 791	30 310 312	2 167 839	32 060 354	18 296 900	-	102 240 434	506 414 630	-	6 684 014
	Reimbursable Work for Others	2 971 226	-	-	-	-	-	-	2 971 226		
	Total	324 310 017	30 310 312	2 167 839	32 060 354	18 296 900	-	102 240 434	509 385 856		
	Source of Funds										
	Assessment on Member States	318 536 791	30 310 312	-	-	-	-	-	348 847 103		
	Extrabudgetary Capital	-	-	-	-	-	-	-	-		
	Income from reimbursable work for others	2 971 226	-	-	-	-	-	-	2 971 226		
	Other miscellaneous income	2 802 000	-	-	-	-	-	-	2 802 000		
	Other UN organizations	-	-	2 167 839	-	-	-	400 000	2 567 839		
	Technical Cooperation Fund	-	-	-	-	-	-	83 840 434	83 840 434		
	Extrabudgetary Programme	-	-	-	32 060 354	18 296 900	-	18 000 000	68 357 254		
	Total	324 310 017	30 310 312	2 167 839	32 060 354	18 296 900	-	102 240 434	509 385 856		

Table 4(a). Operational Regular Budget — By Item of Expenditure

Item of Expenditure	2009 adjusted budget	2010 estimates at 2009 prices	Variance 2010 over 2009 €	Variance 2010 over 2009 %	2011 prelim. estimates at 2009 prices	Variance 2011 over 2010 €	Variance 2011 over 2010 %	Price Increase	**2010 estimates at 2010 prices**	**2011 prelim. estimates at 2010 prices**
Salaries - established posts - P	74 457 996	79 867 771	5 409 775	7.3%	80 764 421	896 650	1.1%	3.4%	**82 583 275**	**83 510 411**
Temporary assistance - P/MT	10 208 465	9 239 602	(968 863)	(9.5%)	9 411 919	172 317	1.9%	3.4%	**9 553 745**	**9 731 921**
Temporary assistance - P/ST	154 045	274 973	120 928	78.5%	274 973		-	3.4%	**284 323**	**284 323**
Salaries established posts - GS	34 344 028	35 417 534	1 073 506	3.1%	35 480 732	63 198	0.2%	1.3%	**35 874 419**	**35 938 433**
Temporary assistance - GS/MT	4 548 775	3 700 488	(848 287)	(18.6%)	3 798 204	97 716	2.6%	1.3%	**3 748 216**	**3 847 198**
Temporary assistance - GS/ST	200 218	533 089	332 871	166.3%	515 056	(18 033)	(3.4%)	1.3%	**539 965**	**521 704**
Common staff costs	56 380 671	58 710 215	2 329 544	4.1%	59 261 603	551 388	0.9%	2.8%	**60 325 711**	**60 894 481**
Overtime	353 652	231 974	(121 678)	(34.4%)	252 164	20 190	8.7%	1.3%	**234 968**	**255 417**
Subtotal Staff costs	180 647 850	187 975 646	7 327 796	4.1%	189 759 072	1 783 426	0.9%	2.7%	**193 144 622**	**194 983 888**
Travel - staff	13 518 970	12 384 138	(1 134 832)	(8.4%)	12 490 224	106 086	0.9%	0.5%	**12 446 069**	**12 552 686**
Travel non-staff	7 837 795	9 135 291	1 297 496	16.6%	9 672 604	537 313	5.9%	4.6%	**9 555 515**	**10 117 544**
Subtotal Travel costs	21 356 765	21 519 429	162 664	0.8%	22 162 828	643 399	3.0%	2.2%	**22 001 584**	**22 670 230**
Interpretation services	721 715	632 000	(89 715)	(12.4%)	767 000	135 000	21.4%	3.4%	**653 488**	**793 078**
Representation and hospitality	246 516	253 862	7 346	3.0%	257 407	3 545	1.4%	4.3%	**264 798**	**268 494**
Training	1 033 495	1 197 478	163 983	15.9%	1 243 202	45 724	3.8%	2.2%	**1 223 823**	**1 270 552**
Equipment leased or rented	480 076	390 288	(89 788)	(18.7%)	398 288	8 000	2.0%	2.2%	**398 874**	**407 050**
Equipment purchased	10 248 678	8 873 744	(1 374 934)	(13.4%)	10 950 234	2 076 490	23.4%	3.8%	**9 210 944**	**11 366 340**
Supplies and materials	5 928 804	5 902 131	(26 673)	(0.4%)	5 766 775	(135 356)	(2.3%)	4.1%	**6 144 125**	**6 003 221**
General operating costs	11 571 321	8 389 395	(3 181 926)	(27.5%)	8 195 260	(194 135)	(2.3%)	2.1%	**8 565 573**	**8 367 361**
Contracts	2 815 060	9 132 772	6 317 712	224.4%	8 708 765	(424 007)	(4.6%)	2.2%	**9 333 692**	**8 900 357**
Short-term consultants/experts	4 276 629	5 626 664	1 350 035	31.6%	6 249 394	622 730	11.1%	3.4%	**5 817 967**	**6 461 869**
Research and technical contracts	5 232 518	5 780 000	547 482	10.5%	6 089 500	309 500	5.4%	2.2%	**5 907 160**	**6 223 469**
Miscellaneous	3 432 499	3 886 092	453 593	13.2%	3 994 137	108 045	2.8%	2.2%	**3 971 587**	**4 082 010**
VIC Buildings Management	10 453 607	10 523 000	69 393	0.7%	10 518 000	(5 000)	-	2.0%	**10 733 460**	**10 728 360**
VIC Security Services	5 870 044	6 415 444	545 400	9.3%	7 108 926	693 482	10.8%	1.7%	**6 524 507**	**7 229 778**
Subtotal Other direct costs	62 310 962	67 002 870	4 691 908	7.5%	70 246 888	3 244 018	4.8%	2.6%	**68 749 998**	**72 101 939**
Direct implementation costs	12 328 558	12 999 732	671 174	5.4%	13 001 869	2 137	-	2.7%	**13 344 299**	**13 347 614**
Management and operation costs	4 752 479	5 201 494	449 015	9.4%	5 201 494		-	2.2%	**5 313 346**	**5 314 344**
Subtotal Laboratory activities	17 081 037	18 201 226	1 120 189	6.6%	18 203 363	2 137	-	2.5%	**18 657 645**	**18 661 958**
Translation and records services	5 776 216	5 797 629	21 413	0.4%	5 716 429	(81 200)	(1.4%)	3.0%	**5 969 273**	**5 884 299**
Printing services	1 878 230	1 795 272	(82 958)	(4.4%)	1 829 351	34 079	1.9%	1.9%	**1 829 302**	**1 864 393**
Other services		240 663	240 663	-	240 663		-	1.4%	**244 097**	**244 097**
Data processing application services	965 765	1 001 263	35 498	3.7%	1 040 187	38 924	3.9%	3.2%	**1 033 292**	**1 073 075**
Radiation protection and monitoring services	1 244 745	1 244 745		-	1 244 745		-	2.3%	**1 273 393**	**1 273 461**
Medical services	1 020 617	1 017 815	(2 802)	(0.3%)	1 017 815		-	2.3%	**1 041 491**	**1 041 487**
Data processing central services for SG	1 508 469	1 508 469		-	1 508 469		-	2.1%	**1 539 964**	**1 539 964**
Subtotal Shared costs	12 394 042	12 605 856	211 814	1.7%	12 597 659	(8 197)	(0.1%)	2.6%	**12 930 812**	**12 920 776**
Total Operational Regular Budget	**293 790 656**	**307 305 027**	**13 514 371**	**4.6%**	**312 969 810**	**5 664 783**	**1.8%**	**2.7%**	**315 484 661**	**321 338 791**
Reimbursable Work for Others	2 523 046	2 748 701	225 655	8.9%	2 913 288	164 587	6.0%	1.9%	**2 801 848**	**2 971 226**
Total	**296 313 702**	**310 053 728**	**13 740 026**	**4.6%**	**315 883 098**	**5 829 370**	**1.9%**	**2.7%**	**318 286 509**	**324 310 017**

Table 4(b). Capital Regular Budget — By Item of Expenditure

Item of Expenditure	2009 adjusted budget	2010 estimates at 2009 prices	Variance 2010 over 2009 €	Variance 2010 over 2009 %	2011 prelim. estimates at 2009 prices	Variance 2011 over 2010 €	Variance 2011 over 2010 %	Price Increase	**2010 estimates at 2010 prices**	**2011 prelim. estimates at 2010 prices**
Temporary assistance - P/MT	-	-	-	-	1 725 441	1 725 441	-	3.4%	-	**1 784 106**
Temporary assistance - GS/MT	-	-	-	-	96 260	96 260	-	1.3%	-	**97 502**
Common staff costs	-	-	-	-	828 874	828 874	-	3.3%	-	**856 131**
Subtotal Staff costs	-	-	-	-	2 650 575	2 650 575	-	3.3%	-	**2 737 739**
Travel - staff	20 351	-	(20 351)	(100.0%)	132 529	132 529	-	0.5%	-	**133 192**
Subtotal Travel costs	20 351	-	(20 351)	(100.0%)	132 529	132 529	-	0.5%	-	**133 192**
Training	50 878	-	(50 878)	(100.0%)	86 800	86 800	-	2.2%	-	**88 710**
Equipment purchased	3 724 424	-	(3 724 424)	(100.0%)	8 215 000	8 215 000	-	3.8%	-	**8 527 170**
Supplies and materials	-	-	-	-	500 000	500 000	-	4.1%	-	**520 500**
General operating costs	508 781	-	(508 781)	(100.0%)	337 000	337 000	-	2.1%	-	**344 077**
Contracts	542 646	100 000	(442 646)	(81.6%)	17 583 096	17 483 096	n/a	2.2%	**102 200**	**17 958 924**
Miscellaneous	25 439	-	(25 439)	(100.0%)	-	-	-	-	-	-
VIC Buildings Management	661 415	-	(661 415)	(100.0%)	-	-	-	-	-	-
Subtotal Other direct costs	5 513 583	100 000	(5 413 583)	(98.2%)	26 721 896	26 621 896	n/a	2.7%	**102 200**	**27 439 381**
Total Capital Regular Budget	**5 533 934**	**100 000**	**(5 433 934)**	**(98.2%)**	**29 505 000**	**29 405 000**	**n/a**	**2.7%**	**102 200**	**30 310 312**

I.2 Highlights of Major Programmes and Corresponding Resources*

* Resource requirements for major programmes, programmes/functions and subprogrammes/subfunctions outlined in this chapter can be found in Tables 1, 3(a), 3(b) (pages 17, 19 and 20) and in Tables 5–10 (pages 42–45).

Major Programme 1: Nuclear Power, Fuel Cycle and Nuclear Science

63. Major Programme 1 provides core scientific and technological support to Member States in the fields of nuclear power, nuclear fuel cycle and materials technologies, capacity building and nuclear knowledge maintenance for sustainable energy development, and nuclear science. Major Programme 1 is the Agency's programmatic response to Goal A of the Medium Term Strategy.

64. The principal driving forces for Major Programme 1 are:

- Rising expectations for nuclear power;
- Trends toward more efficient resource use and strengthened non-proliferation;
- Increasing interest in regional approaches.

65. These driving forces have, however, become stronger, particularly the first. Thus, while no changes are proposed in the structure of Major Programme 1 for 2010–2011, the focus on support for countries considering new nuclear power programmes will be increased.

66. The increased international interest in nuclear power among countries that currently do not have it is reflected in an anticipated rise of more than threefold in TC projects directed to the *Nuclear Power* programme during the 2009–2011 TC cycle. In response, the programme plans to increase its assistance to Member States interested in expanding or starting nuclear power programmes by, primarily, increasing the resources of Subprogramme 1.1.3, *Infrastructure and Planning for the Introduction of Nuclear Power Programmes*.

67. The number of TC projects directed to the *Nuclear Fuel Cycle and Materials Technologies* programme will also rise, particularly for uranium exploration and production in countries with limited or no previous uranium production experience. To support this increase, and to better disseminate relevant best practices and authoritative information, greater resources are required in this area.

68. In response to increased interest in nuclear power, the programme on *Capacity Building and Nuclear Knowledge Maintenance for Sustainable Energy Development* will increase its support for Member States' energy planning that is focused on nuclear power while maintaining the technology neutrality of the Agency's analytic planning tools. In the areas of nuclear knowledge management and nuclear information systems, support for Member States will shift from methodology development to a greater emphasis on implementation assistance. This will include the nuclear information infrastructure needed for building a safe, reliable and efficient nuclear power programme. Work on energy system modelling will increasingly incorporate advanced and innovative nuclear concepts and analyse them within a global context, in addition to analyses at national and regional levels. The programme will continue to seek efficiencies through distance learning, other web based media, regional training and synergies within Subprogrammes 1.3.4 and 1.3.5. It will also seek to better connect activities in Major Programmes 1 and 2 that are substantively connected with respect to climate change, specifically activities on energy, water and land use.

69. The basic structure of the *Nuclear Science* programme will remain as in 2008–2009. Expansion of nuclear power will increase data needs for advanced fission and fusion reactor design and thus demands on the Agency's nuclear database services. Work on research reactors will focus on coordination and coalitions for better utilization of existing reactors and support for careful planning and feasibility analyses for proposed new research reactors, including their use in training and educating personnel in newcomer countries. Support for fuel conversion and the repatriation of high enriched uranium (HEU) fuel will continue, and continued progress will reduce future needs. Subprogramme 1.4.3, *Accelerator and Nuclear Spectrometry for Materials Science and Analytical Applications*, will re-orient training services in basic electronics and information to increase work on environmental factors more directly relevant to nuclear power and the nuclear fuel cycle.

70. The most notable activities from the previous cycle that have been phased out or completed and the most notable new activities are shown below.

Programme	Phased out / completed activities
Nuclear Power	× International Conferences on Opportunities and Challenges for Water Cooled Reactors in the 21st century; Fast Reactors and Closed Fuel Cycle — Challenges and Opportunities; Materials Research and Utilization of Accelerators; and the Future Application of Nuclear Power × Coordinated research projects (CRPs) on monitoring and assessing ageing reactor pressure vessels, small reactors without on-site refuelling, natural circulation phenomena, and operating experience with fast reactor equipment × A number of Nuclear Energy Series documents × Development of the International Project on Innovative Nuclear Reactors and Fuel Cycles (INPRO) methodology manual × Development of country profiles on innovative technology developments × Coordination of 6 assessment studies by INPRO Members
Nuclear Fuel Cycle and Materials Technologies	× CRPs on advances in high temperature gas cooled reactor (HTGR) fuel, delayed hydride cracking, and spent fuel performance × A number of Nuclear Energy Series documents × Manuals, handbooks and best practice documents for use in training and education in coated particle fuel technology
Capacity Building and Nuclear Knowledge Maintenance for Sustainable Energy Development	× CRPs on greenhouse gas mitigation and nuclear knowledge preservation tools × A number of Nuclear Energy Series documents × The development of tools to collect and analyse freely accessible web based nuclear information (FAWNI)
Nuclear Science	× Nuclear instrumentation maintenance × Support to EC CANDIDE project (Coordination Action on Nuclear Data for Industrial Development in Europe) × CRPs on parameters relevant to non-energy nuclear applications, atomic and molecular data for plasma modelling, a reference database for neutron activation analysis, and an updated decay data library for actinides

Programme	New activities
Nuclear Power	♦ Project on technology support for near term deployment of advanced reactors ♦ Guidance and support on advanced construction and commissioning ♦ International Conference on Human Resource Development for Introducing and Expanding Nuclear Power Programmes ♦ Assistance to Member States on self-assessment of progress against milestones for introducing nuclear power ♦ HTGR knowledge database ♦ New Nuclear Energy Series documents
Nuclear Fuel Cycle and Materials Technologies	♦ Database on worldwide thorium deposits ♦ Development of a network for uranium production cycle training and education ♦ Workshops on fuel engineering for emerging nuclear Member States. ♦ New CRP on cladding and wrapper materials for sodium cooled fast reactor fuel assemblies ♦ New Nuclear Energy Series documents

Programme	New activities
Capacity Building and Nuclear Knowledge Maintenance for Sustainable Energy Development	♦ Scenarios of long term energy demand and supply mixes with a focus on nuclear energy ♦ Framework to assess interdependencies among energy, water, land use and climate, and related policy analysis ♦ Integrated guide on managing knowledge in nuclear organizations ♦ New Nuclear Energy Series documents
Nuclear Science	♦ Fostering and strengthening research reactor (RR) coalitions and an RR users' network and preparing a catalogue on products and services from RRs ♦ Materials science activities with Programmes 1.1 and 1.2, including new CRPs, IAEA-ICTP training events and technical meetings ♦ Environmental applications and structural material characterization using nuclear spectrometry and nuclear instrumentation ♦ International Conferences on Fusion Energy and on Research Reactors: Safe Management and Effective Utilization ♦ New CRPs on several atomic and nuclear data topics primarily for fission and fusion based energy applications ♦ Publication on U–Mo fuels

71. The increased activities proposed for 2010–2011 are focused on supporting countries considering new nuclear power programmes and/or new uranium production activities. They are made possible by proposed budget levels (prior to price adjustments) for 2010–2011 that are 9.6% higher than the level in 2009 and by projected efficiency gains from four main sources: (1) streamlining that takes advantage of synergies in the consolidation of the Library and the International Nuclear Information System (INIS); (2) increasing the productivity of training on the Agency's energy models through distance learning, other web based media and regional training; (3) increased staff flexibility within the Nuclear Power programme to periodically augment the assistance given to nuclear power newcomer countries while limiting the need for new posts; and (4) closer coordination with Major Programmes 3 and 6 in delivering technical cooperation services on uranium exploration and production.

72. Major Programme 1 continues to rely on extrabudgetary funds for approximately 10% of its activities, mostly for cost free experts. Additional regular budget resources have been allocated to INPRO, but INPRO continues to rely to a large extent on the provision of extrabudgetary resources. Other activities of Major Programme 1 that remain partially or fully unfunded include the development of publications on various aspects of nuclear energy and some CRPs and meetings. These activities may be implemented should voluntary contributions be received or regular budget savings materialize in the course of the biennium.

Major Programme 2: Nuclear Techniques for Development and Environmental Protection

73. Major Programme 2 focuses on the priorities identified in the UN Millennium Development Goals and follows the Agency's Medium Term Strategy 2006–2011.

74. Major Programme 2 has been developed in consideration of recent strategic planning efforts which confirmed the role of the Agency in supporting the use of nuclear science and technology to assist in fulfilling basic human needs. The following are some of the key ideas that drive the 2010–2011 programme:

- *Enhancing programme integration*, both within Major Programme 2 and with other major programmes, as a stepping stone towards a potential cluster approach (in the thematic areas of human health and cancer control, water resources and environment, food security, etc.) while responding to emerging issues (e.g. climate change, global food crisis, etc.);
- *Delivering activities more comprehensively and mobilizing resources* (e.g. by means of umbrella programmes such as PACT);
- *Strengthening partnerships* (e.g. the new WHO/IAEA Joint Programme on Cancer Control), and *expanding outreach efforts*;
- *Increasing focus on normative activities* (e.g. new subprogramme on Reference Products for Science and Trade), along with reductions in standard analytical services;
- *Expanding the use of Member State institutions and capacities*, including a growing role for IAEA Collaborating Centres and an increasing use of networks to assist in programme delivery (e.g. utilizing Member State labs to conduct regional analyses);
- *Supporting a majority of TC projects:* Major Programme 2 has considered trends in TC during programme development.

Changes in Programmes

75. The *Food and Agriculture* programme carried out jointly with FAO will concentrate more on the issues of climate change and on increasing the resilience of food production systems to address the challenges of global food security. There will be work on new and improved crop varieties with adaptability to climate change and on animal disease diagnosis and genetic testing. Activities related to the use of the sterile insect technique (SIT) for malaria have been shifted here from the Human Health programme to enhance technical guidance and synergies with other SIT activities. The programme will phase out SIT activities on cactus moth and medfly, and tasks related to pesticide formulation/quality control and pesticide residue analysis will be reduced. Activities in food irradiation for sanitary purposes as well as the use of radioimmunoassay in animal production will be further reduced.

76. The *Human Health* programme responds to the continued evolution from the burden of communicable diseases to the increased weight of non-communicable diseases such as cardiac disease and cancer. Imaging will be further expanded into the field of diagnostic radiology, and more specifically to computed tomography (CT) scanning, given the role that it plays in the management of chronic diseases. Technical support for radiation treatment options that replace large radioactive sources, such as cobalt, is being enhanced. Activities involving the use of radioisotopes for molecular biology techniques in communicable diseases are being progressively phased out, and those related to radiotherapy have been consolidated to enhance synergies with the Programme of Action for Cancer Therapy (PACT). There is an increased emphasis on educational activities, including curriculum design and implementation, teaching and evaluation methods. Quality management, including not only quality control of instrumentation but also auditing activities on clinical practice, will be further expanded.

77. PACT has significantly strengthened its collaboration with international partners, including the new joint programme with WHO to support the development and implementation of sustainable comprehensive cancer control programmes in low and medium resource countries. This aims to mobilize new resources through innovative public–private partnerships and other fundraising efforts. PACT will focus on implementing the joint activities, promoting synergy with WHO and other partners, as well as strengthening support to PACT Model Demonstration Site projects and assisting new countries in cancer control planning through TC regional activities.

78. The *Water Resources* programme includes the IAEA Water Availability Enhancement initiative (I-WAVE), a major new effort to improve the assessment of water resources in Member States. This initiative will be implemented in partnership with other agencies and will offer opportunities for increased assistance to Member States through joint action. The programme will directly facilitate this initiative through the development and application of: improved approaches for assessing groundwater sustainability; methods and tools for isotope based groundwater assessments, including maps, atlases and reports; and analytical instrumentation that is more affordable and more robust. Routine analytical services provided by the Agency will be decreased in favour of the Isotope Hydrology Analytical Network (IHAN), a network of Member State laboratories.

79. The *Environment* programme has been reorganized and consolidated to achieve greater synergies between the Seibersdorf and Monaco laboratories, with the number of subprogrammes reduced from five to four, and a corresponding reduction in projects. A new subprogramme on *Reference Products for Science and Trade* consolidates work done in the Seibersdorf, Monaco and the Isotope Hydrology laboratories to bring more visibility and enhanced efficiency. Routine analysis will be decreased or outsourced where possible to Member State institutions and laboratory networks. Terrestrial environment activities are focusing on using nuclear techniques to understand environmental processes, assess the impact of contaminants in ecosystems, and provide data for remediation strategies. Classical radioecology (i.e. measurements and comparisons of radionuclide concentrations in different environmental media) has been phased out. Activities related to the use of nuclear techniques for understanding the impacts of land based contaminants on marine and coastal ecosystems are now contained in one subprogramme instead of two, while activities related to climate change are combined in another specific subprogramme to be managed in Monaco.

80. *The Radioisotope Production and Radiation Technology* programme is aimed at strengthening Member States' capabilities in the production of radioisotopes and their formulation into different compounds that are essential for assuring more stable supplies for various medical, industrial and research applications. Building on the synergies developed in the 2008–2009 cycle, most activities in radiopharmaceuticals are planned jointly with the *Human Health* programme, leading to a more efficient use of resources. There will be activities to support the use of radiation processing technology to assist in reducing pollution and synthesizing valued-added products as well as in supporting industrial growth by helping Member States to use radiotracers to trouble shoot industrial processes. Close coordination with the *Nuclear Science* programme will include facilitating networking among Member State research reactor and accelerator facilities.

81. The major programme reflects lessons learned from the Programme Performance Report and respective evaluations that have stressed the need to further enhance synergies between respective programmes and among Agency major programmes, as well as to expand external partnerships. Further efforts to balance the need to report results with the ability to collect data efficiently and effectively given available resources have also been emphasized. The shifting of routine laboratory analysis to Member State laboratories is ongoing.

82. The most notable activities from the previous cycle that have been either phased out/completed or reduced and the new activities planned for 2010–2011 are shown below.

Programme	Phased out / completed / reduced activities
Food and Agriculture	× Project on development of Integrated Plant Nutrient and Water Management Practices for Increasing Soil Fertility and Crop Yields × SIT activities related to the Mediterranean fruit fly and cactus moth × Pesticide formulation/quality control × Pesticide residue analysis × Applications of radioimmunoassay in animal production × Networking of quality assured laboratories

Programme	Phased out / completed / reduced activities
	× Sanitary applications of food irradiation × Physical mapping and gene pyramiding in plants × Effects of mutagenic agents on DNA sequence in plants × Fertilizer evaluation activities involving field–plot scale studies
Human Health	× Activities related to the use of radioisotopes in communicable diseases, leading to a reduction of activities involving molecular biology × Activities related to in vivo dosimetry in radiotherapy × Activities on harmonization of radioactivity measurements in nuclear medicine × Activities related to uncertainties in Secondary Standards Dosimetry Laboratories
Water Resources	× Routine analytical services in the Isotope Hydrology Laboratory × Applications in geothermal areas × Dam safety activities × Activities to monitor biosphere–atmosphere interactions
Environment	× Standard environmental monitoring × Standard radioecology
Radioisotope Production and Radiation Technology	× Project on the detection of explosives and illicit materials and for compositional analysis × CRP on tracers and software for inter-well investigations for the oil industry × Development of generator technologies for certain therapeutic radionuclides × Electron beam treatment of organic pollutants contained in gaseous streams × Activities in non-destructive testing for industrial applications (NDT) and other well established nuclear analytical and radiotracer techniques × Applications of nuclear analytical techniques to investigate the authenticity of art objects

Programme	New activities
Food and Agriculture	♦ Food traceability ♦ Irradiated vaccines ♦ Activities on new and improved crop varieties with adaptability to climate change ♦ Increasing livestock genetic resources ♦ Project on development of SIT for control of human disease-transmitting mosquitoes (transferred from *Human Health*)
Human Health	♦ Development of curriculum, teaching methods, didactic materials and assessment/evaluation approaches ♦ Increased emphasis on training of trainers to enhance sustainability in developing countries ♦ Activities related to diagnostic radiology, specifically computed tomography (CT) scanning, including expansion of activities in the area of cardiovascular disease diagnosis ♦ Activities related to auditing in radiation oncology, nuclear medicine and dosimetry ♦ Development of a web based Virtual University for Cancer Control

Programme	New activities
Water Resources	♦ Assessment of water resources, including transboundary aquifers and impacts of climate change, in partnership with other organizations ♦ IAEA Water Availability Enhancement (IWAVE) ♦ Synthesis and availability of global isotope data through atlases and web based applications ♦ Develop an integrated approach to assess water, energy and land use, and related environmental impacts, in a single methodological framework.
Environment	♦ New subprogramme on Reference Products for Science and Trade ♦ Increased programmatic synergies in coastal zone management
Radioisotope Production and Radiation Technology	♦ Support for the development and local production of key radiopharmaceuticals and emerging positron emitters for regular clinical use ♦ Support for the production of certain radiopharmaceuticals for targeted therapy in primary cancer treatment ♦ Fostering international/regional cooperation in the use of reactors for radioisotope production to enhance the availability of radioisotope products, in particular for medical uses ♦ Activities to facilitate the radiation based production of advanced and value added materials and remediation of biohazard contaminants ♦ Coordinated development of industrial CT methods and their validation for quality assurance and safety in multiphase industrial applications

83. The current budget reflects considerable changes that have been achieved through prioritization resulting in reduced activities in several thematic areas, and increased emphasis in others to accommodate important new initiatives. Additional resources have been allocated to enhance communication efforts.

84. Major Programme 2 continues to require significant extrabudgetary funding. FAO remains the key provider of such funds as the Agency's formal partner in Food and Agriculture activities.

85. Reference product services carried out in all three laboratories have now been centralized into a new subprogramme in the *Environment* programme which will lead to a more efficient and effective delivery of services.

Major Programme 3: Nuclear Safety and Security

86. The Agency's work under Major Programme 3 directly executes the Agency's statutory functions of establishing standards of safety and providing for their application. Major Programme 3 also establishes nuclear security guidelines and promotes their use taking into account the international legal framework for nuclear security which embodies both binding and non-binding instruments adopted under both Agency and other auspices. These high quality safety standards and security guidelines constitute the backbone of the global nuclear safety and security regime that is being implemented through peer reviews, advisory services, knowledge networks and capacity building activities for continuous improvement of safety and security worldwide. This major programme also provides for international capacity building and preparedness for effectively responding to and mitigating the radiological consequences of a nuclear accident or incident or an act of nuclear terrorism, should such an event occur. Major Programme 3 is the Agency's programmatic response to

Goal B of the Medium Term Strategy 2006–2011 and is composed of three overarching projects and five programmes.

87. The *three overarching projects* aim at: ensuring effective coordination; delivering high quality standards, guidelines and services; and promoting synergies and integration between all programmes within Major Programme 3. Particular effort will be dedicated to the implementation of the Commission on Safety Standards (CSS) roadmap for the long term structure of safety standards and related policies and to ensure that safety measures and security measures are designed and implemented in an integrated manner. Emphasis will be devoted to coordination of assistance to countries considering the introduction of nuclear power and/or increased use of other nuclear applications with radioactive substances to assist them in establishing and sustaining effective nuclear safety and nuclear security. Furthermore, support and coordination will be provided to Member States facing new challenges in capacity building, communications, networking and knowledge management.

88. The *Incident and Emergency Preparedness and Response* programme responds to an increasing number of requests from Member States to assist in minimizing the impact of nuclear or radiological incidents and emergencies. This programme also meets the Agency's obligations under the Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency (the Assistance Convention), and is based on relevant General Conference resolutions, Board decisions and oversight authority recommendations. Emergency Preparedness and Response is a cross-cutting area, being explicitly or implicitly part of most of the Agency programmes. Emphasis will be given to enhancing capabilities to respond to large scale emergencies and to build capacity for emergency preparedness and response in Member States.

89. The *Safety of Nuclear Installations* programme has to face continuous challenges to ensure that effective safety infrastructures are in place and maintained for emerging and expanding nuclear power programmes in Member States. The Agency will assist in developing and sustaining the necessary nuclear safety infrastructure and supporting worldwide regulatory cooperation. The introduction of nuclear technologies in countries heretofore without nuclear programmes is an issue for the global nuclear community, especially since the occurrence of a serious accident anywhere is a serious problem everywhere. It is imperative that new entrant nuclear programmes are launched in a safe and secure manner. The Agency's standards, guidelines, peer reviews and advisory services must be effectively developed and applied to both mature nuclear programmes and emerging ones. In response to a recent increased interest in Member States in planning, design or building new nuclear power plants, this programme will also focus on capacity building and networking, which are recognized more and more as effective means of improving cooperation, fostering an integrated safety approach and promoting continuous improvement through peer reviews, advisory services, education and training. The programme will recognize the globalization of the nuclear industry and the expansion of nuclear programmes in the world. It will support and promote effective global systems to safely operate and regulate nuclear installations, including the creation of new knowledge on and sharing of experience. The success of these efforts depends to a large extent on available financial and human resources.

90. The *Radiation and Transport Safety* programme focuses on the establishment of standards for the protection of people — workers, patients and members of the public — from the detrimental effects attributed to radiation exposure arising from natural and human-made sources. The programme also provides for the application of these standards, in particular to health and safety measures with respect to, inter alia, operations under Agency control or supervision and any Agency projects. The programme is composed of two subprogrammes, one related to the establishment of the elements of the global safety regime and the other one devoted to the application of this regime in Member States

and technology transfer. The activities within the programme are mainly ongoing, with some emphasis in accordance with GC(52)/RES/9, namely:

- Patient protection — more than 10 million medical exposure procedures involving ionizing radiation are carried out every day. The Agency has taken a leading role in informing and training health professionals worldwide. However, accidental exposures of patients continue to be reported, and there are new reports of unnecessary and unintended exposures and therefore efforts will be devoted to meet this evolving challenge;
- Denial of shipments of radioactive material, where the Agency is also taking a leading role to coordinate international efforts such as regional workshops for exchanging knowledge and sharing experience on the safe and secure shipment of radioactive materials;
- Enhancing the implementation of the Code of Conduct on the Safety and Security of Radioactive Sources by States, to ensure that sources are utilized in a well regulated manner throughout their life cycle.

91. The *Management of Radioactive Waste* programme continues to contribute to the prevention of potential environmental and health damage from radioactive waste and spent nuclear fuel, and is the Agency's response to several international agreements, such as the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management (the Joint Convention), the Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter (the London Convention) and the Global Programme of Action for the Protection of the Marine Environment from Land-based Activities. As a consequence of the duration of waste management projects in Member States, most of the projects proposed for 2010–2011 are not new and are expected to continue in some form beyond the programme cycle. The programme is built into two subprogrammes: one contributes to the establishment of elements of the global nuclear safety and security regime and the other one is devoted to the application of this regime in Member States and technology transfer. As was noted in document GOV/2008/31 *Programme Performance Report for 2006–2007*, international harmonization remains an important goal. To address this, the programme has strengthened its networking activities to promote access to, and participation in the development and application of, information on radioactive waste safety and waste management. A strong impetus is provided to such networks by the renaissance of the nuclear power industry, which creates growing expectations for the Agency to assist its Member States in the adoption of an effective nuclear safety culture and to achieve systematic progress with legacy issues. This is of particular relevance for the programme with the growing demand for Agency support to uranium production cycle activities.

92. The risk that nuclear or other radioactive material could be used in malicious acts remains high and is regarded as a serious threat to international peace and security. Appropriate and effective national systems for nuclear security are vital in facilitating the peaceful use of nuclear energy and enhancing global efforts to combat nuclear terrorism.

93. The *Nuclear Security* programme will contribute to global efforts to achieve worldwide, effective security wherever nuclear or other radioactive material is in use, storage and/or transport, and of associated facilities, by supporting States, upon request, in their efforts to establish and maintain effective nuclear security through assistance in capacity building, guidance, human resource development, sustainability and risk reduction. The objective is also to assist adherence to and implementation of nuclear security related international legal instruments; and to strengthen the international cooperation and coordination of assistance given through bilateral programmes and other international initiatives in a manner which also would contribute to enabling the safe, secure and peaceful use of nuclear energy and of applications with radioactive substances.

94. The programme has been restructured to respond to changes in the nuclear security situation since the instigation of the first nuclear security plan, to the needs of States and to recommendations from external evaluations that the programme clearly identifies core Agency functions. The programme is designed to establish and provide long term sustained improvements in nuclear security. Within the regular budget, priority is given to the establishment of an effective information platform; the establishment of nuclear security norms and guidance; the provision of services, for assessment and evaluation, upon request, of States' systems in accordance with the guidance; and for human resources development. In addition, using extrabudgetary funds, the programme allows for the provision of assistance, on request, to improve security at existing facilities, locations and transports involving nuclear and other radioactive material and to introduce nuclear security in those systems that operate in the public arena, for example, at borders (effective border control) and major public events. The latter activities will continue to rely largely on extrabudgetary funding from the Nuclear Security Fund.

95. The most notable activities from the previous cycle that have been phased out/completed as well as new activities are shown below.

Programme	Phased out / completed activities
Incident and Emergency Preparedness and Response	× International Action Plan for Strengthening the International Preparedness and Response System for Nuclear and Radiological Emergencies
Safety of Nuclear Installations	× CRPs in the Engineering Safety, Safety Assessment, Research Reactor and Fuel Cycle Safety areas
Radiation and Transport Safety	× Development of the web version of RAIS 3.0
Management of Radioactive Waste	× Revision of the Safety Guide on Classification of Radioactive Waste

Programme	New activities
Overarching projects	♦ Ensuring that safety measures and security measures are planned and implemented in an integrated manner ♦ Strengthening capacity building, communication and knowledge management
Incident and Emergency Preparedness and Response	♦ Capacity building with emerging nuclear programmes ♦ Implement Response Assistance Network (RaNET) ♦ Enhance the IEC capability to respond and assist in large scale emergencies
Safety of Nuclear Installations	♦ Safety infrastructure and capacity building for countries embarking on nuclear power programmes ♦ Enhanced support to International Regulatory Network and the Convention on Nuclear Safety
Radiation and Transport Safety	♦ Integration of networks involving occupational protection, patient protection, transport, education and training and networks for regulators
Management of Radioactive Waste	♦ Safety Guide on radiological impact assessment

Major Programme 4: Nuclear Verification

96. The nuclear verification programme supports the Agency's statutory mandate to establish and administer safeguards, to ensure that special fissionable and other material, services, equipment, facilities and information made available by the Agency or at its request or under its supervision or control are not used in such a way as to further any military purpose. In addition, the Agency is supporting the efforts of the international community to verify nuclear arms control and reduction agreements and arrangements. The objectives of the nuclear verification programme are derived from the Medium Term Strategy 2006–2011 aiming, *inter alia*, at further enhancing the Agency's capability to draw independent, impartial and timely safeguards conclusions and its ability to adequately respond to current and future proliferation challenges.

97. The move towards information driven safeguards and the implementation of a non-discriminatory approach to safeguards implementation taking account of State specific factors, including the implementation of integrated safeguards where appropriate, will enhance the effectiveness and efficiency of all relevant activities at the State and the facility level. In that context the project on *State Evaluation* (4.1.1.6) has been incorporated into the respective verification projects to reflect the fact that this State evaluation process is an integral part of the planning, implementation and evaluation of verification activities in line with a State level approach. Similarly, Project 4.1.2.16 on *Analysis of Nuclear Technology and Trade* was incorporated into Project 4.1.2.12 *Information Support for State-level Safeguards*.

98. The Agency expects that it will be requested by India to implement safeguards at additional facilities in India (used for its civilian nuclear programme) in 2010 and 2011, as a result of India's separation plan agreed between India and the United States of America (USA) in 2006, under the agreement between the Agency and the Government of India for the application of safeguards to civilian nuclear facilities, as approved by the Board of Governors in August 2008 and entered into force on 11 May 2009. These verification activities will require significant additional resources.

99. The Agency will continue its efforts to have adequate and uniform legal authority in place to ensure the availability of and access to safeguards relevant information with regard to all States and thus enhance the credibility of safeguards conclusions. The Agency will therefore pursue its outreach efforts to relevant States to facilitate the conclusion and implementation of comprehensive safeguards agreements (CSAs) and additional protocols (APs). In addition, the Agency will continue to communicate with States in order to implement the Board's 2005 decisions regarding small quantities protocols (SQPs), with a view to amending or rescinding SQPs to reflect the revised standardized text and changed eligibility criteria.

100. The increasing importance of capabilities to detect indicators of undeclared nuclear material and activities has been strongly reflected in all relevant activities in this programme. More specifically, throughout the biennium the Agency will improve and intensify the development and/or acquisition of more effective information collection, analysis and evaluation tools and the capabilities to apply them.

101. New technologies are being developed to expand the role of unattended monitoring systems and attended installed systems which would enable inspectors to focus on other critical safeguards efforts. Additional extrabudgetary resources will be required to expand the development and field testing of novel technologies for the detection of undeclared nuclear activities at declared and undeclared locations.

102. Information and communications technology (ICT) is being enhanced through re-engineering and deployment of the IAEA Safeguards Information System (ISIS). The enhanced ICT system will

provide the framework on which the Agency's transition to information-driven safeguards is based. This ICT environment will promote the integration of information and implementation of relevant specific solutions for more effective and efficient sharing of information and its analysis, not only for technical safeguards evaluations but also for enhanced management decisions and planning.

103. Building on the integration of the data architecture developed under the *ISIS Re-engineering* project (4.1.2.13) to be completed in 2011, a new project on *Integrated Analysis* (4.1.2.17) will be initiated to enhance the information collection, analysis and dissemination capabilities through the utilization of advanced analytical tools fully integrated with the Integrated Safeguards Environment (ISE) architecture.

104. The activities related to safeguarding the Rokkasho Reprocessing Plant in Japan have been rescheduled due to postponement of the commercial operation of the plant. The resources required for the development and implementation of a safeguards approach for a large automated mixed oxide fuel fabrication plant (JMOX) in Japan for which construction was scheduled to begin in October 2007, will be significant. Although preliminary safeguards activities have begun based on the provision of design information of the facilities, the precise schedule for safeguards equipment procurement will depend upon updated construction schedules and/or availability for the facilities to be placed under safeguards.

105. The Safeguards Training Programme is designed to ensure that inspectors and other safeguards staff can effectively and efficiently perform the verification and evaluation activities required of them. Training in soft skills and integrated information analysis will be incorporated into the training programme. A comprehensive training package providing a career path for safeguards inspectors and other professional staff will be developed and implemented. The Traineeship programme will be conducted for professionally qualified persons from developing countries to assist them in acquiring knowledge and skills qualifying them for a position of safeguards inspector with the Agency or in national State Systems of Accounting for and Control of Nuclear Material (SSACs).

106. The Agency continues to develop and implement inspection effort saving approaches for verification of spent fuel transfers, approaches involving unattended monitoring and surveillance systems, and approaches based on verification through short notice and unannounced inspections of the SSAC declarations of facilities' operational plans and data using a 'mailbox system'.

107. Safeguards approaches using remote monitoring (RM) capabilities result in enhanced effectiveness and efficiency of safeguards implementation. At the end of 2008, there were 168 surveillance and radiation monitoring systems with remote transmission capabilities in 18 States, installed in 84 facilities (106 surveillance systems with 408 cameras and 62 unattended radiation monitoring systems). Of these systems, 136 systems in 13 States, installed at 68 facilities were capable of transmitting all safeguards data, not just 'state of health' status. It is estimated that in 2008, with 168 systems connected in the field, 200 person-days of inspection (PDI) were saved.

108. The reduction of inspection effort in the field resulting from the implementation of integrated safeguards has been significant; however, the activities at Headquarters related to the introduction of new facilities, evaluation of additional protocol declarations, information analysis and State evaluations have substantially increased. This reflects the shift in the focus of safeguards implementation from verification of declared nuclear material at declared facilities to an information driven system that aims at understanding and assessing the consistency of information on a State's nuclear programme as a whole. Additional savings in inspection effort in the field will be realized with the introduction of integrated safeguards in the remaining non-nuclear-weapon States of the European Union by 2010 and in Ukraine in 2011. Significant additional savings during the biennium due to

integrated safeguards implementation are not expected as no additional States with major fuel cycle activities will qualify for integrated safeguards during the period.

109. Efficiencies and productivity improvements of the safeguards system continue to be pursued through the implementation of the quality management system.

110. On 9 July 2007, the Board of Governors authorized the Director General, subject to the availability of funds, to implement the ad hoc arrangement for monitoring and verification as agreed between the Agency and the Democratic People's Republic of Korea (DPRK) and foreseen in the Initial Actions agreed at the Six-Party Talks. The Agency implemented such arrangements until 14 April 2009 when, as reported to the Board of Governors by the Director General, the DPRK decided, inter alia, to cease all cooperation immediately with the IAEA. On 16 April 2009, the Agency's inspectors departed the DPRK. Should the Agency be requested to resume its verification activities in the DPRK, it will request voluntary contributions to cover the cost of these activities, estimated at €2.2 million per year assuming that they remain at the same level as they were in 2008.

111. The safeguards analytical services provided by the Safeguards Analytical Laboratory (SAL) and the Network of Analytical Laboratories (NWAL) for nuclear material and environmental samples analyses will be strengthened through the Project 4.1.2.16 *Enhancing Capabilities of the Safeguards Analytical Services* (ECAS). The Agency is requesting the necessary resources for this new project that is critical to maintain and further develop an effective and efficient analytical services verification system, in order to draw the Agency's independent, impartial and timely safeguards conclusions.

112. The Agency has been requested to implement safeguards at a new commercial enrichment plant and a MOX fuel fabrication plant in the USA as of 2010. Similarly, safeguards may be implemented in an enrichment plant in France, which is currently under construction, for possible startup of operation in 2009.

113. The proposed operational regular budget resources, at 2009 prices, for Major Programme 4 reflect an increase of €1.2 million or 1.0% in 2010 compared with 2009 and an increase of €1.6 million or 1.4% in 2011 over 2010.

114. Extrabudgetary funds of €15.7 million expected to be received in 2010 and €15.1 million in 2011 will be directed mainly to the project on *Provision of safeguards instrumentation*. Should the Agency be asked to resume its verification activities in the DPRK, it will request voluntary contributions to cover the cost of monitoring and verification activities in the DPRK, estimated at €2.2 million, assuming that these activities remain at the same level as they were in 2008.

115. The most notable activities from the previous cycle that have been phased out/completed as well as new activities are shown below.

Programme	Phased out / completed/ incorporated into another project
4.1 Safeguards *Subprogramme: Operations*	× Project on *State Evaluation* (4.1.1.6) has been incorporated into the respective verification projects to reflect the fact that the State evaluation process is an integral part of the planning, implementation and evaluation of verification activities in line with a State level approach.
4.1 Safeguards *Subprogramme:* *Development and Support*	× Project 4.1.2.16 on *Analysis of Nuclear Technology and Trade* was incorporated into Project 4.1.2.12 *Information Support for State-level Safeguards*.

Programme	New activities
4.1 Safeguards Subprogramme: Development and Support	♦ Building on the integration of the data architecture developed under the ISIS re-engineering project (4.1.2.13) to be completed in 2011, a new project on *Integrated Analysis* (4.1.2.17) will be initiated to enhance the information collection, analysis and dissemination capabilities through the utilization of advanced analytical tools fully integrated with the integrated safeguards environment (ISE) architecture.
4.1 Safeguards Subprogramme: Development and Support	♦ The safeguards analytical services provided by the Safeguards Analytical Laboratory (SAL) and the Network of Analytical Laboratories (NWAL) for nuclear material and environmental samples analyses will be strengthened through the project *Enhancing Capabilities of the Safeguards Analytical Services (ECAS).*

Major Programme 5: Policy, Management and Administration Services

116. Major Programme 5 will continue to comprise all policy, management and administration services. These functions have four purposes. First, leadership, under the Director General, for all Agency activities to provide the coordination essential to ensure a one-house approach, particularly with respect to overall policies, the development of programmes and the evaluation and assessment of performance. Second, services for the Agency's policy making bodies and other interactions with Member States. Third, Major Programme 5 provides the necessary support in terms of legal, financial, human resources, procurement and general services to those directly engaged in the implementation and delivery of the Agency's programme. Finally, Major Programme 5 is involved with the management and interchange of information within the Secretariat, and between the Secretariat and Member States, the media and the general public.

117. A major undertaking will be progress on the Agency-wide Information System for Programme Support (AIPS). During the biennium, the first 'Plateau' of the project — Finance and Procurement — will be completed. This will involve considerable business process re-engineering throughout the Agency and is expected to bring benefits in terms of more efficient and effective support for all aspects of programme delivery. Work on the second Plateau — Human Resources and Programme and Project Management — will be started in the 2010–2011 time frame. It is expected that subsequent to the implementation of Plateau 2, Plateaus 3 and 4 (Meetings, Contacts, Travel and Transportation) will be initiated. While AIPS is very much a 'one-house' project, it will require strong leadership from Major Programme 5.

118. The completion of Plateau 1 of the AIPS project will pave the way during the biennium for the introduction into the Agency of the International Public Sector Accounting Standards (IPSAS). In connection with this transition and in order to provide Member States with a clearer and more systematic picture of the Agency's future investment requirements, a multi-year Major Capital Investment Plan will be introduced, as elaborated in the next section (I.3).

119. As always, the Agency's IT services will continue to adapt to the inevitable rapid changes in technology and global practices. An important feature of work in the biennium will be assurance of secure and reliable services, broadening of business continuity capability, and enhancements to the Agency's computer centre.

120. Also reflected in these budget proposals are increases in Major Programme 5 resources to partly cover additional staff security and safety measures mandated by the United Nations Safety and

Security Services (UNSSS) as well as increases in resources needed to adequately fund the Agency's procurement services.

121. The increase in the number of Member States seeking the Agency's advice on the possible, or planned, introduction of a nuclear power programme will lead to a rising demand for legal guidance in establishing the necessary infrastructures. Greater legal support will also be required in connection with strengthened safeguards and other verification activities, for protection against nuclear terrorism and for technical cooperation.

122. Another aspect of the expected expansion in nuclear power will be the demand from the public for impartial information on all things nuclear. This will necessitate new developments in the public information sphere of the Agency's outreach work.

123. Throughout the UN system, there is a sharpening focus on oversight functions. This trend, coupled with the Agency's increasing dependency on IT systems in delivering its programmes, means that there will be a need to strengthen further the Agency's oversight activities.

124. A highlight in the *Human Resources* area will be continuous adaptation to improved practices in performance management and staff well being. The focus will continue to move towards partnering, advisory services and policy development. Recruiting specialist staff of high quality will be increasingly challenging as the nuclear labour market tightens.

125. The rapidly evolving travel industry will present a challenge to maintain Agency travel costs at an acceptable level. Other major challenges will arise from the final stages of the asbestos removal project, the operation of the new conference building, the maintenance of security installations and the construction of new laboratories in Seibersdorf, as elaborated in the next section (I.3).

126. One continuing task in the area of conference, language and publishing services will be the analysis of possible financial savings derivable from outsourcing — subject to the requirements of information security and timeliness of production — and the management of the outsourcing.

Major Programme 6: Management of Technical Cooperation for Development

127. Major Programme 6 is responsible for the formulation and delivery of the Agency's technical cooperation (TC) programme. The programme aims to promote tangible socioeconomic impacts in Member States, supporting the use of appropriate nuclear science and technology to address major sustainable development priorities at the national, regional and interregional levels. Major Programme 6 concentrates on the delivery of support in six thematic areas (human health, agricultural productivity and food security, water resource management, environmental protection, physical and chemical applications and sustainable energy development, together with a seventh cross-cutting thematic area, safety and security), and supports the achievement of the Millennium Development Goals. Working closely with the Agency's technical programmes, which provide technical expertise, Major Programme 6 interacts on an ongoing basis with national authorities in Member States at every stage of the programme, from initial formulation to implementation and evaluation.

128. The programme will face a number of challenges in the coming biennium. First and foremost is the challenge of consolidating the performance of recent years, while at the same time keeping pace with the increasing number of Member States and the growing scope of operations. The programme will also have to respond proactively to major challenges deriving from the changing scientific, environmental, financial and policy environment. As a result, the key challenges that Major Programme 6 will face during the biennium include:

- Enhancing dialogue with, and participation of, Member States at all stages of the programme cycle, in particular in the design, implementation, monitoring and assessment of TC projects. Strong government commitment is needed to achieve set objectives and to sustain them after project closure. Strengthened policy dialogue and upstream work will improve project relevance, ownership and sustainability, and will support the definition of objectives and related performance indicators that are specific, measurable, achievable, realistic and timely (SMART). This will also facilitate the mobilization of financial resources.
- Adjusting the TC programme to the evolving and differentiated needs of Member States and the changing global environment through innovative working arrangements and implementation modalities that can respond in a timely and targeted way to change. Strengthened strategic analysis will support the continuous integration of emerging development issues into the management of the TC programme.
- The absence of field representation and a highly specialized field of expertise as factors influencing the building of country and regional partnerships with UN programming frameworks (UNDAFs).
- The promotion, in addition to more traditional operational activities, of networking and partnerships among Member States to strengthen the role of IAEA as a hub of nuclear knowledge and information.
- Resource mobilization will be strengthened further and include efforts to ensure that there is a critical mass of resources available to support the TCP.
- Developing and applying a quality system, including monitoring, credible and regular reporting on results and lessons learned. The introduction of project self-assessment will be a key factor in this context.
- Promoting gender mainstreaming. Special attention will be given to promoting women in the TC programme as experts, trainees and fellows.

129. In the Africa region, the TC programme for the biennium will focus on supporting development goals such as increased food productivity and better nutrition and health services, paying particular attention to least developed countries (LDCs). The building of technical, managerial and institutional capacities in nuclear science and technology will also be important.

130. Strengthening the technical capacity of national and regional institutions and resource centres for applications in health, agriculture and energy will be the main focus in the Asia and Pacific region. The provision of assistance for comprehensive nuclear power planning and development with an emphasis on safety and security will be stressed.

131. In the Europe region the main focus will be on maintaining safety and security standards in older nuclear power plants and mitigating environmental degradation. Due to the changing nature of Member States needs in this region, resources and capacities will be increasingly shared.

132. In the Latin America region, strategic partnerships, particularly with Co-operation Agreement for the Promotion of Nuclear Science and Technology in Latin America and the Caribbean (ARCAL), will be used to address the development needs of Member States in the field of energy, human health, food and nutrition, and the environment. Emphasis will be given to strengthening national regulatory frameworks and capacity building for radiation safety in all Member States.

133. Communication and outreach activities will form an area of special attention to raise the visibility of the TC programme and to strengthen its position in the development arena. Through a systematic thematic approach, new funding sources will be explored.

134. Additional human resources are required to help respond effectively to various General Conference resolutions, including those on strengthening the Agency's TC activities such as GC(52)/RES/11, considering the growing complexity of the programme, its management and the operating environment. Specifically, resources are needed to strengthen policy dialogue, and programme formulation and bring the programme closer to stakeholders, to establish partnerships and strengthen networks among countries, to mobilize additional resources and make sure that a quality system is in place providing Member States with timely and credible information on project and programme results.

Major Programme 1 - Nuclear Power, Fuel Cycle and Nuclear Science

Summary of Regular Budget Resources for the Biennium

(excluding Major Capital Investments)

Table 5

	Subprogramme / Programme	2009 adjusted budget	2010 estimates at 2009 prices	Variance 2010 over 2009 €	Variance 2010 over 2009 %	2011 prelim. estimates at 2009 prices	Variance 2011 over 2010 €	Variance 2011 over 2010 %	Price Increase	**2010 estimates at 2010 prices**	**2011 prelim. estimates at 2010 prices**
1.0.0.1	Overall Management, Coordination and Common Activities	907 374	1 027 244	119 870	13.2%	1 027 298	54	-	2.8%	**1 056 341**	**1 056 394**
		907 374	1 027 244	119 870	13.2%	1 027 298	54	-	2.8%	**1 056 341**	**1 056 394**
1.1.1	Integrated Support for Operating Nuclear Facilities	1 626 679	1 658 511	31 832	2.0%	1 659 193	682	-	3.2%	**1 712 156**	**1 712 741**
1.1.2	Support for Expansion of Nuclear Power Plants	924 364	804 916	(119 448)	(12.9%)	804 916	-	-	2.9%	**828 341**	**828 616**
1.1.3	Infrastructure and Planning for the Introduction of Nuclear Power Programmes	545 453	1 121 150	575 697	105.5%	1 180 410	59 260	5.3%	3.2%	**1 157 425**	**1 218 557**
1.1.4	Coordination of the International Project on Innovative Nuclear Reactors and Fuel Cycles (INPRO)	384 441	584 246	199 805	52.0%	608 495	24 249	4.2%	3.0%	**601 763**	**626 835**
1.1.5	Technology Development for Advanced Reactor Lines	1 664 401	1 808 491	144 090	8.7%	1 841 142	32 651	1.8%	3.1%	**1 864 691**	**1 898 594**
1.1.6	Support for Non-electric Applications of Nuclear Power	493 838	502 686	8 848	1.8%	516 186	13 500	2.7%	3.3%	**519 238**	**533 251**
Programme 1.1 - Nuclear Power		**5 639 176**	**6 480 000**	**840 824**	**14.9%**	**6 610 342**	**130 342**	**2.0%**	**3.1%**	**6 683 614**	**6 818 594**
1.2.1	Uranium Resources and Production and Databases for the Nuclear Fuel Cycle	825 342	1 243 084	417 742	50.6%	1 248 492	5 408	0.4%	3.4%	**1 284 808**	**1 290 373**
1.2.2	Nuclear Power Reactor Fuel Engineering	551 631	596 857	45 226	8.2%	616 215	19 358	3.2%	3.1%	**615 135**	**635 067**
1.2.3	Management of Spent Fuel from Nuclear Power Reactors	520 947	526 512	5 565	1.1%	544 576	18 064	3.4%	3.1%	**542 845**	**561 455**
1.2.4	Topical Issues of Nuclear Fuels and Fuel Cycles for Advanced and Innovative Reactors	641 660	666 690	25 030	3.9%	690 190	23 500	3.5%	3.2%	**688 059**	**712 709**
Programme 1.2 - Nuclear Fuel Cycle and Materials Technologies		**2 539 580**	**3 033 143**	**493 563**	**19.4%**	**3 099 473**	**66 330**	**2.2%**	**3.2%**	**3 130 847**	**3 199 604**
1.3.1	Energy Modelling, Data and Capacity Building	1 559 183	1 600 123	40 940	2.6%	1 600 123	-	-	3.3%	**1 652 625**	**1 652 621**
1.3.2	Energy Economy Environment (3E) Analysis	1 198 767	1 391 240	192 473	16.1%	1 391 240	-	-	3.0%	**1 433 121**	**1 433 124**
1.3.3	Nuclear Knowledge Management	1 871 088	1 993 189	122 101	6.5%	1 993 189	-	-	3.1%	**2 054 801**	**2 054 801**
1.3.4	International Nuclear Information System (INIS)	2 933 123	3 152 337	219 214	7.5%	3 202 337	50 000	1.6%	2.6%	**3 234 894**	**3 286 738**
1.3.5	Library and Information Support	2 826 938	2 771 710	(55 228)	(2.0%)	2 821 710	50 000	1.8%	2.9%	**2 851 012**	**2 902 907**
Programme 1.3 - Capacity Building and Nuclear Knowledge Maintenance for Sustainable Energy Development		**10 389 099**	**10 908 599**	**519 500**	**5.0%**	**11 008 599**	**100 000**	**0.9%**	**2.9%**	**11 226 453**	**11 330 191**
1.4.1	Atomic and Nuclear Data	2 511 440	2 628 316	116 876	4.7%	2 718 996	90 680	3.5%	3.1%	**2 709 161**	**2 803 711**
1.4.2	Research Reactors	968 718	1 321 179	352 461	36.4%	1 329 499	8 320	0.6%	3.1%	**1 362 473**	**1 371 986**
1.4.3	Accelerators and Nuclear Spectrometry for Materials Science and Analytical Applications	2 260 835	2 472 729	211 894	9.4%	2 514 729	42 000	1.7%	3.0%	**2 546 002**	**2 588 517**
1.4.4	Nuclear Fusion Research	562 817	621 586	58 769	10.4%	606 586	(15 000)	(2.4%)	2.9%	**639 306**	**623 454**
1.4.5	Support to the Abdus Salam International Centre for Theoretical Physics (ICTP)	2 384 014	2 384 014	-	-	2 384 014	-	-	2.2%	**2 436 462**	**2 436 462**
Programme 1.4 - Nuclear Science		**8 687 824**	**9 427 824**	**740 000**	**8.5%**	**9 553 824**	**126 000**	**1.3%**	**2.8%**	**9 693 404**	**9 824 130**
Major Programme 1 - Nuclear Power, Fuel Cycle and Nuclear Science		**28 163 053**	**30 876 810**	**2 713 757**	**9.6%**	**31 299 536**	**422 726**	**1.4%**	**3.0%**	**31 790 659**	**32 228 913**

Major Programme 2 - Nuclear Techniques for Development and Environmental Protection

Summary of Regular Budget Resources for the Biennium

(excluding Major Capital Investments)

Table 6

	Subprogramme / Programme	2009 adjusted budget	2010 estimates at 2009 prices	Variance 2010 over 2009 €	Variance 2010 over 2009 %	2011 prelim. estimates at 2009 prices	Variance 2011 over 2010 €	Variance 2011 over 2010 %	Price Increase	**2010 estimates at 2010 prices**	**2011 prelim. estimates at 2010 prices**
2.0.0.1	Overall Management, Coordination and Common Activities	4 136 548	4 399 398	262 850	6.4%	4 419 398	20 000	0.5%	2.4%	4 502 838	4 524 161
2.0.0.2	Management of the Coordinated Research Activities	672 718	672 780	62	-	672 780	-	-	2.3%	688 359	688 341
		4 809 266	5 072 178	262 912	5.5%	5 092 178	20 000	0.4%	2.3%	5 191 197	5 212 502
2.1.1	Sustainable Intensification of Crop Production Systems	3 851 169	4 005 467	154 298	4.0%	3 885 089	(120 378)	(3.0%)	2.8%	4 117 276	3 991 246
2.1.2	Sustainable Intensification of Livestock Production Systems	1 984 448	2 071 380	86 932	4.4%	1 989 245	(82 135)	(4.0%)	2.8%	2 129 779	2 046 442
2.1.3	Improving Food Safety and Consumer Protection	1 716 650	1 465 935	(250 715)	(14.6%)	1 631 401	165 466	11.3%	3.0%	1 510 550	1 682 986
2.1.4	Sustainable control of major insect pests	3 007 269	3 356 754	349 485	11.6%	3 393 801	37 047	1.1%	2.8%	3 451 441	3 488 443
Programme 2.1 - Food and Agriculture		**10 559 536**	**10 899 536**	**340 000**	**3.2%**	**10 899 536**	**-**	**-**	**2.8%**	**11 209 046**	**11 209 117**
2.2.1	Nutrition and Support for Infectious Disease Management	1 859 432	1 732 540	(126 892)	(6.8%)	1 875 540	143 000	8.3%	3.0%	1 784 519	1 930 857
2.2.2	Nuclear Medicine and Diagnostic Imaging	1 566 039	2 067 035	500 996	32.0%	1 958 935	(108 100)	(5.2%)	3.0%	2 130 002	2 019 028
2.2.3	Radiation Oncology and Cancer Treatment	1 708 050	1 591 814	(116 236)	(6.8%)	1 769 203	177 389	11.1%	2.9%	1 638 113	1 819 745
2.2.4	Quality Assurance and Metrology in Radiation Medicine	2 157 582	2 253 269	95 687	4.4%	2 228 269	(25 000)	(1.1%)	3.0%	2 321 247	2 293 367
2.2.5	Programme of Action for Cancer Therapy	619 904	1 110 000	490 096	79.1%	1 210 000	100 000	9.0%	2.9%	1 141 847	1 244 192
Programme 2.2 - Human Health		**7 911 007**	**8 754 658**	**843 651**	**10.7%**	**9 041 947**	**287 289**	**3.3%**	**3.0%**	**9 015 728**	**9 307 189**
2.3.1	Sustainable Water Use and Services	649 209	866 324	217 115	33.4%	1 008 471	142 147	16.4%	3.2%	894 058	1 042 129
2.3.2	Isotope Methods for the Improved Understanding of the Water Cycle	1 396 568	1 299 462	(97 106)	(7.0%)	1 245 941	(53 521)	(4.1%)	3.0%	1 337 815	1 283 340
2.3.3	Analytical Services for Isotope Hydrology	1 223 201	1 036 192	(187 009)	(15.3%)	1 037 566	1 374	0.1%	2.2%	1 059 434	1 060 785
Programme 2.3 - Water Resources		**3 268 978**	**3 201 978**	**(67 000)**	**(2.0%)**	**3 291 978**	**90 000**	**2.8%**	**2.8%**	**3 291 307**	**3 386 254**
2.4.1	IAEA Reference Products for Science and Trade	898 582	1 721 308	822 726	91.6%	1 598 136	(123 172)	(7.2%)	2.7%	1 768 589	1 639 949
2.4.2	Nuclear Techniques to Understand Climate and Environmental Change	899 021	1 188 875	289 854	32.2%	1 318 675	129 800	10.9%	2.4%	1 217 122	1 352 690
2.4.3	Nuclear Techniques for the Sustainable Development of Marine and Coastal Ecosystems	2 434 389	2 157 696	(276 693)	(11.4%)	2 194 096	36 400	1.7%	2.7%	2 215 223	2 253 209
2.4.4	Understanding and Protecting the Terrestrial and Atmospheric Environments	189 094	506 480	317 386	167.8%	558 026	51 546	10.2%	3.2%	522 668	576 098
2.4.5	PHASED OUT	606 907	-	(606 907)	(100.0%)	-	-	-	-	-	-
Programme 2.4 - Environment		**5 027 993**	**5 574 359**	**546 366**	**10.9%**	**5 668 933**	**94 574**	**1.7%**	**2.7%**	**5 723 602**	**5 821 946**
2.5.1	Support to Radioisotope Products for Medical and Industrial Applications	807 808	872 276	64 468	8.0%	953 276	81 000	9.3%	3.0%	898 456	983 368
2.5.2	Radiation technology support for material development and analysis and pollutant treatment	1 136 051	1 186 583	50 532	4.4%	1 100 583	(86 000)	(7.2%)	3.0%	1 222 495	1 134 346
Programme 2.5 - Radioisotope Production and Radiation Technology		**1 943 859**	**2 058 859**	**115 000**	**5.9%**	**2 053 859**	**(5 000)**	**(0.2%)**	**3.0%**	**2 120 951**	**2 117 714**
Major Programme 2 - Nuclear Techniques for Development and Environmental Protection		**33 520 639**	**35 561 568**	**2 040 929**	**6.1%**	**36 048 431**	**486 863**	**1.4%**	**2.8%**	**36 551 831**	**37 054 722**

Major Programme 3 - Nuclear Safety and Security

Summary of Regular Budget Resources for the Biennium

(excluding Major Capital Investments)

Table 7

	Subprogramme / Programme	2009 adjusted budget	2010 estimates at 2009 prices	Variance 2010 over 2009 €	Variance 2010 over 2009 %	2011 prelim. estimates at 2009 prices	Variance 2011 over 2010 €	Variance 2011 over 2010 %	Price Increase	**2010 estimates at 2010 prices**	**2011 prelim. estimates at 2010 prices**
3.0.0.1	Enhancing the Global Nuclear Safety and Security Regime	659 807	732 808	73 001	11.1%	727 487	(5 321)	(0.7%)	3.0%	755 029	749 288
3.0.0.2	Fostering Safety and Security Infrastructure and Improving Capacity Building	130 927	217 272	86 345	65.9%	221 988	4 716	2.2%	3.3%	224 350	229 130
3.0.0.3	Strengthening Communication and Knowledge Management	130 927	229 567	98 640	75.3%	232 042	2 475	1.1%	3.1%	236 661	239 124
		921 661	1 179 647	257 986	28.0%	1 181 517	1 870	0.2%	3.1%	1 216 040	1 217 542
3.1.1	National Preparedness and Response Capabilities	736 217	1 280 533	544 316	73.9%	1 303 057	22 524	1.8%	3.3%	1 322 853	1 346 122
3.1.2	International Response Capabilities and Arrangements	685 386	1 927 209	1 241 823	181.2%	2 308 653	381 444	19.8%	3.0%	1 984 859	2 377 694
Programme 3.1 - Incident and Emergency Preparedness and Response		**1 421 603**	**3 207 742**	**1 786 139**	**125.6%**	**3 611 710**	**403 968**	**12.6%**	**3.1%**	**3 307 712**	**3 723 816**
3.2.1	Governmental and Regulatory Framework and other Elements of Safety Infrastructure	1 866 023	2 349 389	483 366	25.9%	2 434 536	85 147	3.6%	3.0%	2 420 765	2 508 561
3.2.2	Safety Management and Capacity Building	1 068 847	1 078 309	9 462	0.9%	1 059 124	(19 185)	(1.8%)	3.2%	1 112 793	1 092 823
3.2.3	Safety Assessment of Sites and Installations	2 685 877	2 807 342	121 465	4.5%	2 747 116	(60 226)	(2.1%)	3.0%	2 890 160	2 828 676
3.2.4	Operational Safety and Experience Feedback	1 681 567	1 896 796	215 229	12.8%	1 858 148	(38 648)	(2.0%)	2.9%	1 951 255	1 911 603
3.2.5	Safety of Research Reactors and Fuel Cycle Facilities	1 129 558	1 000 054	(129 504)	(11.5%)	999 042	(1 012)	(0.1%)	3.1%	1 030 676	1 029 843
Programme 3.2 - Safety of Nuclear Installations		**8 431 872**	**9 131 890**	**700 018**	**8.3%**	**9 097 966**	**(33 924)**	**(0.4%)**	**3.0%**	**9 405 649**	**9 371 506**
3.3.1	Safety Standards and Global Regime for Radiation and Transport Safety	2 871 138	2 788 549	(82 589)	(2.9%)	2 770 895	(17 654)	(0.6%)	2.9%	2 870 341	2 851 843
3.3.2	Application of Safety Standards for Radiation and Transport Safety	2 509 329	2 761 955	252 626	10.1%	2 734 029	(27 926)	(1.0%)	2.8%	2 840 475	2 811 606
Programme 3.3 - Radiation and Transport Safety		**5 380 467**	**5 550 504**	**170 037**	**3.2%**	**5 504 924**	**(45 580)**	**(0.8%)**	**2.9%**	**5 710 816**	**5 663 449**
3.4.1	Global Regime for Waste, Spent Fuel and Decommissioning Management	2 219 127	2 641 155	422 028	19.0%	2 654 248	13 093	0.5%	3.0%	2 721 475	2 735 113
3.4.2	Application of Safety Standards and Best Practices for radioactive Waste, Spent Fuel and Decommissioning Management	4 124 671	3 872 705	(251 966)	(6.1%)	3 883 536	10 831	0.3%	3.1%	3 992 536	4 003 923
Programme 3.4 - Management of Radioactive Waste		**6 343 798**	**6 513 860**	**170 062**	**2.7%**	**6 537 784**	**23 924**	**0.4%**	**3.1%**	**6 714 011**	**6 739 036**
3.5.1	Needs Assessment, Information Collation and Analysis	336 038	1 166 671	830 633	247.2%	1 486 868	320 197	27.4%	3.0%	1 202 184	1 533 742
3.5.2	Contributing to the Establishment of a Global Nuclear Security Framework	352 828	972 280	619 452	175.6%	1 308 558	336 278	34.6%	3.2%	1 002 967	1 346 010
3.5.3	Providing Nuclear Security Services	313 361	762 281	448 920	143.3%	1 553 738	791 457	103.8%	3.1%	786 006	1 600 968
3.5.4	Risk Reduction and Security Improvement	100 242	198 768	98 526	98.3%	250 836	52 068	26.2%	2.5%	203 665	256 682
Programme 3.5 - Nuclear Security		**1 102 469**	**3 100 000**	**1 997 531**	**181.2%**	**4 600 000**	**1 500 000**	**48.4%**	**3.1%**	**3 194 822**	**4 737 402**
Major Programme 3 - Nuclear Safety and Security		**23 601 870**	**28 683 643**	**5 081 773**	**21.5%**	**30 533 901**	**1 850 258**	**6.5%**	**3.0%**	**29 549 050**	**31 452 751**

Major Programme 4 - Nuclear Verification

Summary of Regular Budget Resources for the Biennium

(excluding Major Capital Investments)

Table 8

	Subprogramme / Programme	2009 adjusted budget	2010 estimates at 2009 prices	Variance 2010 over 2009 €	Variance 2010 over 2009 %	2011 prelim. estimates at 2009 prices	Variance 2011 over 2010 €	Variance 2011 over 2010 %	Price Increase	**2010 estimates at 2010 prices**	**2011 prelim. estimates at 2010 prices**
4.0.0.1	Overall Management, Coordination and Common Activities	1 063 133	1 113 063	49 930	4.7%	1 112 937	(126)	-	3.1%	1 148 036	1 147 904
		1 063 133	1 113 063	49 930	4.7%	1 112 937	(126)	-	3.1%	1 148 036	1 147 904
4.1.1	Operations	74 990 063	75 474 099	484 036	0.6%	77 926 987	2 452 888	3.2%	2.7%	77 503 950	80 060 071
4.1.2	Development and Support	41 094 077	41 748 593	654 516	1.6%	40 915 932	(832 661)	(2.0%)	2.7%	42 890 598	42 029 297
Programme 4.1 - Safeguards		**116 084 140**	**117 222 692**	**1 138 552**	**1.0%**	**118 842 919**	**1 620 227**	**1.4%**	**2.7%**	**120 394 548**	**122 089 368**
Major Programme 4 - Nuclear Verification		**117 147 273**	**118 335 755**	**1 188 482**	**1.0%**	**119 955 856**	**1 620 101**	**1.4%**	**2.7%**	**121 542 584**	**123 237 272**

Major Programme 5 - Policy, Management and Administration Services

Summary of Regular Budget Resources for the Biennium

(excluding Major Capital Investments)

Table 9

	Functions	2009 adjusted budget	2010 estimates at 2009 prices	Variance 2010 over 2009 €	Variance 2010 over 2009 %	2011 prelim. estimates at 2009 prices	Variance 2011 over 2010 €	Variance 2011 over 2010 %	Price Increase	**2010 estimates at 2010 prices**	**2011 prelim. estimates at 2010 prices**
5.0.1	Executive Leadership and Policy	12 280 830	12 132 287	(148 543)	(1.2%)	12 234 721	102 434	0.8%	2.8%	12 473 788	12 577 361
5.0.2	Legal Services	2 338 173	2 313 315	(24 858)	(1.1%)	2 330 457	17 142	0.7%	2.9%	2 379 251	2 396 939
5.0.3	Oversight Services	1 691 488	1 691 488	-	-	1 691 488	-	-	3.2%	1 745 597	1 745 592
5.0.4	Public Information and Communications	3 225 528	3 191 237	(34 291)	(1.1%)	3 214 884	23 647	0.7%	2.5%	3 271 789	3 295 828
5.0.5	Information and Communication Technology	9 140 173	9 043 001	(97 172)	(1.1%)	9 110 011	67 010	0.7%	2.6%	9 276 048	9 346 199
5.0.6	Financial Management and Services	7 075 863	6 951 169	(124 694)	(1.8%)	7 002 678	51 509	0.7%	2.2%	7 106 985	7 159 543
5.0.7	Human Resources Management	6 128 828	6 063 671	(65 157)	(1.1%)	6 108 603	44 932	0.7%	2.4%	6 209 794	6 256 335
5.0.8	General Services	27 969 526	29 307 179	1 337 653	4.8%	30 000 661	693 482	2.4%	1.9%	29 877 368	30 582 083
5.0.9	Conference, Languages and Publishing Services	5 200 251	5 144 966	(55 285)	(1.1%)	5 183 090	38 124	0.7%	2.1%	5 254 029	5 294 636
Major Programme 5 - Policy, Management and Administration Services		**75 050 660**	**75 838 313**	**787 653**	**1.0%**	**76 876 593**	**1 038 280**	**1.4%**	**2.3%**	**77 594 649**	**78 654 516**

Major Programme 6 - Management of Technical Cooperation for Development

Summary of Regular Budget Resources for the Biennium

(excluding Major Capital Investments)

Table 10

	Functions	2009 adjusted budget	2010 estimates at 2009 prices	Variance 2010 over 2009 €	Variance 2010 over 2009 %	2011 prelim. estimates at 2009 prices	Variance 2011 over 2010 €	Variance 2011 over 2010 %	Price Increase	**2010 estimates at 2010 prices**	**2011 prelim. estimates at 2010 prices**
6.0.1	Management of the technical cooperation programme	16 307 161	18 008 938	1 701 777	10.4%	18 255 493	246 555	1.4%	2.5%	18 455 888	18 710 617
Major Programme 6 - Management of Technical Cooperation for Development		**16 307 161**	**18 008 938**	**1 701 777**	**10.4%**	**18 255 493**	**246 555**	**1.4%**	**2.5%**	**18 455 888**	**18 710 617**

I.3 Major Capital Investments (MCI) for 2010–2011 and the establishment of the Major Capital Investment Fund (MCIF)

135. As foreseen in document GOV/2006/21 *(Planning for the 2008–2009 and 2010–2011 Programme and Budget Proposals)*, the Agency must undertake major infrastructure projects in the next biennium. These expenditures will be material, non-recurrent and extraordinary in nature and thus are shown separately from the operational portion of the regular budget. However, they are of high priority, and are indispensable for the Agency to deliver the full range of activities under the regular budget and the TC programme.

136. As was noted in the 2008–2009 Programme and Budget (GC(51)/2) "The Agency's presentation of essential investments is a transitional step towards capital budgeting"[1]. Therefore, the Secretariat makes its recommendations for Major Capital Investment (MCI) funding in the context of:

- A long term plan[2] of projected Agency MCI requirements between 2010 and the year 2019, based on clear criteria;
- A proposed MCI funding mechanism ("the MCI Fund" or MCIF) designed to enhance long term planning, ensure adequate/timely funding, allow for the provision and carryover of funds to be utilized over several years and also minimize peaks in annual regular budget proposals.

A. Background

137. Although many UN system organizations use some form of capital budgeting[3], most have predominately relied on cash basis budgeting to meet their funding needs (i.e. funds are appropriated in sufficient quantities only to meet the expected expenditure in the budget period covered). This methodology has left those organizations unable to accumulate funds over several budget periods for the implementation of large exceptional infrastructure projects. Major capital investment requirements have therefore been met via one-time increases in the regular budget or with special appropriations.

138. A major feature of a capital budgeting approach, together with a long term capital investment plan, is to allocate, accumulate and retain funds. This has required the establishment of a Reserve Fund which allows the retention ('carryover') of funds beyond the end of a budget biennium. This will ensure that sufficient resources are available when large capital expenditures need to be made.

139. The Agency already has had some relevant experience of capital budgeting:

(a) The Equipment Replacement Fund (ERF), which has been in existence since the 1990s, is essentially a capital fund devoted exclusively to replacing structural IT equipment.

(b) It has contributed annually to the Buildings Management Special Fund (BMSF) established by UNIDO as a reserve fund to ensure adequate resources for multi-biennia work related to VIC asbestos removal and associated renovations by enabling funds to be retained from biennium to biennium for such purposes. Each of the VIC-based organizations (VBOs) contribute a percentage to the BMSF.

(c) The Secretariat is also familiar with CTBTO's Capital Investment Fund (CIF) which, at $17.6 million in 2009, represented 19.5% of CTBTO's verification related major

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[1] The terms 'essential investments' and 'Major Capital Investments' are virtually synonymous. MCI is more consistent with wider UN system practice and includes a specific threshold of €200 000.

[2] The Major Capital Investment Plan or MCIP.

[3] The Report of the UN System Working Group on Capital Budgeting of the HLCM/FB Network of 19 January 2009 states that "Eight organizations (32%) do have some form of capital budgeting policy in place and explicitly engage in a variation of the practice/concept."

programme resources. The CIF is a multi-year fund used by CTBTO to finance its treaty monitoring facilities worldwide.

B. The MCIF

140. MCIF has been established as a Reserve Fund by the Board of Governors, as recommended in GOV/2009/1, in accordance with Financial Regulation 4.06[4] with immediate effect, to support major infrastructural investments. The proposed purposes and limits of this Fund and the authority to incur expenditure are set out in paragraph 138 of document GOV/2009/1. Specifically:

(a) The MCIF will be funded by appropriations in the capital regular budget and any other source as the Board may determine.

(b) The Director General will incur expenditures from the MCIF to implement the Major Capital Investment Plan (MCIP) in compliance with the Financial Regulations and Rules.

(c) The MCIF will be reviewed by the Board in the framework of the established programme and budget approval process to determine, inter alia, the adequacy of the fund balance and the level of appropriations required for the capital regular budget after considering such factors as extrabudgetary contributions received or pledged for items in the MCIP, rate of implementation, and adjustments to the MCIP due to changes in circumstances or prioritization.

141. Interest earned on holdings in the Fund is to be retained in the Fund.

142. Any savings from annual regular budget appropriations will be retained within the MCIF to fund those items identified in the MCIP[5].

143. In 2010, the MCIF will be funded as detailed in GOV/2009/52/Rev.1:

(a) By appropriations in the capital regular budget of €0.1 million;

(b) Extrabudgetary contributions of €6.0 million for the funding of items identified in the MCIP;

(c) Year-end savings of €6.5 million from 2009 regular budget appropriations to be achieved through, inter alia, immediate adoption of the austerity measures referred to above (see paragraph 6 above).

144. The projects/items in the MCIP will have been assessed in accordance with the following criteria; that such project/items:

(a) Be a compelling priority.

(b) Have a useful life in excess of one financial period (year).

(c) Have a total value throughout their lifespan of €200 000 or more.[6]

(d) Be of a major infrastructure nature (e.g. buildings, major IT backbone systems, and other infrastructure such as the Agency-wide Information System for Programme Support (AIPS)).

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[4] Financial Regulation 4.06 provides:
Reserve Funds may be established by the Board or by the Director General with the approval of the Board. The purposes and limits of each Reserve Fund and the authority to incur expenditures shall be clearly defined. Financial Regulations 4.04 and 4.05 shall not apply to Reserve Funds and balances remaining at the end of a financial year may be carried forward to subsequent financial years.

[5] To include those items referred to in the 2009 Programme and Budget as 'Essential Investments'.

[6] FAO's threshold has been set at $500 000.

(e) Be major expenditures of a one-off or infrequent nature which would cause significant distortion to levels of the operational portion of the regular budgets. Partial tranches/instalments could be provided over several years in order to avoid spikes in funding requirements in the regular budget in any one period.

145. Efforts will be made to accumulate sufficient balances in the MCIF from year to year to allow the offsetting of immediate costs of project construction/item purchase. In this manner, annual requests for appropriated support for the MCIF should be "smoothed out" as much as possible.

146. The following table shows the capital regular budget details for the MCIF for 2010 and 2011:

Table 11. Capital Regular Budget Details, 2010-2011

	Major Capital Item / Major Programme	2009 adjusted budget a/	2010 estimates at 2009 prices	2011 prelim. estimates at 2009 prices	Price Increase	2010 estimates at 2010 prices	2011 prelim. estimates at 2010 prices
2.1	Share of site development costs in Seibersdorf b/	193 990	-	275 000	3.8%	-	285 450
2.4	Replacement of ageing equipment in Seibersdorf and Monaco	-	-	880 000	3.8%	-	913 440
	Total Major Programme 2	**193 990**	**-**	**1 155 000**	**3.8%**	**-**	**1 198 890**
3.1	Incident and Emergency Centre (IEC)	20 420	-	-	-	-	-
	Total Major Programme 3	**112 310**	**-**	**-**	**-**	**-**	**-**
4.1	Enhancing Capabilities of the Safeguards Analytical Services (ECAS)	-	-	11 675 000	2.2%	-	11 931 850
4.1	Share of site development costs in Seibersdorf b/		-	825 000	2.2%	-	843 150
4.1	Monitoring equipment — JMOX	-	-	3 000 000	3.8%	-	3 114 000
4.1	Secure Agency-wide Computer Centre	766 638	-	-	-	-	-
	Total Major Programme 4	**3 367 074**	**-**	**15 500 000**	**2.5%**	**-**	**15 889 000**
5.0.1	Agency-wide Information System for Programme Support (AIPS)	-	-	7 700 000	2.5%	-	7 895 822
5.0.6	International Public Sector Accounting Standards (IPSAS)	319 514	100 000	100 000	2.2%	102 200	102 200
5.0.8	C Building electronics	670 196	-	2 650 000	3.8%	-	2 750 700
5.0.8	Furniture for M and C Buildings	-	-	500 000	4.1%	-	520 500
5.0.8	Agency share of M Building	500 000	-	500 000	-	-	500 000
5.0.8	Share of site development costs in Seibersdorf b/	-	-	1 400 000	3.8%	-	1 453 200
	Total Major Programme 5	**1 489 710**	**100 000**	**12 850 000**	**2.9%**	**102 200**	**13 222 422**
	Total Agency Programmes	**5 533 934**	**100 000**	**29 505 000**	**2.7%**	**102 200**	**30 310 312**

a/ Essential Investments as shown in 2008–2009 Programme and Budget, GC(51)/2 and The Agency's Budget Update for 2009, GC(52)/5/Rev.1.

b/ Total biennium cost of site development apportioned as follows: MP2 11%, MP4 33%, MP5 56%.

C. Long term MCI Plan and Funding Projection

147. Initially, the MCIF will require sufficient appropriated funds to fully cover urgent requirements in 2010 and 2011. These requirements are mainly due to the historic absence of a mechanism to build up funds. Additionally, investment amounts or instalments will be required for the MCIF to begin accumulating sufficient balances to allow for large out–year purchases in a manner that maintains year-to-year regular budget requests at a stable and reasonable level. The following table estimates: (a) Agency-wide MCI requirements through 2019 by major programme, the Agency's Major Capital Investment Plan; and (b) appropriation requirements. Section D below provides detailed descriptions of the items/projects within each major programme and estimated requirements for each. These forecasts are subject to revision as the years progress.

Table 12. Major Capital Investment Plan, 2010-2019 a/

	Needs by Major Programme and Funding Source	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	Total
2	**Nuclear Techniques for Development and Environmental Protection**	**835 590**	**1 198 890**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2 034 480**
	Funding Source:											
	Member States Assessments	-	1 198 890	-	-	-	-	-	-	-	-	1 198 890
	Extrabudgetary Capital	-	-	-	-	-	-	-	-	-	-	-
	Carry Forward of MCIF	835 590	-	-	-	-	-	-	-	-	-	
	MCI Fund Balance	-	-	-	-	-	-	-	-	-	-	
3	**Nuclear Safety and Security**	**-**	**-**	**-**	**-**	**3 000 000**	**3 000 000**	**3 000 000**	**3 000 000**	**500 000**	**3 000 000**	**15 500 000**
	Funding Source:											
	Member States Assessments	-	-	-	-	3 000 000	3 000 000	3 000 000	3 000 000	500 000	3 000 000	15 500 000
	Extrabudgetary Capital	-	-	-	-	-	-	-	-	-	-	-
	Carry Forward of MCIF	-	-	-	-	-	-	-	-	-	-	
	MCI Fund Balance	-	-	-	-	-	-	-	-	-	-	
4	**Nuclear Verification**	**6 785 058**	**15 889 000**	**15 250 000**	**5 600 000**	**2 000 000**	**800 000**	**800 000**	**800 000**	**400 000**	**-**	**48 324 058**
	Funding Source:											
	Member States Assessments	-	15 889 000	15 250 000	5 600 000	2 000 000	800 000	800 000	800 000	400 000	-	41 539 000
	Extrabudgetary Capital	6 000 000	-	-	-	-	-	-	-	-	-	6 000 000
	Carry Forward of MCIF	785 058	-	-	-	-	-	-	-	-	-	
	MCI Fund Balance	-	-	-	-	-	-	-	-	-	-	
5	**Policy, Management and Administration Services**	**4 981 552**	**13 222 422**	**9 857 000**	**2 163 000**	**5 476 000**	**2 813 000**	**3 649 208**	**4 449 208**	**4 504 000**	**3 547 000**	**54 662 390**
	Funding Source:											
	Member States Assessments	102 200	13 222 422	9 857 000	2 163 000	5 476 000	2 813 000	3 649 208	4 449 208	4 504 000	3 547 000	49 783 038
	Extrabudgetary Capital	-	-	-	-	-	-	-	-	-	-	-
	Carry Forward of MCIF	4 879 352	-	-	-	-	-	-	-	-	-	
	MCI Fund Balance	-	-	-	-	-	-	-	-	-	-	
	Total needs	**12 602 200**	**30 310 312**	**25 107 000**	**7 763 000**	**10 476 000**	**6 613 000**	**7 449 208**	**8 249 208**	**5 404 000**	**6 547 000**	**120 520 928**
	Funding Source:											
	Member States Assessments	102 200	30 310 312	25 107 000	7 763 000	10 476 000	6 613 000	7 449 208	8 249 208	5 404 000	6 547 000	108 020 928
	Extrabudgetary Capital	6 000 000	-	-	-	-	-	-	-	-	-	6 000 000
	Carry Forward of MCIF	6 500 000	-	-	-	-	-	-	-	-	-	
	MCI Fund Balance	-	-	-	-	-	-	-	-	-	-	

a/ Price adjustments have been applied to 2010–2011. For 2012–2019 figures are indicative given the time scope of the plan.

D. Descriptions of Specific Requests for 2010–2011[7]

Major Programmes 2 and 5: Site Development in Seibersdorf

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	Total
Funding Needs	**1 739**	**1 739**	-	-	-	-	-	-	-	-	**3 477**
Funding Source:											
Member States Assessments	-	1 739	-	-	-	-	-	-	-	-	1 739
Extrabudgetary Capital	-	-	-	-	-	-	-	-	-	-	-
Carry Forward of MCIF	1 739	-	-	-	-	-	-	-	-	-	
Total Funding Source	-	-	-	-	-	-	-	-	-	-	

Note that the total cost is €5.2 million over two years. The above figures represent the share of MPs 2 and 5. The remaining €1.69 million is included under MP4, ECAS (also divided over 2 years).

148. The Agency is in the process of acquiring an additional parcel of land adjacent to the laboratories in Seibersdorf. This land is approximately 55 000m2 (5.5 hectares) in area.

149. The funding of approximately €5.2 million will be required for the following major site infrastructures: site clearance, site layout, access roads, electricity and lighting, drainage and security perimeter fencing.

150. The present site acquired over forty years ago has no more room for future expansion, and acquisition of the new land is needed for future development in terms of new laboratories/research facilities (including the proposed new SAL building). In addition, space is needed for the proposed Agency warehouse.

Major Programme 2: Replacement of ageing equipment in Seibersdorf and Monaco

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	Total
Funding Needs	**550**	**913**	-	-	-	-	-	-	-	-	**1 464**
Funding Source:											
Member States Assessments	-	913	-	-	-	-	-	-	-	-	913
Extrabudgetary Capital	-	-	-	-	-	-	-	-	-	-	-
Carry Forward of MCIF	550	-	-	-	-	-	-	-	-	-	
Total Funding Source	-	-	-	-	-	-	-	-	-	-	

151. Ageing equipment in the laboratories at Seibersdorf and Monaco needs to be replaced, and additional equipment needs to be installed to maintain the necessary anticipated level of programme support to the scientific and technical major programmes as well as to the TC programme. The items requested include, at Seibersdorf: a next generation sequencer (Solexa), four climatized insect rearing containers and a liquid gas chromatograph. At Monaco, the needs are for an electronic microscope and a gas chromatograph.

Major Programme 3: Incident and Emergency Centre (IEC)

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	Total
Funding Needs	-	-	-	-	**3 000**	**3 000**	**3 000**	**3 000**	**500**	**3 000**	**15 500**
Funding Source:											
Member States Assessments	-	-	-	-	3 000	3 000	3 000	3 000	500	3 000	15 500
Extrabudgetary Capital	-	-	-	-	-	-	-	-	-	-	-
Carry Forward of MCIF	-	-	-	-	-	-	-	-	-	-	
Total Funding Source	-	-	-	-	-	-	-	-	-	-	

152. The IEC is the global focal point for international communication, preparedness and response to nuclear and radiological safety or security related incidents, emergencies, threats or events of media interest.

[7] Figures in the tables are in thousands of euro. Due to rounding, figures do not always reconcile with totals. Price adjustments have been applied to 2010–2011. For 2012–2019, figures are indicative given the time scope of the plan.

153. In order to enhance its capabilities to respond to large scale emergencies, IEC has to invest in information technology communication systems, in accordance with the start-of-the-art reliability and security standards.

154. The IEC also needs to build its capacity for emergency preparedness and response in Member States and for assistance purposes in emergencies. It has to invest in the development of an emergency detection global monitoring system and in field response and training equipment.

Major Programme 4:

Enhancing Capabilities of the Safeguards Analytical Services (ECAS)

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	Total
Funding Needs	**6 478**	**12 775**	**12 000**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**31 253**
Funding Source:											
Member States Assessments	-	12 775	12 000	-	-	-	-	-	-	-	24 775
Extrabudgetary Capital	6 000	-	-	-	-	-	-	-	-	-	6 000
Carry Forward of MCIF	478	-	-	-	-	-	-	-	-	-	
Total Funding Source	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	

The total above includes €29.57 million for ECAS and €1.69 million for site development in Seibersdorf. Per GOV/INF/2008/15, total cost of ECAS will be €37 million. The difference between €37 million and the figures above were funded prior to 2010 with extrabudgetary funds (€4.5 million) and reprogrammed 2008 carryover funds (approx. €1.2 million.)

155. In his report of 24 October 2007 (GOV/2007/59), the Director General informed the Board of Governors that the Agency's ability to provide independent and timely analysis of safeguards samples is at risk because of ageing technical infrastructure and analytical equipment at the Safeguards Analytical Laboratory (SAL), which includes the Nuclear Laboratory and the Clean Laboratory. It also noted that the facility does not meet UN System security standards and that it is not fully compliant with Agency safety requirements and security guidelines. As the highest priority, the report identified the procurement and installation of an ultra high sensitivity secondary ion mass spectrometer (UHS-SIMS) and the replacement of the obsolete SIMS with a new instrument. All of the critical improvements are to be addressed as components of a coordinated effort known as ECAS.

156. The Secretariat has developed an overall SAL improvement plan with two phases[8]. Phase 1 will address the sustainability and enhancement of the Agency's particle analysis capabilities for environmental samples and Phase 2 will address the future of the Nuclear Laboratory. For 2010, extrabudgetary pledges to ECAS have been received from Japan, Republic of Korea, Spain, and the United States of America.

Monitoring equipment — JMOX

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	Total
Funding Needs	**-**	**3 114**	**3 250**	**2 450**	**-**	**-**	**-**	**-**	**-**	**-**	**8 814**
Funding Source:											
Member States Assessments	-	3 114	3 250	2 450	-	-	-	-	-	-	8 814
Extrabudgetary Capital	-	-	-	-	-	-	-	-	-	-	-
Carry Forward of MCIF	-	-	-	-	-	-	-	-	-	-	
Total Funding Source	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	

157. Effective and efficient implementation of safeguards requires special verification equipment and instrumentation. As new facilities have come under safeguards, demands on the financial resources of Major Programme 4 have increased.

158. The development and implementation of a safeguards approach for a large mixed oxide fuel fabrication plant in Japan (JMOX) (Project 4.1.2.9), for which construction was scheduled to begin in October 2007, will continue to require significant resources. Although preliminary safeguards activities have begun based on the provision of design information of the facilities, the actual

[8] As envisioned in GOV/2007/59.

schedule for safeguards equipment procurement will depend upon updated construction plans and/or availability for the facilities to be placed under safeguards.

159. Capital investments of approximately €8.8 million primarily for non-destructive assay (NDA) and containment and surveillance equipment, will be needed in the period 2011 through 2013.

Monitoring equipment — Chernobyl

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	Total
Funding Needs	-	-	-	**3 150**	**1 000**	-	-	-	-	-	**4 150**
Funding Source:											
Member States Assessments	-	-	-	3 150	1 000	-	-	-	-	-	4 150
Extrabudgetary Capital	-	-	-	-	-	-	-	-	-	-	-
Carry Forward of MCIF	-	-	-	-	-	-	-	-	-	-	
Total Funding Source	-	-	-	-	-	-	-	-	-	-	

160. A new spent fuel conditioning facility has been built at the Chernobyl site to process the irradiated fuel assemblies. However, due to the determination that much of the spent fuel is damaged, major changes in the construction of the conditioning facility are required, which will affect the Agency's originally designed safeguards system. Thus, modification and upgrading of the latter is necessary as well as the acquisition of additional equipment.

161. The revised equipment cost for the conditioning facility (comprising 20 surveillance cameras and 20 NDA monitors) is estimated to be €2.7 million in 2013, including installation.

162. Additionally, €300 000 will be required in 2013 for surveillance and NDA monitoring equipment to be installed on the container transport system used to transfer the spent fuel containers from the conditioning facility to dry storage. €150 000 is also required in 2013 to integrate the surveillance/NDA/monitoring data from the conditioning facility, rail cars, reactor units and shelter to a central location for ease of access by the inspectors.

163. A new safe confinement (NSC or 'shelter') is being installed over the damaged Reactor Unit 4 at Chernobyl. €1.0 million will be required in 2014 for the shelter.

164. In summary, the total equipment costs associated with the Chernobyl shelter, conditioning facility, container transport system and site data integration is estimated to be €2.5 million in 2013 and €1.0 million in 2014. The total cost for installation of the equipment is €0.7 million in 2013.

Integrated analysis

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	Total
Funding Needs	-	-	-	-	**1 000**	**800**	**800**	**800**	**400**	-	**3 800**
Funding Source:											
Member States Assessments	-	-	-	-	1 000	800	800	800	400	-	3 800
Extrabudgetary Capital	-	-	-	-	-	-	-	-	-	-	-
Carry Forward of MCIF	-	-	-	-	-	-	-	-	-	-	
Total Funding Source	-	-	-	-	-	-	-	-	-	-	

165. To support information-driven safeguards, Major Programme 4 continues to develop a fully integrated information system, to make all information available to and reachable by any staff, on a need to know basis, in order to support both inspection activities in the field as well as analytical activities at headquarters. The foundation for this information system is being laid under the ISIS Re-engineering Project (IRP) by the development of an integrated data architecture (Integrated Safeguards Environment (ISE)).

166. The logical next steps covered by the Integrated Analysis project (4.1.2.17) include the enhancement of information collection, analysis and dissemination capabilities with a view to facilitate cross-evaluation and analysis of information from multiple sources, through the utilization of advanced analytical tools fully integrated with the ISE architecture. This will provide user friendly

information, facilitate human evaluation activities and better support information-driven safeguards implementation, from the point of both effectiveness and efficiency.

167. The Agency will enhance its analysis software capabilities, including enterprise information search, entity extraction, and parametric and secure search. It will also initiate the establishment of an information analysis laboratory to keep abreast of rapidly changing technologies and provide quick response capabilities for special investigations. Furthermore, it will start the development of a comprehensive virtual State file to provide a single point of entry for controlled and secure access to all State related information, including the enhancement of the existing Safeguards Additional Protocol System.

168. Finally, the Agency will start the development of an advanced information dissemination system that will provide multiple views of data relevant to the analytical endeavour (e.g. Geographic Information System (GIS)) for supporting geographically based activities such as inspections and programmatic review analysis, including time line analysis, in support of State evaluation. The definition and deployment of verification related knowledge management and e-learning software for the purpose of retaining and developing corporate knowledge to address the large turnover of technical staff will be undertaken during the same biennium. The cost of capital investments associated with this project is estimated to be €3.8 million.

Secure Agency-wide Computer Centre

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	Total
Funding Needs	**307**	-	-	-	-	-	-	-	-	-	**307**
Funding Source:											
Member States Assessments	-	-	-	-	-	-	-	-	-	-	-
Extrabudgetary Capital	-	-	-	-	-	-	-	-	-	-	-
Carry Forward of MCIF	307	-	-	-	-	-	-	-	-	-	
Total Funding Source	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	

169. In late 2007 the Agency began the construction of a highly secure and reliable Computer Centre. Its overall cost has been apportioned to the users, with Major Programme 4 requiring additional funding. When completed, this Centre will replace the multiple provisional spaces that have been in use for over a decade. The new space will be located in a more secure area of the VIC and will be equipped with best practice redundancies and safeguards. The funding requested represents ongoing support for the physical infrastructure and its security. It is not for new or replacement IT equipment. To date, approximately €2.4 million has been spent and €750 000 is budgeted in 2009. It is anticipated that an additional €0.3 million will be needed from Major Programme 4 in 2010 to complete the work.

Major Programme 5:

Agency-wide Information System for Programme Support (AIPS)

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	Total
Funding Needs	**-**	**7 896**	**7 026**	**420**	**1 030**	**420**	**420**	**420**	**420**	**1 030**	**19 082**
Funding Source:											
Member States Assessments	-	7 896	7 026	420	1 030	420	420	420	420	1 030	19 082
Extrabudgetary Capital	-	-	-	-	-	-	-	-	-	-	-
Carry Forward of MCIF	-	-	-	-	-	-	-	-	-	-	
Total Funding Source	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	

Total needs are approximately €28.9 million for AIPS through 2019. The €28.9 million consists of the €19.1 million shown in the table above plus an estimated cost for Plateau 1 (€9.8 million) that is anticipated to be funded during the 2008–2009 biennium.

170. AIPS refers to a set of organizational processes and IT applications that are intended to provide more efficient and effective support for programme management and delivery (GOV/INF/2007/5). Such systems — generically referred to as Enterprise Resource Planning systems (ERPs) — are widely used in the private and public sector and have been implemented in the majority of UN system organizations.

171. AIPS will support the one-house approach to programme delivery and help achieve consistency in the services provided to Member States by harmonizing the processes and consolidating information throughout the Agency. It will provide on-line information that is integrated, real time, accurate and accessible so that transparency will be increased and accountability enhanced. Management processes will be streamlined, for example, the AIPS project will result in the retirement of forty-five out of the current sixty IT support applications. The resulting efficiencies will better enable Agency staff to meet the challenges of increasing workloads.

172. Document GOV/2008/21/Rev.1 noted that although funding for the project was proposed under 'Essential Investments' in the Agency's Draft Programme and Budget for 2008–2009 (GOV/2007/1), the Board directed that funding be moved in its entirety to the category of CAURBs and that extrabudgetary funding be sought. GOV/2008/21/Rev.1 also requested, and received, Board approval to utilize the funds voluntarily provided by Member States from their individual allocations of the 2006 Cash Surplus in the regular budget fund for Plateau 1 of AIPS, plus regular budget savings from any major programme as well as extrabudgetary contributions to the project. To date, about €4.5 million has been earmarked for the project from the 2006 cash surplus and extrabudgetary contributions. This is short of the estimated €9.8 million required for successful completion of Plateau 1 (i.e. the implementation of processes relating to Finance and Procurement, including IPSAS requirements). However, it is anticipated that regular budget savings in other areas will enable the Agency to meet this level in 2009.

173. In its entirety, it is projected that the project will cost approximately €28.9 million through 2019 and the funding sources for Plateaus 2, 3 and 4 (addressing processes relating to Human Resources, Programme and Project Management, Meetings and Contacts, Travel and Transportation) are currently unidentified. The work on these remaining plateaus is scheduled to begin in 2010. Therefore, in order to avoid costly disruptions to the project implementation and to regularize funding, €7.9 million is required in 2011. Remaining funding needs will be included in the proposals for the regular budget appropriations for the 2012–2013 biennium. An initial estimate of €4.7 million for additional capital investments to continuously improve an established AIPS solution is also reflected for the years 2013–2019.

Provision for IT infrastructure investment

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	Total
Funding Needs	**-**	**-**	**2 831**	**1 743**	**2 096**	**1 043**	**943**	**1 743**	**4 084**	**2 517**	**17 000**
Funding Source:											
Member States Assessments	-	-	2 831	1 743	2 096	1 043	943	1 743	4 084	2 517	17 000
Extrabudgetary Capital	-	-	-	-	-	-	-	-	-	-	-
Carry Forward of MCIF	-	-	-	-	-	-	-	-	-	-	
Total Funding Source	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	

2010 and 2011 expenditure needs will be met with funds from the existing 2009 Equipment Replacement Fund (ERF).

174. Additional funding requirements for IT infrastructure will be included in the proposal for the regular budget appropriations for the year in which or after all funds of the ERF 2009 are fully expended as approved by the Board. In the future, the MCIF will be used to upgrade and replenish the IT infrastructure for the entire Secretariat in a wide range of technical areas, including central server computers, electronic storage facilities, networking equipment, communication systems and IT security facilities. The governance model for the MCIF should ensure the flexibility that will enable the Agency to adequately respond to threats as well as take advantage of opportunities in a rapidly changing IT industry. Investments in the central IT infrastructure will benefit all major programmes through improved communications with Member States, promoting one-house networking and information security standards, as well as reliable central storage, database and computing capacity.

International Public Sector Accounting Standards (IPSAS)

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	Total
Funding Needs	**102**	**102**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**204**
Funding Source:											
Member States Assessments	102	102	-	-	-	-	-	-	-	-	204
Extrabudgetary Capital	-	-	-	-	-	-	-	-	-	-	-
Carry Forward of MCIF	-	-	-	-	-	-	-	-	-	-	
Total Funding Source	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	

175. The Board of Governors has approved the adoption of IPSAS (GOV/COM.9/OR.268) as proposed in document GOV/2007/10 "Proposal to adopt International Public Sector Accounting Standards (IPSAS) by the Agency". The initial proposal was to implement IPSAS from the financial year beginning 1 January 2010. However, due to delays in the implementation of AIPS, which would enable changes in business processes that support IPSAS-compliant accounting practices, the Agency will likely not be able to implement IPSAS prior to January 2011. It will be necessary to maintain the technical expertise of the IPSAS project team and to augment relevant operational capacity during the transition period.

176. The estimated cost for additional staff, consultants, training, travel and contributions for the interagency support mechanism, and temporary assistance during the transition and post-implementation support period (2008–2012), is estimated at approximately €1.5 million. For 2010–2011, €102 200 is required per year from the regular budget. These amounts do not include the resources related to system support needed for the introduction of IPSAS, which are provided under AIPS (paragraph 170).

C Building electronics

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	Total
Funding Needs	**2 406**	**2 751**	**-**	**-**	**-**	**-**	**2 286**	**2 286**	**-**	**-**	**9 729**
Funding Source:											
Member States Assessments	-	2 751	-	-	-	-	2 286	2 286	-	-	7 323
Extrabudgetary Capital	-	-	-	-	-	-	-	-	-	-	-
Carry Forward of MCIF	2 406	-	-	-	-	-	-	-	-	-	
Total Funding Source	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	

177. The maintenance and refurbishment of the VIC is carried out, on behalf of all VIC-based organizations (VBOs), by the office of Buildings Management Services (BMS) of UNIDO. All associated costs, regardless of the direct beneficiary of the work, are shared by the VBOs according to an agreed formula. One of the major activities to be undertaken during the 2010–2011 biennium is the replacement of obsolete electronic equipment in the conference rooms of the C Building.

Furniture for M and C Buildings

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	Total
Funding Needs	**521**	**521**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**1 041**
Funding Source:											
Member States Assessments	-	521	-	-	-	-	-	-	-	-	521
Extrabudgetary Capital	-	-	-	-	-	-	-	-	-	-	-
Carry Forward of MCIF	521	-	-	-	-	-	-	-	-	-	
Total Funding Source	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	

178. The new M Building, generously provided by the Government of Austria includes furniture in the main conference and meeting rooms; however, all other offices are yet to be equipped. Additionally, the furniture in the conference and meeting rooms in the C Building is nearly thirty years old and much of it is scheduled for replacement in conjunction with the asbestos removal.

Buildings Management Services (BMS)

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	Total
Funding Needs	-	-	-	-	**1 350**	**350**	-	-	-	-	**1 700**
Funding Source:											
Member States Assessments	-	-	-	-	1 350	350	-	-	-	-	1 700
Extrabudgetary Capital	-	-	-	-	-	-	-	-	-	-	-
Carry Forward of MCIF	-	-	-	-	-	-	-	-	-	-	
Total Funding Source	-	-	-	-	-	-	-	-	-	-	

179. UNIDO has a capital fund — Buildings Management Special Fund (BMSF) — for major projects such as work related to asbestos removal. Contributions are shared by the VBOs, and the Agency's share is 54%. For various reasons, including lack of synchronization between UNIDO's and the Agency's budget cycles, the Agency has generally only funded BMSF's expenditures on a "pay-as-you-go" basis. This has resulted in an Agency 'debt' as of the end of 2008 of approximately €6.1 million a*s measured against the BMSF funding plan and UNIDO's budget*. If C Building electronics are factored out, the amount due to UNIDO to support planned future BMSF building maintenance work at the VIC is €1.7 million, reflected in the MCIP in 2014–2015.

Agency's share of M Building

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	Total
Funding Needs	**500**	**500**	-	-	-	-	-	-	-	-	**1 000**
Funding Source:											
Member States Assessments	-	500	-	-	-	-	-	-	-	-	500
Extrabudgetary Capital	-	-	-	-	-	-	-	-	-	-	-
Carry Forward of MCIF	500	-	-	-	-	-	-	-	-	-	
Total Funding Source	-	-	-	-	-	-	-	-	-	-	

180. Construction work on the new conference facility, M Building, provided by the Government of Austria to the VBOs, is virtually complete. This facility is to be used initially as swing space during asbestos removal in the current conference facilities in the C Building. Upon completion of the asbestos work, the Agency will use the conference space in the new building and the other VBOs will expand their meeting rooms into the Agency's current areas in the C Building. In this manner, all VBOs will all gain increased meeting room space, which is critical since the current conference facilities are often insufficient to meet demand.

181. The total cost of the new conference facility is approximately €52.5 million. In the negotiations with the VBOs leading to the Memorandum of Understanding signed by the four Executive Heads and the Foreign Ministry of Austria in October 2004, a financial contribution of €2.5 million by the four VBOs was agreed upon. This represents less than 5% of the total cost. The Agency, the main beneficiary of the M building conference facilities, is required to contribute €2.0 million, which has been budgeted in four equal annual instalments of €0.5 million each beginning in 2008.

Agency warehouse

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	Total
Funding Needs	-	-	-	-	**1 000**	**1 000**	-	-	-	-	**2 000**
Funding Source:											
Member States Assessments	-	-	-	-	1 000	1 000	-	-	-	-	2 000
Extrabudgetary Capital	-	-	-	-	-	-	-	-	-	-	-
Carry Forward of MCIF	-	-	-	-	-	-	-	-	-	-	
Total Funding Source	-	-	-	-	-	-	-	-	-	-	

182. Over time, it has become necessary to progressively convert existing storage space in the VIC to laboratories, data centres, archives and offices. This has resulted in a drastic reduction in storage space available for valuable equipment, including materials for essential field operations. Items have been stored in open garage space in the park decks, exposing the equipment to bad weather and making it susceptible to rapid deterioration and damage. This has attracted the concern of the UN Safety and Security Services. Moreover, some equipment and materials belonging to the safeguards programme are temporarily stored at the Austria Center under inadequate conditions. The required 1500 m^2 warehouse is estimated to cost approximately €2.0 million.

I.4 Draft Resolutions for 2010

183. This section presents the Agency's draft resolutions for 2010, including the appropriations for the 2010 regular budget, the allocation for the Technical Cooperation Fund (TCF) in 2010, and the Working Capital Fund (WCF) in 2010.

A. The regular budget

184. The regular budget appropriations for 2010 are presented in two parts: one for the operational regular budget (paragraphs 1 to 2 of Resolution A); and one for the capital regular budget (paragraphs 3 to 4 of Resolution A). The expenditures against these appropriations will be recorded separately, so that funds appropriated for the operational regular budget will not be used for major capital investments and vice versa.

185. The resolution for the regular budget appropriation contains an adjustment formula to take into account the exchange rate variations during the year. Member State contributions will be based on the scale of assessment fixed by the General Conference in September 2009.

B. Technical cooperation programme

186. The TC activities of the Agency are financed from the TCF and extrabudgetary contributions. The TCF is mainly comprised of voluntary contributions, for which a target is recommended each year by the Board of Governors, and National Participation Costs paid by recipient Member States. The target figure for voluntary contributions to the TCF recommended by the Board of Governors for 2010 amounts to $85 000 000 and to $86 000 000 for 2011 (GOV/2008/47/Rev.1).

187. The forecast of the resources for the TC programme for 2010 amounts to $139 122 360 and comprises: (a) $83 722 360 for estimated core project funding; (b) $43 000 000 for the estimated implementation levels of extrabudgetary activities; (c) $400 000 under UNDP projects; and (d) $12 000 000 for government cost sharing contributions.[1] This amount does not constitute a target for or limitation on funds and does not in any way prejudge the TC programme for 2010. The forecast of the resources for the TC programme for 2011 amounts to $102 240 434.

C. Working Capital Fund

188. The 52nd General Conference approved a continuation of the WCF at the €15 210 000 level for 2009. No change in this level is proposed for 2010, although it should be borne in mind that the average monthly requirement according to the proposed operational regular budget with price adjustment would be €26.0 million.

D. Other measures

189. The Board of Governors will convene a working group to consider priorities and resource requirements and address the Agency's budget for 2011 and the programme and budget for 2012–2013. This review will take into account, inter alia, the special role of the Agency, an appropriate balance between assessed and voluntary contributions, opportunities for efficiency gains through management reform and improved business practices, safeguards financing, the methodology for price adjustments, the financing of the activities of the Agency and the balance among them, and the incentive scheme for in-time payment of assessed contributions. The working group will draw to the extent necessary on the expertise of the Secretariat and its advisory groups.

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[1] Funds provided by Member States to augment projects in their own country.

Draft Resolutions

A. REGULAR BUDGET APPROPRIATIONS FOR 2010

The General Conference,

Accepting the recommendations of the Board of Governors relating to the regular budget of the Agency for 2010 [1],

1. Appropriates on the basis of an exchange rate of $1.00 to €1.00, an amount of €318 286 509 for the operational portion [2] of the regular budget expenses of the Agency in 2010 as follows [3]:

		€
1.	Nuclear Power, Fuel Cycle and Nuclear Science	31 790 659
2.	Nuclear Techniques for Development and Environmental Protection	36 551 831
3.	Nuclear Safety and Security	29 549 050
4.	Nuclear Verification	121 542 584
5.	Policy, Management and Administration Services	77 594 649
6.	Management of Technical Cooperation for Development	18 455 888
	Subtotal Agency Programmes	315 484 661
7.	Reimbursable Work for Others	2 801 848
	TOTAL	318 286 509

the amounts in the appropriation sections to be adjusted in accordance with the adjustment formula presented in Attachment A.1 in order to take into account the exchange rate variations during the year.

2. Decides that the foregoing appropriation shall be financed, after the deduction of
   - Revenues deriving from Reimbursable Work for Others (Section 7); and
   - Other Miscellaneous Income of €2 102 000 (representing €1 723 600 plus $378 400);

from contributions by Member States amounting, for an exchange rate of $1.00 to €1.00, to €313 382 661 (€253 819 345 plus $59 563 316), in accordance with the scale of assessment fixed by the General Conference in resolution GC(53)/RES/ ; and

[1] See document GC(53)/5.
[2] See Part I, Chapters I.1 and I.2 of GC(53)/5.
[3] Appropriation Sections 1–6 represent the Agency's major programmes.

3. Appropriates on the basis of an exchange rate of $1.00 to €1.00, an amount of €102 200 for the capital portion[4/] of the regular budget expenses of the Agency in 2010 as follows[5/]:

		€
1.	Nuclear Power, Fuel Cycle and Nuclear Science	—
2.	Nuclear Techniques for Development and Environmental Protection	—
3.	Nuclear Safety and Security	—
4.	Nuclear Verification	—
5.	Policy, Management and Administration Services	102 200
6.	Management of Technical Cooperation for Development	—
	TOTAL	102 200

the amounts in the appropriation sections to be adjusted in accordance with the adjustment formula presented in Attachment A.2 in order to take into account the exchange rate variations during the year.

4. Decides that the foregoing appropriation shall be financed from contributions by Member States amounting, for an exchange rate of $1.00 to €1.00, to €102 200 (€102 200 plus $0), in accordance with the scale of assessment fixed by the General Conference in resolution GC(53)/RES/ ;

5. Authorizes the Director General:

(a) To incur expenditures additional to those for which provision is made in the regular budget for 2010, provided that the relevant emoluments of any staff involved and all other costs are entirely financed from revenues arising out of sales, work performed for Member States or international organizations, research grants, special contributions or other sources extraneous to the regular budget for 2010; and

(b) With the approval of the Board of Governors, to make transfers between any of the Sections listed in paragraphs 1 and 3.

[4/] See Part I, Chapter I.3 of GC(53)/5.
[5/] Appropriation Sections 1–6 represent the Agency's major programmes.

ATTACHMENT

A.1 APPROPRIATIONS FOR THE OPERATIONAL PORTION OF THE REGULAR BUDGET IN 2010

ADJUSTMENT FORMULA IN EURO

		€		US$	
1.	Nuclear Power, Fuel Cycle and Nuclear Science	24 814 244	+	(6 976 415	/R)
2.	Nuclear Techniques for Development and Environmental Protection	29 578 653	+	(6 973 178	/R)
3.	Nuclear Safety and Security	22 998 335	+	(6 550 715	/R)
4.	Nuclear Verification	96 254 034	+	(25 288 550	/R)
5.	Policy, Management and Administration Services	66 903 486	+	(10 691 163	/R)
6.	Management of Technical Cooperation for Development	14 994 193	+	(3 461 695	/R)
	Subtotal Agency Programmes	255 542 945	+	(59 941 716	/R)
7.	Reimbursable Work for Others	2 542 368	+	(259 480	/R)
	TOTAL	258 085 313	+	(60 201 196	/R)

Note: R is the average United Nations dollar-to-euro exchange rate which will be experienced during 2010.

ATTACHMENT

A.2. APPROPRIATIONS FOR THE CAPITAL PORTION OF THE REGULAR BUDGET IN 2010

ADJUSTMENT FORMULA IN EURO

		€		US$
1.	Nuclear Power, Fuel Cycle and Nuclear Science	—	+	(— /R)
2.	Nuclear Techniques for Development and Environmental Protection	—	+	(— /R)
3.	Nuclear Safety and Security	—	+	(— /R)
4.	Nuclear Verification	—	+	(— /R)
5.	Policy, Management and Administration Services	102 200	+	(— /R)
6.	Management of Technical Cooperation for Development	—	+	(— /R)
	TOTAL	102 200	+	(— /R)

Note: R is the average United Nations dollar-to-euro exchange rate which will be experienced during 2010.

B. TECHNICAL COOPERATION FUND ALLOCATION FOR 2010

The General Conference,

Noting the decision of the Board of Governors on 16 June 2009 to recommend the target figure of $85 000 000 for voluntary contributions to the Agency's Technical Cooperation Fund for 2010, and

Accepting the foregoing recommendation of the Board,

1. Decides that for 2010 the target for voluntary contributions to the Technical Cooperation Fund shall be $85 000 000;

2. Notes that funds from other sources, estimated at $1 000 000, are expected to be available for that programme;

3. Allocates the amount of $86 000 000 for the Agency's Technical Cooperation programme for 2010;

4. Urges all Member States to make voluntary contributions for 2009 in accordance with Article XIV.F of the Statute, with paragraph 2 of its Resolution GC(V)/RES/100 as amended by Resolution GC(XV)/RES/286 or with paragraph 3 of the former Resolution, as appropriate;

C. THE WORKING CAPITAL FUND IN 2010

The General Conference,

Accepting the recommendations of the Board of Governors relating to the Agency's Working Capital Fund in 2010,

1. Approves a level of €15 210 000 for the Agency's Working Capital Fund in 2010;

2. Decides that the Fund shall be financed, administered and used in 2010 in accordance with the relevant provisions of the Agency's Financial Regulations[1/].

3. Authorizes the Director General to make advances from the Fund not exceeding €500 000 at any time to finance temporarily projects or activities which have been approved by the Board of Governors for which no funds have been provided under the regular budget, and

4. Requests the Director General to submit to the Board statements of advances made from the Fund under the authority given in paragraph 3 above.

[1/] INFCIRC/8/Rev.2.

PART II

Details of the Programme and Budget for 2010–2011 by Major Programme

Major Programme 1
Nuclear Power, Fuel Cycle and Nuclear Science

Introduction

For 2010–2011, Major Programme 1 will follow the directions established in the initial planning document for 2008–2009 and 2010–2011. The principal driving forces cited there and in *The Agency's Programme and Budget 2008–2009* have only grown stronger in the past two years. They are:

- The continuing rise in expectations around the world for nuclear power, as evidenced by the increased Member State interest reported in *International Status and Prospects of Nuclear Power*, published at the end of 2008, and by the increased growth projections for nuclear power by the Agency and others;
- The global long term trend in nuclear power development towards increased sustainability through more efficient use of resources and strengthened non-proliferation;
- Increasing interest in regional approaches in the areas of nuclear power and the fuel cycle.

Through Major Programme 1, the Agency provides services and advice to Member States on nuclear power and the nuclear fuel cycle for:

- Continued reliable and safe lifetime operation of present reactor systems and fuel cycle facilities;
- Expanded use of nuclear power, particularly for countries currently without nuclear power or with only small nuclear power programmes;
- Development of advanced reactor systems and their fuel cycles for the long term;
- Capacity building for energy analysis and planning;
- Objective consideration of the role of nuclear power for sustainable development;
- Development of nuclear knowledge management, information and communication.

With respect to 'continued reliable and safe lifetime operation of present reactor systems and fuel cycle facilities', Major Programme 1 provides information, guidance and assistance, particularly on: uranium and thorium resources, exploration and production; dealing with ageing facilities and an ageing workforce; plant life management; fuel performance and waste disposal; improved utilization of research reactors; and the conversion of research reactors from high enriched uranium (HEU) to low enriched uranium (LEU).

With respect to 'expanded use of nuclear power, particularly for countries currently without nuclear power or with only small nuclear power programmes', the Agency provides assistance complementing that provided by governments, private firms, industrial associations and other international organizations. The Agency's comparative advantages are in: establishing authoritative guidelines; disseminating experience, new knowledge and best practices; providing training; and assembling expert teams for peer reviews. The Agency has developed infrastructure milestones that cover not just human resources and necessary industrial support but also the development of legal and regulatory frameworks. For 2010–2011, Major Programme 1 will assist an increasing number of interested Member States in meeting those milestones. The programme also addresses the increased interest in regional and multilateral cooperation, particularly with respect to energy planning, energy security, infrastructure development, research reactors, fuel cycle facilities and waste management, as well as interest in possible supply assurance mechanisms.

With regard to the 'development of advanced reactor systems and their fuel cycles for the long term', the expansion of nuclear power includes the development of advanced reactors and fuel cycles with improved safety, security, non-proliferation and economic characteristics that also utilize resources more efficiently, e.g. through a closed fuel cycle with recycling of spent fuel. The major programme catalyses innovation and the underlying basic science to better assess alternative advanced systems and to increase the predictability, reliability and efficiency of research. Over the 2010–2011 biennium, greater emphasis will be placed on the increasing data needs for advanced fission and fusion reactor design. The International Thermonuclear Experimental Reactor (ITER) Council and the Agency have entered into a formal cooperation agreement to, among other things, keep the Agency abreast of developments for the benefit of a number of Member States with strong interest in fusion energy research outside the ITER Agreement.

The objective of ‘capacity building for energy analysis and planning’ is to provide energy analysis tools tailored to the special circumstances of different developing countries, and to respond to the increasing demand for such analysis due to growing energy needs and rising expectations for nuclear power.

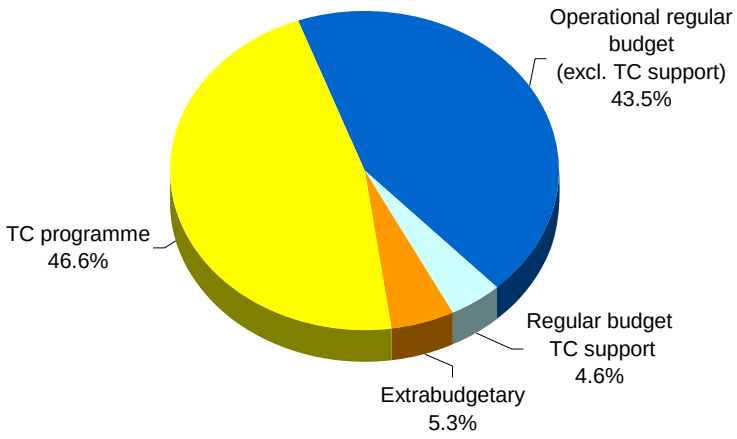
In the case of the ‘objective consideration of the role of nuclear power for sustainable development’, the major programme includes activities for encouraging the fair consideration of nuclear power in international environmental and development agreements, including post–2012 greenhouse gas (GHG) emission reduction schemes.

With respect to the ‘development of nuclear knowledge management, information and communication’, the major programme addresses the growing need to facilitate the safe expansion of nuclear power through the continuous and effective transfer of nuclear knowledge and information. This involves: linking centres of competence with centres of growth; supporting the process of ‘learning by doing’; taking full advantage of Agency information resources such as the International Nuclear Information System (INIS), registries, databases and training packages; and expanding new forms of cooperation among nuclear libraries.

Objective	Performance Indicators
— To enhance the contribution of nuclear science and nuclear power to sustainable development by achieving more effective use of current nuclear technologies, advancing nuclear science and technology, catalysing innovation, and sustaining and building up the experience, expertise, knowledge base and capacity needed to support existing and expanded use of nuclear power and nuclear science applications.	— Number of Member States using the Agency’s resources, guidance, recommendations, analytical tools, analyses and assistance, and the level of use. — Number of joint initiatives, joint products and other interactions with national and international organizations. — Consideration of the nuclear option in international forums.

Outcomes	Performance Indicators
— Increased use of the Agency’s knowledge resources, guidance and recommendations in nuclear science, managing nuclear facilities and programmes, addressing urgent issues throughout the fuel cycle and promoting the development of evolutionary and innovative designs and their applications.	— Number of Member States using the Agency’s resources, guidance, recommendations, analytical tools, analyses and assistance, and the level of use.
— Increased use of the Agency’s knowledge resources, analytical tools, analyses and assistance in energy system assessment, particularly in developing country Member States, and in international deliberations and analyses about sustainable development.	— Number of Member States using the Agency’s resources, guidance, recommendations, analytical tools, analyses and assistance, and the level of use.
— Increased international cooperation and national competence in nuclear science and better use of resources and facilities.	— Number of joint initiatives, joint products and other interactions with national and international organizations.
— Nuclear power option remains open for all interested Member States.	— Consideration of the nuclear power option in international forums.

2010–2011 Resources for Nuclear Power, Fuel Cycle and Nuclear Science[1]



Programmes	2010 *at 2010 prices*	2011 *at 2010 prices*	Total for biennium
Overall management, coordination and common activities	1 056 341	1 056 394	2 112 735
Nuclear Power	6 683 614	6 818 594	13 502 208
Nuclear Fuel Cycle and Materials Technologies	3 130 847	3 199 604	6 330 451
Capacity Building and Nuclear Knowledge Maintenance for Sustainable Energy Development	11 226 453	11 330 191	22 556 644
Nuclear Science	9 693 404	9 824 130	19 517 534
Total regular budget	**31 790 659**	**32 228 913**	**64 019 572**
Extrabudgetary	3 524 968	3 490 968	7 015 936
TC programme	46 586 037	15 290 499	61 876 536
Total resources	**81 901 664**	**51 010 380**	**132 912 044**

[1] Excludes unfunded activities of €1 043 366.

1.0.0.1 Overall management, coordination and common activities

Description	Main outputs
The overall coordination and advisory activities within the major programme relate to, and interact with, all of the programmes and are crucial for achieving efficiency and effectiveness in programme implementation. Their efficient implementation contributes to an increase in programme transparency and outreach. No new activities will be added in 2010–2011 beyond those added in 2008–2009 to address recent Agency management initiatives such as the Nuclear Power Support Group, the IAEA Nuclear Energy Series, the Continuous Improvement Group and communications.	Guidance, reports, policy documents, advice and recommendations.

1.0.0.1	**2010** *at 2010 prices*	**2011** *at 2010 prices*
Regular Budget	1 056 341	1 056 394
Extrabudgetary	—	—
Unfunded	—	—

Programme 1.1 Nuclear Power

Rationale: Enlarging the benefits of the peaceful uses of nuclear science and technology is a fundamental mandate of the Agency. This programme provides core engineering, technological and management support to interested Member States in the field of nuclear power with special emphasis on the needs of developing countries. Responses to the growing challenges facing nuclear power development have been incorporated into the new 2010–2011 programme cycle to ensure continued strengthening of deliverables to Member States. Four important goals have guided the formulation of priorities.

The first is to respond to the growing needs of interested Member States in their national programmes to launch nuclear power and to build sound infrastructures to support its safe, reliable and efficient operation. The development and implementation of an appropriate infrastructure to support nuclear power is an issue of central concern.

The second is to respond to important needs regarding performance, life management and optimization of operation and maintenance of nuclear power plants, including national decisions on the phase-out of nuclear power and/or possible decommissioning. This will be through the provision of a worldwide pool of information and expertise on internationally accepted and proven engineering and management practices in all relevant areas, including technical and human performance improvement, change management, and implementation of management systems. In an effort to meet the challenges faced by Member States planning to start nuclear power programmes, Major Programme 1 has been upgraded and improved by focusing on the development of needed guidance and information from lessons learned over the past 50 years.

The third goal is to act as a catalyst for innovation and to assist, as appropriate, in the resolution of scientific and technological issues related to nuclear energy for both electricity generation and other uses, such as desalination and hydrogen production. The Agency will coordinate research, promote information exchange and analyse technical data and results for various reactor lines (such as advanced water cooled reactors, high temperature gas cooled reactors, liquid metal cooled reactors and accelerator driven systems), and for innovative nuclear energy systems (INSs), including small and medium sized reactors (SMRs). The focus will be on supporting the establishment of nuclear power as a sustainable energy source for various applications, with competitive economics, very high levels of safety and proliferation resistance, efficient resource use and minimal waste. The International Project on Innovative Nuclear Reactors and Fuel Cycles (INPRO) will provide a forum for technology users and holders to jointly consider innovation and to coordinate programmes on INS development and on system analysis of the future role of nuclear energy, both regionally and globally. The Technical Working Groups on advanced reactor lines will provide advice on areas for international collaboration in technology development and marshal support in Member States for agreed activities.

Finally, it is important to manage, preserve and further enhance nuclear expertise, knowledge and competence in support of Member States, and to sustain the Agency's unique position as the leading global international organization in the nuclear field. The Agency will continue to update databases and knowledge supporting advanced reactor technology development and applications, and the optimization of performance, service life and infrastructure. This approach will help expand partnerships and the exchange of information to facilitate the beneficial use of nuclear energy, including non-electric applications.

The programme will introduce matrix management to more efficiently use staff resources, especially in technical cooperation projects, and will cooperate with other divisions and departments to eliminate redundant activities.

Objectives:

— To enhance the capability of interested Member States considering launching nuclear power programmes to plan and build the necessary infrastructure.
— To enhance the capability of interested Member States with existing and planned nuclear power programmes, in a rapidly changing market environment, to improve nuclear power plant operating performance, life cycle management including decommissioning, human performance, quality assurance and technical infrastructure, through good practices and innovative approaches consistent with global objectives on non-proliferation, nuclear safety and security.
— To enhance the capacity of Member States for the development of evolutionary and innovative nuclear system technology for electricity generation, for actinide utilization and transmutation, and for non-electric applications, consistent with sustainability goals.

Outcomes	Performance Indicators
— Use of the Agency's databases and recommendations in engineering, technology development and management practices in Member States.	— Number of Member States using the Agency's recommendations in engineering, technology development and management practices, evaluation methodology, guidance, databases and training methodologies.
— Increased cooperation between Member States for evolutionary and innovative nuclear reactor technology development and applications.	— Number of Member States cooperating in evolutionary and innovative nuclear reactor technology development and applications under Agency coordination.

Follow-up on programme-wide lessons learned from reviews, assessment, evaluations: The lessons learned, as reported in programme performance reports, evaluations and reviews, include the need to:

- Continue the dissemination of best practices through the publication of relevant technical documents;
- Improve the timeliness and quality of Power Reactor Information System (PRIS) data;
- Increase the level of cross-departmental cooperation within INPRO, which covers the issues of safety, proliferation resistance, environment, economics and waste management in a holistic manner, and hence requires support from and coordination with other programmes;
- Provide for the stable implementation of the programme and budget to meet new demands from Member States, particularly in the area of infrastructure support;
- Develop documents in a timely manner, including guidelines on applying the Agency's milestones for infrastructure building;
- Increase Agency capabilities to respond to requests from Member States interested in expanding or starting nuclear power programmes.

Lessons learned from past operating experience have also provided insights that will be used by Member States in building their own nuclear power programmes. Construction, commissioning and operational information will be shared appropriately with Member States as needed.

1.1	2010 *at 2010 prices*	2011 *at 2010 prices*
Regular Budget	6 683 614	6 818 594
Extrabudgetary	2 844 979	2 838 979
Unfunded	248 000	281 000

Specific criteria for prioritization:

1. First priority is given to activities in response to the increasing use of nuclear energy and to emerging development needs, to ensure sharing of the best practices in efficient operation, and to support the launching of nuclear power programmes and the development of nuclear power in the near term.
2. Second priority is given to activities underpinning innovative development of nuclear power for a long term sustainable future.
3. Third priority is given to activities fostering international cooperation, information exchange, knowledge management and education on nuclear power issues.

Subprogramme 1.1.1 Integrated Support for Operating Nuclear Facilities

Rationale: Subprogramme 1.1.1 focuses on recent experience and developments in Member States to identify key operating improvements and to provide a better understanding of factors affecting the operation, power uprating, maintenance, life management, modernization, human resources management, training, education and accreditation issues associated with nuclear power plants. The goal is to enhance the ability of Member States to meet changing needs and limit risks.

Many Member States have given high priority to continued operation of nuclear power plants beyond the timeframe originally anticipated (e.g. 30 or 40 years). Out of a total of 438 operating nuclear power plants, 352 have been in operation for more than 20 years (as of January 2009). The need for engineering support for operation, maintenance, safety review, life management for long term operation and education/training is increasingly evident.

Maintaining a reliable supply of appropriately skilled workers is a major challenge for the entire nuclear power industry. In some countries, an ageing workforce, declining student enrolment and the risk of losing accumulated nuclear knowledge and experience are already serious challenges, even for mature organizations.

To enhance and improve nuclear power plant safety and performance, it is important to maintain and update relevant information exchange systems (databases and web pages). Additional performance improvements are possible through analyses of data from operational and outage experience.

Fifteen Member States have asked to participate in TC projects for the 2009–2011 cycle related to strengthening their capabilities to improve nuclear power plant performance and service life. This is a significant increase from seven requests for the 2007–2008 TC cycle.

To improve nuclear power plant safety, performance and service life in the new competitive environment, publications in the IAEA Nuclear Energy Series and publications dealing with safety will be produced to strengthen the decision making capabilities of technical managers.

Objective: To enhance performance and safe lifetime operation of nuclear power plants.	
Outcome	**Performance Indicator**
— Use of Agency expertise and guidance to establish and implement best practices in the areas of infrastructure, human performance and nuclear power plant design and operation.	— Number of Member States using the Agency's resources, safety standards, guidance, recommendations and databases.

Programmatic changes and trends: This is a continuation of the subprogramme focusing on plant life management to enhance safety, improve performance and extend the service life of nuclear power plants.

Resource changes and trends: The proposed regular budget resource requirements, at 2009 prices, reflect an increase of 2.0% (€31 832) in 2010 as compared with 2009 and no change in 2011 as compared with 2010.

1.1.1	**2010** *at 2010 prices*	**2011** *at 2010 prices*
Regular Budget	1 712 156	1 712 741
Extrabudgetary	—	—
Unfunded	—	—

Projects

Title, duration and ranking	Main outputs
1.1.1.1 Engineering support for design, operation, maintenance, and plant life management for safe long term operation *Duration:* Recurrent *Ranking:* 1	New and updated safety standards and related technical supporting documents on specific engineering aspects of design, commissioning and construction, operation, maintenance, and plant life management of operating nuclear power plants; engineering safety/design review services to facilitate transfer of technology and exchange of experience; and exchange of information among Member States and sharing of national experiences.
1.1.1.2 Strengthening integrated management of human resources *Duration:* Recurrent *Ranking:* 2	IAEA Nuclear Energy Series guidance publications on specific aspects of management of human resources (including nuclear facility personnel training); information and national experience in the subject area exchanged among Member States.
1.1.1.3 Support plant performance improvement by information exchange *Duration:* Recurrent *Ranking:* 2	Updated information exchange systems and databases such as Country Nuclear Power Profiles, electronic catalogue of training services, Nuclear Economic Performance Information System, operating experience, and international databases on instrumentation and control (I&C) modernization projects, component reliability; operational/outage information exchanged among Member States and sharing of their national experience.

Subprogramme 1.1.2 Support for Expansion of Nuclear Power Plants

Rationale: After a slowdown in the construction of new nuclear power plants, there has been a marked increase in recent years in the number of Member States with operating nuclear plants that are interested in building new plants. The increasing number of requests for energy planning assistance today is likely to translate into a growing number of requests for implementation assistance in expanding nuclear power programmes in the future. This will require developing and sustaining the necessary nuclear power infrastructure and building expertise in operating organizations. This subprogramme will assist in the sharing of relevant experience among Member States regarding the effective expansion of nuclear power programmes using best practice tools, including a comprehensive application of management systems and benchmarking.

There is now a more competitive energy market than there was when most existing plants were constructed; at the same time, more demanding safety and environmental requirements are being imposed. Together, these pose special challenges to the managers of nuclear power plant operating organizations as they strive to implement cost effective solutions for designing, constructing and operating new plants.

Objective: To enable Member States with existing nuclear power plants to implement the design, construction and operation of new facilities based upon international experience.	
Outcome	**Performance Indicator**
— Use of Agency documents, materials and expertise, and consideration of international lessons learned in the planning of new nuclear power plants. Use of guidance documents for expansion of nuclear infrastructure.	— Percentage of Member States expanding their nuclear power plant fleets that request materials or services from the Agency.

Programmatic changes and trends: This is a continuation of the subprogramme focusing on new nuclear power plant construction by Member States with existing plants. Although, as noted in the rationale, there is increased demand for assistance in this area, a decrease in resources is proposed to allow a greater focus of resources on the Programme 1.1 priority of supporting countries considering new nuclear programmes. However, many of the results from Subprogramme 1.1.3 will apply also to the expansion programmes addressed in this subprogramme.

Resource changes and trends: The proposed regular budget resource requirements, at 2009 prices, reflect a decrease of 12.9% (€119 448) in 2010 as compared with 2009 and no change in 2011 as compared with 2010. Resources were moved to Subprogramme 1.1.3, *Infrastructure and Planning for the Introduction of Nuclear Power Programmes.*

1.1.2	**2010** *at 2010 prices*	**2011** *at 2010 prices*
Regular Budget	828 341	828 616
Extrabudgetary	—	—
Unfunded	—	—

Projects

Title, duration and ranking	Main outputs
1.1.2.1 Preparations for adding nuclear power plants *Duration:* Recurrent *Ranking*: 1	Guidance, recommendations and good practices in the IAEA Nuclear Energy Series and other publications on lessons learned in planning and preparation of new nuclear power plant projects; information and national experience in the subject area exchanged between Member States through benchmarking activities.
1.1.2.2 Management, implementation and engineering support for new nuclear power plant projects *Duration:* Recurrent *Ranking:* 2	Publications in the IAEA Nuclear Energy Series on management, implementation and engineering support for new nuclear power plant projects; benchmarks of experience on management, implementation and engineering support for such projects.
1.1.2.3 Utilization of advanced technologies for new nuclear power plant projects *Duration:* Recurrent *Ranking:* 2	Publications in the IAEA Nuclear Energy Series on utilization of advanced technologies in new nuclear power plant projects; guidance to nuclear power plant operating organizations in Member States to effectively use this information.

Subprogramme 1.1.3 Infrastructure and Planning for the Introduction of Nuclear Power Programmes

Rationale: In 2006, 2007 and 2008, the General Conference recognized, in resolutions GC(50)/RES/13, GC(51)/RES/14 and GC(52)/RES/12, that the development and implementation of an appropriate infrastructure to support the successful introduction of nuclear power and its safe and efficient use is an issue of central concern, especially for countries that are considering and planning their first nuclear power project. For the 2008–2009 programme and budget cycle, a new subprogramme was established to coordinate the Agency's

activities in this area. Given the long term nature of introducing a nuclear power programme and the significant increase in interest in a number of Member States in this area, this subprogramme will be continued and expanded in 2010–2011.

The significant increase in Member State interest in nuclear power in the past two years is evidenced by the fact that for the 2009–2011 cycle some 54 Member States have requested to participate in TC projects related to the introduction of nuclear power; this compares with 23 for the 2007–2008 cycle, which was a significant increase from 6 for the 2005–2006 cycle. According to the IAEA's high projection of future use of nuclear power, some eight additional Member States will have their first operating nuclear power plant by 2020. The low projection suggests that only two or three will have reached the stage of operation by this date. By the same date, some 20 others are likely to be in the later phases of preparation of their necessary infrastructure in this regard. Thus, an increase is needed in resources to support both regular budget and TC activities related to the introduction of nuclear power.

The infrastructure to support the implementation of a nuclear power project includes a wide range of topics, ranging from the physical facilities and equipment associated with the delivery of the electricity, the transport of material and supplies to the site, the site itself, and the facilities for handling radioactive waste material, to the legal and regulatory framework within which all of the necessary activities are carried out, and the human and financial resources necessary to provide confidence in the ability to implement the required activities.

These topics are addressed by different parts of the Agency, and the appropriate coordination of the activities of the Agency has been identified as a requirement. To address this issue and to develop a coordinated approach, an inter-Departmental Nuclear Power Support Group (NPSG) was established to develop a framework to provide effective and coordinated support to interested Member States. The aim is to identify the key functional activities necessary to enable the Agency to help assess a country's energy demand and identify the legislative and regulatory framework necessary to ensure public health and safety, protection of the environment, and reliable and economic operation of nuclear installations.

Objective: To achieve improved understanding by all Member States of the requirements and obligations that are essential in order to implement nuclear power programmes.	
Outcome	**Performance Indicator**
— Use by Member States considering the introduction of nuclear power plants of the guidance provided by the Agency leading to improved clarity of the requirements and obligations of any Member State operating or planning to operate nuclear power plants.	— Number of Member States using the Agency's support and guidance for the assessment and implementation of nuclear infrastructure and planning the first nuclear power plant.

Programmatic changes and trends: No changes are requested in the programme structure for this cycle. However, the programme has been adapted to respond to the significant increase in Member State interest in nuclear power.

Resource changes and trends: The proposed regular budget resource requirements, at 2009 prices, reflect an increase of 105.5% (€575 697) in 2010 as compared with 2009 and an increase of 5.3% (€59 260) in 2011 as compared with 2010. Funds have been shifted to this subprogramme from Subprogramme 1.1.2, *Support for Expansion of Nuclear Power Plants*.

1.1.3	**2010** *at 2010 prices*	**2011** *at 2010 prices*
Regular Budget	1 157 425	1 218 557
Extrabudgetary	940 872	940 872
Unfunded	—	—

Projects

Title, duration and ranking	Main outputs
1.1.3.1 Infrastructure support for Member States interested in nuclear power *Duration:* Recurrent *Ranking:* 1	Publications providing guidance for Member States considering the introduction of nuclear power plants; assistance to these Member States in the development of the appropriate infrastructure, either through review services or technical cooperation projects.
1.1.3.2 Planning and support for Member States' first nuclear power project *Duration:* Recurrent *Ranking:* 1	Publications in the IAEA Nuclear Energy Series on guidance for Member States that have decided to implement a nuclear power programme; publications providing advice and examples of national proven practices that have achieved successful results; preparation of documentation and material to support the inter-Departmental Nuclear Power Support Group. Databases and other tools to improve coordination of support to Member States in implementing nuclear power programmes.
1.1.3.3 Development of future nuclear infrastructure arrangements *Duration:* Recurrent *Ranking:* 1	Documentation on the assessment of the benefits of nuclear infrastructure development upon national economies; proposals for improvements in international and national infrastructure arrangements.

Subprogramme 1.1.4 Coordination of the International Project on Innovative Nuclear Reactors and Fuel Cycles (INPRO)

Rationale: Any major future increase in the use of nuclear power will depend largely on continued innovation in reactor and fuel cycle technology. International cooperation is important to facilitate such innovation: both technical innovation involving R&D and institutional innovation. Dialogue between today's technology developers and prospective future technology users is important to develop a joint understanding of challenges and global technology perspectives.

The Agency is in a unique position to provide a global forum for such cooperation on innovative nuclear systems. In response to related Member State requests, INPRO was launched in 2001; since then INPRO has found continued strong support from Member States through resolutions of the IAEA General Conference, from the UN General Assembly and from world leaders, for example through the G8. INPRO is implemented with contributions from all relevant Agency programmes and in synergy with other international initiatives.

The subprogramme is implemented in coordination and/or cooperation with parts of the following programmes and subprogrammes: 1.1.3, 1.1.5, 1.1.6, 1.2, 1.3, 2.4, 3.2, 3.4, 3.5 and 4.1.2.

Objective: To facilitate international dialogue and cooperation on the development of competitive, safe, environmentally benign and proliferation resistant innovative nuclear energy systems.

Outcome	Performance Indicator
— Increased international dialogue and cooperation on innovative nuclear systems through INPRO.	— Number of Member States or international organizations that are members of INPRO.

Programmatic changes and trends: Increased emphasis on dialogue between technology developers and users, continuing emphasis on INPRO Collaborative Projects.

Resource changes and trends: The proposed regular budget resource requirements, at 2009 prices, reflect an increase of 52.0% (€199 805) in 2010 as compared with 2009 and an increase of 4.2% (€24 249) in 2011 as compared with 2010.

1.1.4	**2010** *at 2010 prices*	**2011** *at 2010 prices*
Regular Budget	601 763	626 835
Extrabudgetary	1 581 228	1 617 228
Unfunded	—	—

Projects

Title, duration and ranking	Main outputs
1.1.4.1 Coordination and implementation of INPRO activities *Duration:* Recurrent *Ranking:* 1	Publications and tools on innovative nuclear system development; progress reports on selected INPRO projects.
1.1.4.2 Management of INPRO *Duration:* Recurrent *Ranking:* 1	Steering Committee guidance; effective interactions with other international initiatives; publications and outreach material, including Internet based products.

Subprogramme 1.1.5 Technology Development for Advanced Reactor Lines

Rationale: Continued technological advances are key to the future growth of nuclear power, and to its ability to provide sustainable, economically competitive power while meeting increasingly stringent safety requirements. Advances in competing fossil based technologies and the trend toward deregulated electricity markets mean that nuclear power plants must be built in shorter times at lower capital costs, and they must be highly reliable and economical to operate. Sustainability goals require improvements in nuclear fuel utilization as well as investigations of actinide and long lived fission product transmutation. Continuous feedback from technology development will form an important element for the further improvement of advanced reactor lines. Member States can benefit from the sharing of information and knowledge, performing cooperative assessments, and pooling resources for conducting joint research in advanced reactor technology. Furthermore, all Member States interested in using nuclear energy need balanced and objective information on advances in nuclear power technology.

This subprogramme brings together experts to pool R&D resources from national organizations towards agreed common goals. The global forum is provided through an existing structure of Technical Working Groups (TWGs) on major reactor lines (water cooled reactors, gas cooled reactors and fast reactors). The national representatives on these TWGs exchange information, discuss their activities and identify areas in which they are interested in collaborating with the Agency. For the agreed activities, the representatives then ensure appropriate support from their national experts. Collaboration is in the form of information exchange and coordinated research.

Objective: To achieve progress in the development of advanced nuclear power technologies that have competitive economics and meet stringent safety objectives through international information exchange and coordinated research.

Outcome	Performance Indicator
— Use by Member States of information provided through the Agency on technology development for advanced reactors.	— Number of Member States using information on technology development provided by the Agency.

Programmatic changes and trends: There continues to be a noticeable increase in interest in fast reactors and non-electric applications. Additionally, there continue to be requests for additional support by Member States in advanced water cooled reactor technology assessment and deployment.

Resource changes and trends: The proposed regular budget resource requirements, at 2009 prices, reflect an increase of 8.7% (€144 090) in 2010 as compared with 2009 and an increase of 1.8% (€32 651) in 2011 as compared with 2010.

1.1.5	**2010** *at 2010 prices*	**2011** *at 2010 prices*
Regular Budget	1 864 691	1 898 594
Extrabudgetary	322 879	280 879
Unfunded	238 000	281 000

Projects

Title, duration and ranking	Main outputs
1.1.5.1 Technology support for near term deployment *Duration:* Recurrent *Ranking:* 1	Publications in the IAEA Nuclear Energy Series and web based status report on the key technological advances and design features of advanced water cooled reactor designs available for near term deployment.
1.1.5.2 Technology advances in water cooled reactors for improvements in economics and safety *Duration:* Recurrent *Ranking:* 1	Balanced and objective status report on advanced water cooled reactor designs; report of CRP results on technology development; web based databases of thermohydraulic and thermophysical properties; educational material on water cooled reactor technology.
1.1.5.3 Support for innovative fast reactor technology development and deployment *Duration:* Recurrent *Ranking:* 1	Publications in the IAEA Nuclear Energy Series, plus supporting information on the web and at international meetings on the status of research and technology development of innovative fast neutron systems.
1.1.5.4 Technology advances for gas cooled reactors (GCRs) *Duration:* Recurrent *Ranking:* 2	Publications in the IAEA Nuclear Energy Series on: status of high temperature gas cooled reactor (HTGR) design and technology; performance of past HTGR test reactors and critical facilities; licensing experiences from past HTGRs and challenges for future HTGR nuclear power plants; HTGR economic analysis.
1.1.5.5 Common technologies and issues for small and medium sized reactors (SMRs) *Duration:* Recurrent *Ranking:* 1	Publications in the IAEA Nuclear Energy Series on: development of key enabling technologies common for SMRs of various types; non-technical factors that could facilitate deployment of SMRs in different countries or certain regions of countries; increased support to Member States planning to embark on to continue or to expand nuclear programmes and considering SMR options (through the technical cooperation programme).

Subprogramme 1.1.6 Support for Non-electric Applications of Nuclear Power

Rationale: Currently, nuclear power plants contribute about 14% of the world's electricity generation, but only about 6% of total primary energy use. Nuclear energy has a still unexploited potential to produce process heat and steam over a broad temperature range. There is experience with nuclear energy in the heat and steam market in the low temperature range. An extension appears possible in the short term in the areas of desalination, district heating, and tertiary oil recovery. In the higher temperature range, a significant potential for nuclear energy exists for hydrogen production and in the petro chemical industries, including for producing liquid fuels for the transportation sector.

The use of nuclear energy for the production of fresh water from seawater (nuclear desalination) is of broad interest in Member States due to acute water shortage issues in many arid and semi-arid zones. The desalination of seawater using nuclear energy (low temperature heat or electricity) is a demonstrated option that could help meet the growing demand for potable water.

Nuclear generated hydrogen has important potential advantages in terms of efficiency and cleanliness over other sources that will be considered for a growing hydrogen economy. Activities are being pursued in several Member States to realize hydrogen's potential in meeting energy security and diversity, and environmental needs.

Although nuclear industrial process heat applications have significant potential, they have not been realized to any large extent. One potential future application is the use of nuclear process heat for oil sand open-pit mining and deep-deposit extraction in Canada. Another area of active interest is coal gasification/liquefaction for cleaner fossil fuels. The production of synfuels and other hydrocarbons using nuclear heat is another area of significant promise.

Member States can benefit from sharing information and knowledge, performing collaborative assessments, and pooling resources for conducting collaborative research on the production of hydrogen with nuclear energy. Such collaboration, as well as promotional activities, can facilitate the movement from today's fossil based energy economy to a future sustainable hydrogen economy.

Objectives:

— To increase the capability of Member States faced with water scarcity problems and interested in deploying nuclear desalination demonstration projects to launch feasibility studies, to perform economic evaluations of integrated nuclear desalination systems, and to establish experience in nuclear desalination.

— To enhance information exchange, cooperative assessments, and collaborative research among Member States interested in non-electric applications mainly on nuclear desalination, nuclear hydrogen production, and industrial applications of nuclear energy, and on planning associated development and demonstration projects.

Outcome	Performance Indicators
— Use by Member States of information provided by the Agency on non-electric applications of nuclear energy, and on means of safely and economically coupling the production systems with nuclear reactors.	— Number of Member States using Agency provided information and expertise on non-electric applications of nuclear energy. — Number of Member States collaborating through the Agency to share information and to conduct collaborative R&D on the use of nuclear energy for non-electric applications.

Programmatic changes and trends: Activities on nuclear desalination and other non-electric applications, nuclear hydrogen production, and other industrial applications of nuclear energy will continue. The application of nuclear heat for various other industrial applications such as coal gasification, production of synthetic liquid fuels and heavy oil recovery has been of interest for many years and will also be reviewed.

Resource changes and trends: The proposed regular budget resource requirements, at 2009 prices, reflect an increase of 1.8% (€8 848) in 2010 as compared with 2009 and an increase of 2.7% (€13 500) in 2011 as compared with 2010.

1.1.6	**2010** *at 2010 prices*	**2011** *at 2010 prices*
Regular Budget	519 238	533 251
Extrabudgetary	—	—
Unfunded	10 000	—

Projects

Title, duration and ranking	Main outputs
1.1.6.1 Support for demonstration of nuclear seawater desalination *Duration:* Recurrent *Ranking:* 2	Reports on completed feasibility studies, construction/operation of demonstration projects, release of further improved versions of DEEP computer code; reports on advances in nuclear desalination technologies, and socioeconomic and environmental aspects of nuclear desalination, and on economic research and assessment of nuclear desalination projects; personnel trained in nuclear desalination technologies and economic evaluation.

Title, duration and ranking	Main outputs
1.1.6.2 Nuclear hydrogen production *Duration:* Recurrent *Ranking:* 2	Publication on the potential of HTGRs in process heat applications.
1.1.6.3 Industrial applications of nuclear power *Duration:* Recurrent *Ranking:* 1	Technical reports and documents on aspects of industrial applications of nuclear energy.

Programme 1.2 Nuclear Fuel Cycle and Materials Technologies

Rationale: The expected increase in the use of nuclear power will put increasing demands on nuclear fuel cycle activities and on understanding the behaviour of materials used in nuclear fuels. Developments are needed to increase uranium production, better utilize uranium resources, improve fuel performance, and properly manage spent fuel through long term storage and/or reprocessing and recycling. In particular, countries that will introduce uranium mining or nuclear power will require increased support in all these areas.

For nuclear power to be sustainable, the fuel cycle must also be sustainable. The development of advanced nuclear power plants (e.g. fast reactors) needs corresponding fuel cycle developments in the areas of advanced processing methods and fuels for recycling, including for transmutation.

Uranium demand is increasing and new uranium production centres will be needed. The increase in uranium demand and price has led to a dramatic rise in uranium exploration, mining and production activities all over the world. Though uranium is more or less uniformly distributed across all six continents, it is mostly mined and produced in Member States without nuclear power programmes and is mostly consumed in Member States with little or no uranium production. Authoritative and updated analyses of uranium resources and of the supply–demand situation are therefore needed. As new production centres are developed, often in countries with no previous experience of nuclear activities, Agency support will be needed to disseminate good practices in the uranium production cycle from exploration to closure and decommissioning with due regard to current and future economic, social and environmental aspects. Also the expected lack of experienced staff needs to be addressed. Thorium, the other basic raw material for nuclear fuel, has not yet been used on a large scale anywhere in the world. However, in recent years, there has been renewed interest in thorium utilization in some Member States. There is a need to initiate a database on the worldwide distribution of thorium and to explore different thorium fuel cycle options.

Only a few countries have complete nuclear fuel cycle activities and programmes. Countries entering into nuclear power for the first time are likely to depend on an external supply of fuel cycle services; hence, the assurance of such services is becoming an important international issue. Several proposals have been made on how to increase this assurance, for example, through a well functioning market combined with a backup mechanism based on international cooperation. Studies of the technical, legal and commercial implications of such cooperation will be needed.

Better understanding is also needed of fuel management issues. This includes improving the understanding of fuel behaviour, and helping Member States to develop fuel engineering capabilities and implement effective spent fuel management. The effective and reliable performance of fuel has a major impact on nuclear power's competitiveness and safety. More demanding fuel utilization strategies are being developed, including extended burnup, longer fuel residence times, higher thermal rates and greater operational flexibility. This puts new requirements on understanding and modelling material and fuel behaviour in reactors under normal, transient and accident conditions. The exchange of knowledge is important for better fuel design, coolant chemistry, performance codes and recommendations to fuel manufacturers.

Issues related to the back end of the cycle are highly relevant to the sustainability of nuclear power. Appropriate management of spent fuel is key. At present most countries have an 'interim' spent fuel storage policy, and long term storage of spent fuel is becoming a reality, with Member States now referring to storage periods of 100 years or more. As storage periods are extended, there are new institutional and technical challenges. In the last few years, interest has revived in reprocessing of spent fuel to recover uranium, plutonium and minor actinides for recycling, primarily in fast reactors. Multiple recycling of plutonium in fast reactors and burning of

minor actinides would not only more efficiently utilize mined uranium but also significantly reduce the volume, radiotoxicity and decay heat of high level waste. The Agency's focus will be on advanced partitioning processes aimed at improved proliferation resistance and efficient new fuels for advanced reactors.

As in other nuclear power related areas, there has been a depletion of trained human resources in all parts of the nuclear fuel cycle, including exploration and mining, fuel production, quality control, spent fuel storage, reprocessing, recycling and R&D on advanced and innovative nuclear fuels and fuel cycle options. There is therefore a need to augment training programmes and refresher courses for all parts of the nuclear fuel cycle.

Establishing a sustainable nuclear fuel cycle involves various technical, economic and political challenges. The Agency's activities on advanced nuclear fuel cycles are designed to facilitate fuel cycle options in Member States that make possible the peaceful, efficient and safe use of fissile and fertile materials while increasing proliferation resistance and environmental protection.

The programme is intended to play a catalytic role in the areas mentioned above, primarily by fostering and promoting the exchange of information and experience, analysing data, identifying best practices in sustainable nuclear fuel cycle activities, and encouraging cooperation among Member States and with other international organizations, such as the OECD/Nuclear Energy Agency and the World Nuclear Association, and with international initiatives like INPRO, GIF and GNEP.

Objective: To enhance and further strengthen the capabilities of interested Member States for policy making, strategic planning, technology development and implementation of safe, reliable, economically efficient, proliferation resistant, environmentally sound and secure nuclear fuel cycle programmes.	
Outcome	**Performance Indicators**
— Use of Agency guidelines, methods and procedures by interested Member States to plan and make policy, undertake research and development and implement safe, economic, proliferation resistant, environment friendly and sustainable nuclear fuel cycle activities.	— Number of Member States making use of Agency guidelines, methods and procedures. — Number of participants/organizations/Member States participating in Agency activities (e.g. technical meetings and CRPs) or contributing to databases and publications in the area of the nuclear fuel cycle and materials.

Follow-up on programme-wide lessons learned from reviews, assessment, evaluations: There has been continuous enhancement of uranium exploration, mining and milling activities all over the world. Accordingly, the Agency should continue its activities to promote good practices, with due regard to environmental issues, through training events, workshops and technical meetings addressing the problem of an ageing workforce. The Agency's activities will continue on fuel and fuel assembly behaviour and reactor water chemistry to help develop high performance and high burnup fuels for water cooled reactors, and long term spent fuel storage. With higher burnup, it will be increasingly important to better understand radiation damage of fuel structural materials, particularly for fast reactor fuel assemblies. The increasing interest in reprocessing and plutonium recycling, and in fast reactors with a closed fuel cycle, will require expanded Agency activities in advanced and innovative nuclear fuel cycles with a focus on the efficient utilization of uranium and thorium resources and proliferation resistance. Increased Agency activities are also foreseen on studying fuel cycle services, particularly for the benefit of Member States launching nuclear power programmes.

1.2	**2010** *at 2010 prices*	**2011** *at 2010 prices*
Regular Budget	3 130 847	3 199 604
Extrabudgetary	343 657	343 657
Unfunded	199 683	209 683

Specific criteria for prioritization:

1. First priority is given to fuel cycle activities in support of the increasing use of nuclear power and ensuring the efficient and safe production of uranium.
2. Second priority is given to activities underpinning the development of best practices and the technical basis for safety guides in the front and back ends of the nuclear fuel cycle, and the efficient use of fissile and fertile materials through improved fuels and fuel recycling, while ensuring proliferation resistance.
3. Third priority is given to activities fostering international cooperation and information exchange on nuclear fuel cycle issues.

Subprogramme 1.2.1 Uranium Resources and Production and Databases for the Nuclear Fuel Cycle

Rationale: The demand for uranium continues to increase, and new uranium resources will need to be developed. Much of the current uranium production is from Member States having no nuclear power programme, while consumption is mainly in Member States having little or no uranium production. This subprogramme will deal with issues throughout the complete uranium production cycle, including environmental aspects, and databases related to the nuclear fuel cycle. A significant and growing challenge for the expanding activity in this area is the global shortage of experienced staff coupled with the ageing of the present working population. For these reasons increased attention needs to be paid to training at all stages of the uranium production cycle, in particular for new countries entering the field.

Data collection, analysis and publication from worldwide sources are activities essential to obtain an accurate perspective on the supply and demand situation for uranium and related aspects of the fuel cycle. The Agency collaborates with the OECD/NEA to produce the biennial report *Uranium Resources, Production and Demand*, known as the 'Red Book'. In addition the programme prepares and maintains databases, including introducing a new database on thorium deposits. It is also important to have authoritative and reliable information on the policies and trends in nuclear fuel cycle programmes worldwide. The information needs to be maintained, updated, revised, and, when appropriate, integrated with other databases from the Agency and/or other international bodies (e.g. OECD/NEA). This activity maximizes the opportunities for synergies and facilitates consistency across data sets.

Objective: To improve the capability of Member States to understand, plan and develop nuclear fuel cycle programmes and activities, including uranium production, through the use of databases, publications, analyses and the various options and concepts as provided by the Agency.	
Outcomes	**Performance Indicators**
— Increased use by Member States and other Agency entities of the information provided through databases on nuclear fuel cycle activities, including uranium supply and demand assessment and analysis.	— Increase in use by target groups in Member States of the information and analyses provided by the Agency in the area of the nuclear fuel cycle.
— Consideration and/or use in Member States of information and guidance provided by the Agency on good practices in uranium production.	— Extent of use by the Member States of Agency information and guidance in the area of the uranium production cycle.

Programmatic changes and trends: The programme has been adapted in view of the increasing demands on the Agency to support Member States in all aspects of the rapidly growing uranium industry. The focus is on improving the efficiency of the Agency's activities in uranium geology and deposits, uranium resources, production and demand, uranium exploration and mining and processing, and nuclear fuel cycle databases.

Resource changes and trends: The proposed regular budget resource requirements, at 2009 prices, reflect an increase of 50.6% (€417 742) in 2010 as compared with 2009 and an increase of 0.4% (€5 408) in 2011 as compared with 2010. The increase is mainly needed to increase the support to Member States, as requested through demand for TC, and for other training activities related to new uranium exploration, mining and production in countries with limited or no experience in the area.

1.2.1	2010 *at 2010 prices*	2011 *at 2010 prices*
Regular Budget	1 284 808	1 290 373
Extrabudgetary	—	—
Unfunded	—	—

Projects

Title, duration and ranking	Main outputs
1.2.1.1 Updating uranium resources, production and demand and nuclear fuel cycle databases *Duration:* Recurrent *Ranking:* 1	In 2010, publication of an updated version of *Uranium 2009: Resources, Production and Demand*; publications on and updating of nuclear fuel cycle related databases (e.g. Nuclear Fuel Cycle Information Systems, World Distribution of Uranium Deposits).
1.2.1.2 Supporting good practices in the uranium production cycle, in particular for new countries *Duration:* 2006–2011 *Ranking:* 1	Updated reports on good practices in the uranium production cycle; Member State specialists trained through the TC programme.

Subprogramme 1.2.2 Nuclear Power Reactor Fuel Engineering

Rationale: The effective and reliable performance of fuel is a major factor defining the competitiveness and safety of nuclear power production. Optimization of nuclear power plant operations requires more demanding strategies, including extended burnup, longer fuel residence time, higher thermal rates and greater operational flexibility, while still decreasing fuel failure rates and satisfying appropriate safety margins for normal, transient and accident conditions. New challenges relate to the practical implementation of advanced reactor technologies and fuel cycles. Countries starting nuclear power programmes will need support in all aspects of the fuel cycle, including fuel engineering, manufacturing and behaviour.

To address these issues, degradation of nuclear material properties should be understood, and corresponding mechanisms and models developed. High burnup properties are also being studied, as are primary coolant technologies, water chemistry management, new irradiation and corrosion resistant materials, and advanced fuel designs and technologies. Taking into account the increasing costs and duration of direct irradiation testing, there is a growing role for simulation and modelling that presumes a wide range of experimental and theoretical work aimed at a better physical and mechanistic understanding of the nature of radiation damage. Such fundamental scientific developments in the area of radiation materials science require advanced characterization and examination techniques that are available only in a limited number of large research centres. This underlines the importance of international collaboration involving countries with less developed research infrastructure. Greater precision and more complete experimental data on the processes occurring in irradiated fuel materials and fuel assembly structures will allow improved understanding and more accurate modelling of fuel behaviour under operational conditions.

The Agency is the only independent and non-commercial international organization that provides a forum for the exchange of knowledge and for the promotion of best practices in the technical, scientific and safety aspects of the utilization and reliability of nuclear fuel. It is also well placed to promote the harmonization of fuel fabrication technologies and associated QA/QC, as well as QMS/EMS development according to the highest international standards.

This subprogramme focuses on the exchange of information on nuclear power reactor fuel research, development, design, fabrication, performance and modelling under normal, transient and accident conditions. The lessons learned may well become a reference for Member States that operate or plan to operate reactors of different designs. The subprogramme is concerned as well with R&D on new fuels for advanced and innovative reactors and fuel cycles.

Objective: To improve, through the transfer of information and by sharing experience, the capability of interested Member States to organize an adequate R&D programme supporting effective design and manufacturing technologies and to optimize in-pile fuel performance ensuring reliability and economic efficiency in nuclear fuel utilization, while adhering to appropriate safety margins.

Outcome	Performance Indicator
— Use in interested Member States of information provided by the Agency, and the experience exchanged, to improve fuel design, manufacturing and understanding to provide better fuel performance.	— Organizations in Member States relying on, or considering, advanced technology for improving power reactor core and primary circuit material performance for enhanced utilization, economics and reliability of the fuel, on the basis of information provided by the Agency.

Programmatic changes and trends: The Consultants Meeting on the assessment of Member State needs for international cooperation in the area of nuclear power reactor fuel engineering (December 2007, Vienna) recommended a change in the structure of Subprogramme 1.2.2 to address overlaps between its three projects that created uncertainty about their objectives. This restructuring involved reorganization of objectives and activities from three into two projects for the 2010–2011 biennium.

An increasing number of countries require support in introducing nuclear power. Important components are a full understanding of the behaviour of nuclear fuel and ensuring reliable fuel supplies. The Agency's programme needs to reflect these demands and ensure that all countries have access to the best available information and technology and that the Agency can provide adequate support.

Resource changes and trends: The proposed regular budget resource requirements, at 2009 prices, reflect an increase of 8.2% (€45 226) in 2010 as compared with 2009 and an increase of 3.2% (€19 358) in 2011 as compared with 2010.

1.2.2	**2010** *at 2010 prices*	**2011** *at 2010 prices*
Regular Budget	615 135	635 067
Extrabudgetary	—	—
Unfunded	—	—

Projects

Title, duration and ranking	Main outputs
1.2.2.1 Nuclear power reactor fuel research and development, design and manufacturing *Duration:* 2006–2011 *Ranking:* 2	Publications on: advanced pellet materials and fuel rod designs for water cooled power reactors; PHWR fuel design, fabrication and performance; status of and trends in nuclear power reactor fuel performance and technology (TWGFPT proceedings). Drafts on: QMS, QA/QC in fuel design, manufacturing and procurement.
1.2.2.2 In-reactor behaviour and operational experience of fuel for nuclear power reactors *Duration:* 2006–2012 *Ranking:* 2	Publications on: fuel rod instrumentation; in-pile and post-irradiation examination and poolside inspection techniques; review of fuel failures in water cooled reactors (1994–2006). Drafts on: water chemistry and clad corrosion/deposition including fuel failures; fuel behaviour and modelling under LOCA and RIA conditions; fuel integrity during normal operations and accident conditions in PHWR; hot-cell PIE and pool-side inspection. Technical support for the IAEA PIE facilities database and joint IAEA–OECD/NEA international fuel performance database; codes for fuel behaviour modelling.

Subprogramme 1.2.3 Management of Spent Fuel from Nuclear Power Reactors

Rationale: Appropriate management of the increasing quantities of spent fuel is a key issue for the steady and sustainable growth of nuclear energy. Spent fuel from nuclear power reactors requires safe, secure, environmentally sound and efficient management. Two main management routes are considered: reprocessing of the spent fuel and recycling the energy resources, or disposing of the spent fuel as waste. With a majority of Member States still undecided whether or not to reprocess fuel, and with no repositories for spent fuel or high level waste in operation, long term storage continues to remain a reality. The issues connected to the management of spent nuclear fuel will also be of high importance for countries planning to start a nuclear programme, to ensure that appropriate planning is done.

More than 400 nuclear power reactors are in operation today and a large amount of spent fuel is stored either at or away from the reactor sites. Thus, a major issue in many countries is the need to expand existing capacities at reactor sites or provide additional storage space. Also, the long term aspects of storage, with periods of 100 years and even beyond, constitute new institutional and technical challenges, for example, the management of liabilities, knowledge, experience and information over times spanning several generations, and the longevity of spent fuel packages and structural materials of storage facilities. There is a need for safe storage of spent fuel that can maintain spent fuel integrity over long periods of time and keep the current and future options for spent fuel management open. Regional cooperation and approaches are seen to provide both attractive and challenging prospects for Member States from the economic, safety, environmental and security points of view.

Although spent fuel reprocessing and recycling is an established practice in some countries, most countries are still considering the options. As can be seen from several national and international initiatives, there is an increasing interest in reprocessing and closed fuel cycles, not least in a longer time perspective. Reprocessing and recycling will facilitate efficient utilization of natural resources and could simplify waste management. This subprogramme will address conventional spent fuel reprocessing, while advanced fuels and fuel cycles are addressed in Subprogramme 1.2.4. Management of spent fuel as waste is addressed in Programme 3.4.

Given the importance of spent fuel management to the future of nuclear energy, fostering the application of good practices and sharing of experience is a particularly relevant task for the Agency and of importance, not least, for the signatory countries of the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management.

Objective: To improve the capability of interested Member States to plan, develop and implement safe, environmentally sound and efficient spent fuel management by the identification and mitigation of problems, using information and guidance provided by the Agency.

Outcomes	Performance Indicators
— Increased use by Member States with nuclear power plants of Agency guidance in the planning or implementation of national programmes for power reactor spent fuel management. — Improved implementation of spent fuel management programmes in Member States.	— Number of Member States benefiting from Agency spent fuel management activities, using information or guidance by the Agency for the planning or implementation of state of the art technologies in spent fuel management facilities or improving spent fuel storage and management conditions.
— Improved cooperation between Member States in sharing information and collaborating on spent fuel management.	— Number of Member States using information or guidance by the Agency for the planning or implementation of state of the art technologies in spent fuel storage facilities or improving spent fuel storage and management conditions.

Programmatic changes and trends: This subprogramme has prioritized issues associated with the long term storage of power reactor spent fuel. As Member States are expressing renewed interest in spent fuel recycling, the activities to track developments in spent fuel treatment (reprocessing, conditioning) will increase. The emphasis will be on the development of guidance and information related to increasing quantities of stored spent fuel and durations of storage, and on providing assistance to countries starting nuclear power programmes.

Resource changes and trends: The proposed regular budget resource requirements, at 2009 prices, reflect an increase of 1.1% (€5 565) in 2010 as compared with 2009 and an increase of 3.4% (€18 064) in 2011 as compared with 2010.

1.2.3	**2010** *at 2010 prices*	**2011** *at 2010 prices*
Regular Budget	542 845	561 455
Extrabudgetary	—	—
Unfunded	—	—

Projects

Title, duration and ranking	Main outputs
1.2.3.1 Promoting strategies for spent fuel management for established and newcomer nuclear countries *Duration:* 2008–2011 *Ranking:* 2	Publications on systems integration in spent fuel management and methodologies and tools for estimating spent fuel management costs.
1.2.3.2 Providing technical guidance on good practices for long term management of spent fuel *Duration:* 2006–2011 *Ranking:* 2	Publications on: burnup credit applications; update on influence of high burnup and MOX fuel and on spent fuel management; and spent fuel treatment options. Compilation of spent fuel storage operations lessons learned. Proceedings of the international conference on nuclear fuel for nuclear power reactors. Organization of a CRP on spent fuel performance assessment and research (SPAR III).

Subprogramme 1.2.4 Topical Issues of Nuclear Fuels and Fuel Cycles for Advanced and Innovative Reactors

Rationale: In recent years, a number of new international initiatives have been undertaken on the development of evolutionary, advanced and innovative fuels and fuel cycle technologies that make efficient use of fissile and fertile materials, ensure their proliferation resistance, and minimize the volume, radiotoxicity and decay heat of high level waste. The focus is on advanced aqueous and pyro processes for partitioning and fast reactors with multiple recycling of plutonium and minor actinides (MAs). One key component is the development of new fuels for advanced reactor systems. For fast reactors, in particular, there is a need to develop structural materials that are resistant to irradiation damage at high fast neutron fluence. Towards this, the role of simulation and modelling in understanding and improving the performance of structural materials is growing. Cross-cutting activities involving basic science in radiation damage and the development of advanced characterization methods require international cooperation as well as collaboration within the Agency. There is increasing interest in robust fuels for small and medium sized reactors. It is also essential to maintain and update the country nuclear fuel cycle profiles and the database on MAs. The main objectives of all these activities are proliferation resistance, minimization of the environmental burden, and management and utilization of fissile and fertile materials, including ex-defence plutonium, reprocessed uranium and MAs as well as thorium.

There is also an interest in the development of a possible new framework for the utilization of nuclear energy based on multilateral approaches to fuel cycle services. An important consideration is that States need to have confidence that they will be able to obtain fuel cycle services in a predictable, stable and cost effective manner over the long term. They need to have confidence in a well functioning market, but also to have backup mechanisms with the objective of protecting against disruptions (i.e. disruptions unrelated to technical or commercial considerations).

The Agency will focus its efforts within this subprogramme on the transfer of information and experience, the fostering of cooperation in nuclear fuel cycle issues, and the technical, legal and commercial implications of such cooperation for different fuel cycle services. This will meet the needs of Member States in addressing nuclear fuel cycle issues and concerns by identifying, assessing and documenting the current status, trends and emerging technologies for various options for the entire nuclear fuel cycle, and in obtaining authoritative and factual information on the complex issues involved.

Objectives:

— To enhance the capability of interested Member States to build up advanced or innovative technologies by promotion of information exchange, including the assessment of the constructive use of such innovative technologies to resolve some of the issues associated with existing nuclear fuel cycles for sustainable growth of nuclear energy.

— To increase the capability of interested Member States to develop technologies through information exchange on the management of fissile and fertile material and facilitate knowledge.

Outcomes	Performance Indicators
— Development of nuclear fuel cycle technology in interested Member States for sustainable nuclear energy.	— Use made by target groups in Member States of the technologies and experience, analysis and information systems provided by the Agency in the area of innovative nuclear fuel cycles and nuclear materials management.
— Planning, in interested Member States, for fuel cycle improvements in terms of sustainability and proliferation resistance.	— Use in or by Member States of the Agency's information on the management options for the various nuclear materials and nuclear fuel cycles.

Programmatic changes and trends: In 2010–2011, this subprogramme will place special emphasis on structural materials and radiation damage that is of value for all reactor types as well as proliferation resistant recycling methods. It will also devote increasing effort to the technical aspects of increased international cooperation on the fuel cycle.

The titles of Projects 1.2.4.1 and 1.2.4.2 are more focused. They are now, for 1.2.4.1, *Supporting emerging nuclear fuel cycle technologies for advanced and innovative reactors* and, for 1.2.4.2, *Supporting development of proliferation resistant fuel cycles.*

Resource changes and trends: The proposed regular budget resource requirements, at 2009 prices, reflect an increase of 3.9% (€25 030) in 2010 as compared with 2009 and an increase of 3.5% (€23 500) in 2011 as compared with 2010.

1.2.4	**2010** *at 2010 prices*	**2011** *at 2010 prices*
Regular Budget	688 059	712 709
Extrabudgetary	343 657	343 657
Unfunded	199 683	209 683

Projects

Title, duration and ranking	Main outputs
1.2.4.1 Supporting emerging nuclear fuel cycle technologies for advanced and innovative reactors *Duration:* 2006–2011 *Ranking:* 1	Publications on: CRP results on partitioning and transmutation; fuels and fuel cycles for fast reactors; and handbook on coated particle fuel.
1.2.4.2 Supporting development of proliferation resistant fuel cycles *Duration:* 2004–2011 *Ranking:* 1	Publications on: pathway analysis of proliferation resistance in cooperation with INPRO. Country nuclear fuel cycle profiles.

Programme 1.3 Capacity Building and Nuclear Knowledge Maintenance for Sustainable Energy Development

Rationale: Continued volatile energy markets and high international market prices for energy are expected to burden further economic development. Energy import bills are increasingly eroding foreign currency earnings, especially in the least developed countries. While past price volatility was largely the result of politically motivated supply constraints, the current situation is the result of global energy demand growth and underinvestment in essential energy supply infrastructures. In the wake of high energy costs for producers and policies to foster biofuel production, the prices of food and essential materials have also increased substantially, further endangering socioeconomic development. Compounding the uncertainty that now characterizes energy markets is the call for cooperative action to combat climate change. In their search for long term and robust options, numerous Member States are therefore revisiting their national energy options. And nuclear power is one technology that many countries are turning to again, particularly developing countries with limited domestic energy resources and high import dependence, for reasons of supply security, price stability and environmental protection.

Moreover, all plausible long term energy scenarios show demand growing fastest in developing countries, especially if the United Nations Millennium Declaration on poverty eradication and the Plan of Implementation agreed at the World Summit on Sustainable Development (WSSD) are to be met. Consequently, nuclear energy is expected to play a greater role in meeting future energy requirements in the developing world. Sound energy system analysis that includes all demand and supply side options is a necessary prerequisite for long term energy planning. Nuclear power is a capital and knowledge intensive technology with inherently long lead times from initial planning to first electricity delivery to the grid. Once built, the technology's impact on the system is likely to last for more than half a century. Energy planning therefore has two components. The short term component looks 10–15 years ahead, and the longer term component addresses approximately the next 15–50 years. The short term period focuses on fixing imminent supply shortages, addressing issues of access and affordability or mitigating local health and environmental damages. It is during this period that preparatory work for the introduction of nuclear power may be initiated. The identified solutions, however, should dovetail with longer term energy development opportunities — not foreclose them.

The introduction of nuclear power creates a need for capacity building in the areas of nuclear knowledge and nuclear information, energy–environment planning and comparative assessment of different energy options. In particular those Member States wishing to embark on national nuclear energy programmes would like to base their decisions on sound energy system analysis and develop, early in the process, comprehensive nuclear knowledge and information. Capacity building in the nuclear knowledge and information context embraces all activities required to support informed decision making on issues surrounding the full life cycle of nuclear power. Knowledge and information need to be not only developed and preserved, but above all disseminated. Nuclear education, training and information transfer are essential cornerstones in preparing a country for a successful nuclear power programme. Planning, information and knowledge management are not one time activities. Rather, their effectiveness depends on their continuous application, enhancement and transfer. This is particularly important because information and knowledge are among society's fundamental resources and human-made assets. Nuclear knowledge management, the International Nuclear Information System (INIS) and the IAEA Library are instruments for preserving and enhancing these assets. The Agency's Member States are aware of these development challenges and, consistent with their national sustainable development objectives, routinely request Agency assistance in this regard.

Objectives:

— To enhance the capacity of Member States to perform their own analyses of electricity and energy system development, energy investment planning and energy–environment policy formulation and their economic implications.
— To sustain and effectively manage nuclear knowledge and information resources for the peaceful uses of nuclear science and technology.
— To support Member States interested in including nuclear energy in their national energy mixes by providing nuclear information.

Outcomes	Performance Indicators
— Increased reliance of energy policies and investment decisions in Member States, particularly in developing countries and countries with economies in transition, on Agency methodological tools and analyses, nuclear information and knowledge transfer.	— Number of Member States using the Agency's assessments and analysis tools related to energy system and investment planning or energy–environment policy formulation and their economic implications.
— The Agency regarded by Member States and international organizations as an objective, wide ranging and continuously improving source of quality information on nuclear energy and its peaceful applications.	— Number of cooperative ventures, presentations and other interactions of the Agency with other international organizations. — Number of Member States satisfied with the availability and quality of nuclear knowledge and information services with direct or indirect impacts on their national nuclear programmes.
— The use by Member States of Agency methods, services, tools and guidance to help manage their nuclear knowledge effectively and efficiently.	— Level of access and use of Agency information resources and services.

Follow-up on programme-wide lessons learned from reviews, assessment, evaluations: Planning for sustainable energy development, assessing the potential role of nuclear power in meeting future energy needs, nuclear knowledge management (NKM) and the dissemination of nuclear information are highly effective and sought after services to Member States under Programme 1.3. Access to nuclear information and knowledge is essential not only for Member States but also for the Secretariat. The need for authoritative and objective information, preserved nuclear knowledge and advanced education has gained in importance as Member States increasingly explore the nuclear option and understand the framework conditions under which nuclear power can contribute to their national sustainable development objectives. Capacity development, i.e. increasing the capability of national experts to perform their own independent energy assessments, nuclear education and research, is a central objective of Programme 1.3. Comprehensive energy assessments are a prerequisite for informed decision making for energy infrastructure investments, especially for countries contemplating the introduction of nuclear energy for electricity generation and desalination. Part of the information and knowledge dissemination is the programme's contributions to international debates on nuclear power and sustainable development and to clarifying the positive role nuclear power may play in mitigating climate change. Programme 1.3 is gearing up to meet increasing needs by further enhancing its productivity through: expanded regional level activities; the introduction of web based distance learning; removing barriers to accessing information and knowledge services; networking; and seeking partnerships. Programme 1.3 will also assist INPRO (Subprogramme 1.1.4) on issues of mathematical modelling (through Subprogramme 1.3.1) and the analysis of nuclear energy in global and regional energy supply scenarios (through Subprogramme 1.3.2).

1.3	**2010** *at 2010 prices*	**2011** *at 2010 prices*
Regular Budget	11 226 453	11 330 191
Extrabudgetary	—	—
Unfunded	—	—

Specific criteria for prioritization:

1. First priority is given to Subprogramme 1.3.1, *Energy Modelling, Data and Capacity Building*, and Subprogramme 1.3.3, *Nuclear Knowledge Management.*
2. Second priority is given to the remaining subprogrammes on 3E Analysis, INIS and the Library.

Subprogramme 1.3.1 Energy Modelling, Data and Capacity Building

Rationale: Faced with growing uncertainties for future fossil fuel supplies, many countries are now looking to alternatives including nuclear power. Designing appropriate national energy strategies to ensure affordable and reliable energy services is becoming more and more complex. Member States need to conduct a comprehensive evaluation of all the possible energy supply and technological options in terms of their social, economic and environmental impacts, and to analyse regional development possibilities beyond national borders. Such an evaluation requires reliable data and information, appropriate analytical tools, and adequately trained personnel. Many Member States, particularly developing countries, lack local expertise and experience in these areas.

Long term energy demand and supply modelling also play a critical role in the evaluation of new reactor and fuel cycle designs within the full energy system context. The methodological improvements of the IAEA set of energy analysis tools will benefit INPRO activities.

Accordingly, this subprogramme is designed to provide the necessary data, up to date information and suitable analytical tools, and to build local capabilities, so that Member States can conduct national studies for elaborating their sustainable energy strategies, including the introduction of nuclear energy for electricity and desalination services, and making sound energy decisions.

Objective: To strengthen the capacity and capabilities in Member States to elaborate their sustainable energy strategies and conduct studies for energy system and electricity sector development and management, energy investment planning and energy environment policy formulation.

Outcome	Performance Indicators
— Utilization of Agency analysis tools, experts trained in the use of these tools to independently conduct comprehensive energy environment analyses.	— Number of requests for Agency analytical tools (energy models) by Member States and other international organizations. — Number of experts from Member States trained in the use of Agency energy models.

Programmatic changes and trends: To meet the increasing demand for energy assessments and analyses in Member States, the activities under this subprogramme will focus on assisting Member States in their energy–environment analysis and planning efforts by:

- Carrying out national and regional energy assessments with a nuclear component;
- Providing methodological enhancements for the integration of climate, land-use, energy and water issues;
- Developing distance learning methodologies, self-learning packages and eTraining materials;
- Expanding the Tele-Support Expert Service;
- Training trainers to cope with the expected higher workload;
- Supporting much expanded TCP efforts for building energy analysis capacity and capabilities in Member States, especially those evaluating the nuclear power option.

Resource changes and trends: The proposed regular budget resource requirements, at 2009 prices, reflect an increase of 2.6% (€40 940) in 2010 as compared with 2009 and no change in 2011 as compared with 2010.

Efficiency gains will be accomplished by expanding the use of IT and web based techniques, including distance learning, for assisting end users in Member States.

Quantitative Gain:

A savings of €20 000 can be achieved per training course: whereas a two week face-to-face training course with 35 participants costs about €70 000, a similar course can be conducted by combining a one week face-to-face training session and a ‘distance learning’ session at a cost of about €50 000.

Qualitative Gain:

In the case of a distance learning session, a large part of the training materials can be studied by the participants at a convenient time at their offices and homes. This reduces inconvenience on the participants.

1.3.1	**2010** *at 2010 prices*	**2011** *at 2010 prices*
Regular Budget	1 652 625	1 652 621
Extrabudgetary	—	—
Unfunded	—	—

Projects

Title, duration and ranking	Main outputs
1.3.1.1 Energy, electricity and nuclear power economics: Databanks on status and trends *Duration:* Recurrent *Ranking:* 2	Annually updated information on status and trends of energy and electricity supply and demand patterns, availability of energy resources, technology developments and economics; updated projections on energy and electricity use and nuclear power development in different world regions; information for the *Nuclear Technology Review*; updated internal and external web sites; annual publications such as Reference Data Series No. 1 (RDS-1) and the *Nuclear Technology Review*.
1.3.1.2 Energy models and capacity building for sustainable energy development *Duration:* Recurrent *Ranking:* 1	Enhanced analytical tools (models) for elaborating sustainable energy strategies, applicable in widely diverse country situations. Trained energy analysts in Member States.

Subprogramme 1.3.2 Energy Economy Environment (3E) Analysis

Rationale: According to its Statute, an important mandate of the Agency is to foster the contributions of peaceful nuclear technology to socioeconomic development. In addition, several General Conference resolutions have called for more active Agency involvement in the debate on nuclear power and its contribution to sustainable development. Being the only UN system institution actively pursuing studies on nuclear technologies and sustainable development, the Agency is uniquely qualified to undertake analyses of various aspects of the energy economy environment relationships (3E analysis) in the context of rapidly changing global and national social, economic and environmental priorities.

Objective: To help Member States achieve a better understanding of nuclear technology's contributions to socioeconomic development, climate protection and energy security and its compatibility with national sustainable development objectives in Member States.

Outcome	Performance Indicator
— Agency considered by Member States and other international organizations as a competent partner in addressing sustainable energy development issues and as an objective and up to date source of information on nuclear technology in the context of sustainable energy and economic development.	— Number of instances where Agency economic or 3E analyses are requested, or incorporated into the decision making process of Member States or other agencies or offices.

Programmatic changes and trends: The activities in this subprogramme will focus on providing Member States with comprehensive 3E assessments and analyses of the role of nuclear power and its relation to their sustainable development strategies, a prerequisite for countries contemplating the introduction of nuclear power. The subprogramme will continue to increase the emphasis given to more targeted economic assessments of various aspects of nuclear technologies and their potential for future contributions to sustainable development, and to translating more specifically into Member State sustainable development strategies the outcomes of

international climate change and sustainable development negotiations, particularly as these relate to the future contribution of nuclear power in these spheres. The analysis of innovative reactor designs and fuel cycles in a full energy system context will be strengthened in this biennium.

Resource changes and trends: The proposed regular budget resource requirements, at 2009 prices, reflect an increase of 16.1% (€192 473) in 2010 as compared with 2009 and no change in 2011 as compared with 2010.

1.3.2	**2010** *at 2010 prices*	**2011** *at 2010 prices*
Regular Budget	1 433 121	1 433 124
Extrabudgetary	—	—
Unfunded	—	—

Projects

Title, duration and ranking	Main outputs
1.3.2.1 Technoeconomic analysis *Duration:* 2008–2011 *Ranking:* 2	A series of economic studies (feasibility studies, cost assessments, cost comparisons, cost effectiveness and cost–benefit analyses); integrated assessments of energy–water–land–climate policies; comparative assessments of different energy systems or their attributes.
1.3.2.2 Topical issues related to sustainable energy development *Duration:* Recurrent *Ranking:* 1	Reports and presentations on topical issues related to sustainable development and climate change, and especially on the potential contribution of nuclear technologies; case studies and country profiles analysing sustainable energy development strategies.

Subprogramme 1.3.3 Nuclear Knowledge Management

Rationale: For countries interested in starting nuclear power programmes, it is important to make useful nuclear information and knowledge easily accessible. This means transferring existing information and knowledge; it also means assisting in the establishment of modern information and knowledge management systems.

At the same time, in countries with established nuclear power programmes, the nuclear industry and many academic, research and government institutions dealing with nuclear technology and developing nuclear science and applications are facing challenges caused by retirement and attrition among skilled workers. It is expected that more than 40% of the world's current nuclear work force will become eligible for retirement within the next ten years. This may cause a damaging loss of knowledge and skills accumulated over the past 50 years. The high probability of such a development requires increasing attention to collecting and preserving technical and scientific data, information and knowledge, and to the development of human resources to sustain the operation and eventual decommissioning of existing installations.

Expectations for nuclear power continue to rise, and their realization will require assured continuity and further development of nuclear knowledge, in particular to support the development of new nuclear technologies and innovative power reactor designs. In parallel with technical innovations, a new generation of engineers and scientists needs to be educated and trained for R&D and for the design, licensing, building and operation of new installations. Management strategies are needed now that will deliver high quality knowledge assets in time and as required. The effective management of nuclear knowledge thus involves ensuring the continued and enhanced availability of both scientific and technical knowledge and qualified personnel.

This subprogramme is cross-cutting in nature and will continue to exploit synergies among all programmes within Major Programme 1. INIS and the Library will continue to be natural partners on information management issues, while new synergy and cooperation in education and training will be sought with other programmes in nuclear safety and security, safeguards, nuclear applications and technical cooperation.

Objectives:

— To support Member States in applying nuclear knowledge management strategies through the development and dissemination of methodology, guidance and tools, as well as their implementation in national programmes, and by providing knowledge management services and assistance.
— To enhance the synergy of the Agency's nuclear information and knowledge resources and services.

Outcome	Performance Indicators
— Member States apply nuclear knowledge management methodology and tools for nuclear knowledge preservation, capacity building and innovation in the area of nuclear science and technology.	— Number of Member States participating in and/or supporting the Agency's nuclear knowledge management activities. — Number of nuclear knowledge management activities initiated in Member States and supported by the Agency.

Programmatic changes and trends: By 2010, nuclear knowledge management is expected to be a well established activity in the nuclear sector in Member States using nuclear technology. Both developed and developing countries are interested in managing nuclear knowledge for sustaining competence, increasing efficiency and/or developing knowledge infrastructure. Building capacity early in nuclear knowledge management in Member States wishing to include nuclear energy in their national energy mixes will be a new additional focus of this subprogramme. The strategic elements, i.e. the structure, of the subprogramme will remain the same; the main adjustment on the project/activity level will be support for an increasing number of services, assist visits, and national and regional TC projects.

Resource changes and trends: The proposed regular budget resource requirements, at 2009 prices, reflect an increase of 6.5% (€122 101) in 2010 as compared with 2009 and no change in 2011 as compared with 2010.

1.3.3	**2010** *at 2010 prices*	**2011** *at 2010 prices*
Regular Budget	2 054 801	2 054 801
Extrabudgetary	—	—
Unfunded	—	—

Projects

Title, duration and ranking	Main outputs
1.3.3.1 Implementing methodology and guidance for nuclear knowledge management *Duration:* 2010–2013 *Ranking:* 1	Publications on: integrated guidance on managing knowledge in nuclear organizations (NPPs, radioactive waste facilities, R&D and technical support organizations, regulatory bodies); guidance documents/reports on management strategy to develop nuclear competence (human and knowledge infrastructure development) and practical approaches and tools for its implementation; coordinated research project and community of practice in nuclear knowledge management to promote industry benchmarks and performance improvements.
1.3.3.2 Facilitating sustainable education and training in nuclear science and technology *Duration:* Recurrent *Ranking:* 1	Publication on nuclear education forum; Internet platforms for distance learning; benchmark curricula; multimedia nuclear education resources.
1.3.3.3 Providing products and services in nuclear knowledge management *Duration:* Recurrent *Ranking:* 1	Enhanced nuclear energy knowledge portal; progress reports on the Fast Reactor Knowledge Preservation Initiative; enhanced web based Nuclear Information Archive (NuArch); handbook on nuclear knowledge management products and services; handbook on knowledge services for nuclear power plants; regular updates of the Agency's directory of *Meetings on Atomic Energy*; lessons learned from NKM Assist Visits.

Subprogramme 1.3.4 International Nuclear Information System (INIS)

Rationale: For the past several years there has been increased Member State interest in accessing information, knowledge and expertise related to the peaceful use of nuclear energy. The political and technological

environment has fundamentally changed, and the focus of nuclear science and technology has shifted from research to technology development and implementation. Furthermore, much nuclear information of interest to Member States is now available on the web, in a variety of commercial and governmental databases, and in digital libraries. Many of these information resources will be increasingly accessible through the development of partnerships with information owners and providers. The largest and the most comprehensive information resource in nuclear science and technology remains the International Nuclear Information System (INIS). However, to respond to rising expectations for nuclear energy, the role of INIS can be expanded together with that of the IAEA Library to assist in the establishment of national nuclear information infrastructures for countries planning or considering the introduction of nuclear power.

INIS policy development and planning are done in cooperation with INIS Members through special consultation mechanisms including the Consultative Meeting of INIS Liaison Officers and the Joint INIS/ETDE Technical Committee. Consultations with other Agency programmes also provide input for the formulation of INIS policy.

The Agency is an INIS Member and acts as the INIS Secretariat responsible for coordinating the work of INIS national centres in the areas of input preparation, collecting non-conventional literature, marketing and promotion, maintaining INIS standards and tools, and developing INIS products.

Objectives:

— To respond to the information needs of Member States by providing a comprehensive information service in the area of nuclear science and technology.
— To facilitate a sustainable exchange of information generated by Member States on the peaceful uses of nuclear energy.
— To assist Member States in the establishment of nuclear information infrastructures.

Outcome	Performance Indicators
— Access for Member States and the Agency to comprehensive nuclear information resources within and beyond INIS.	— Level of access and utilization of INIS products and services by customers. — Level of INIS Member activities in maintaining INIS.

Programmatic changes and trends: The primary focus will be on the development and enhancement of partnerships with INIS Members, international organizations, information providers and publishers in order to provide Member States with access to a variety of trusted nuclear information sources available outside the Agency. Synergy with the IAEA Library will be further enhanced through joint projects and activities, and through sharing staff expertise, IT and financial resources.

Resource changes and trends: The proposed regular budget resource requirements, at 2009 prices, reflect an increase of 7.5% (€219 214) in 2010 compared with 2009 and an increase of 1.6% (50 000) in 2011 over 2010.

1.3.4	**2010** *at 2010 prices*	**2011** *at 2010 prices*
Regular Budget	3 234 894	3 286 738
Extrabudgetary	—	—
Unfunded	—	—

Projects

Title, duration and ranking	Main outputs
1.3.4.1 INIS production, content management, quality assurance and preservation *Duration:* Recurrent *Ranking:* 1	Agreement with INIS partners; new or revised data capturing and processing tools; INIS Atomindex file updates; INIS electronic non-conventional collection updates; INIS NCL on CD/DVD-ROM; INIS bibliographic standards and authorities; updated INIS Reference Series; *INIS Multilingual Thesaurus*; INIS digital preservation archives of nuclear full-text resources of the Agency and Member States.
1.3.4.2 INIS services, partnerships and capacity building *Duration:* Recurrent *Ranking:* 1	Agreement with INIS partners; INIS Database on the Internet (with on-line full text access and federated search); INIS Database on CD/DVD-ROM; OECD/NEA computer program database; promotional materials for INIS; INIS web site and Members Area; newsletters; trained personnel; enhancement of national INIS centres; user surveys; access to non-INIS nuclear information.

Subprogramme 1.3.5 Library and Information Support

Rationale: In today's knowledge society the core function of nuclear information services does not change. Trusted information on the benefits and risks of nuclear energy and applications must be available, accessible and exchanged as broadly as needed. The IAEA Library and information support services manage, preserve, provide access to and enable exchange of information in all areas of Agency programmes for the Secretariat and Member States. Responding to the increasing interest of newcomer States in establishing the infrastructure needed for the safe, secure and peaceful development of nuclear energy, the IAEA Library and the International Nuclear Information System (INIS) are well positioned to make available, provide access to and enable exchange of trusted nuclear information ranging from scientific and technical data to information on the benefits and risks of nuclear energy and applications.

Objective: Trusted information concerning the benefits and risks of nuclear energy and its safe, secure and peaceful use will be made available, accessible and exchangeable for the Secretariat and Member States.

Outcome	Performance Indicator
— Effective and efficient information services.	— Availability and ease of access to information

Programmatic changes and trends: The information needs of today's knowledge society require unmediated multi-source access to reusable digital data and information. The IAEA Library and International Nuclear Information System (INIS) respond to these expectations by (i) developing and preserving digital repositories of trusted information, (ii) increasing the availability of resources through expanded partnerships with and among nuclear information centres worldwide (International Nuclear Libraries Network), (iii) assisting Member States interested in adding nuclear energy to their national energy mixes in the establishment of nuclear information infrastructures and (iv) raising awareness and promoting ready access to these repositories.

Resource changes and trends: The proposed regular budget resource requirements, at 2009 prices, reflect a decrease of 2.0% (€55 228) in 2010 as compared with 2009 and an increase of 1.8% (€50 000) in 2011 as compared with 2010.

1.3.5	**2010** *at 2010 prices*	**2011** *at 2010 prices*
Regular Budget	2 851 012	2 902 907
Extrabudgetary	—	—
Unfunded	—	—

Projects

Title, duration and ranking	Main outputs
1.3.5.1 Development and maintenance of the IAEA Library's information resources *Duration:* Recurrent *Ranking:* 1	Procurement and licensing of information sources in accordance with IAEA rules and procedures; access to information resources.
1.3.5.2 Provision of library services and information support *Duration:* Recurrent *Ranking:* 1	Advice and support to the Secretariat and Member States in all aspects of information services; ongoing development, access and preservation of information resources; templates for the establishment of nuclear information infrastructure.

Programme 1.4 Nuclear Science

Rationale: The advantages of nuclear science and technology that benefit human well-being and socioeconomic development continue to attract the attention of both developing and developed countries. The establishment and maintenance of a sound infrastructure in nuclear science is essential to capacity building in a wide range of applications in such fields as energy production, health care, agriculture, industry and the environment. The recent revival of interest in nuclear power around the world, including in countries considering starting nuclear power programmes, and the continuing widespread adoption of radiation and nuclear techniques for non-energy applications are major drivers of the Agency's continued involvement in strengthening nuclear science capabilities in interested Member States. The Agency has an important role to play in helping to establish sound frameworks for the efficient, safe and secure use of nuclear technologies, and to develop the capabilities and infrastructure of interested Member States to manage their own programmes devoted to nuclear and radiological applications. The Nuclear Science Programme has been formulated to respond to all such requirements and will focus more on the needs of developing countries with emerging interest in nuclear power, making use of advice from the Standing Advisory Group on Nuclear Energy (SAGNE) and Standing Advisory Group on Nuclear Applications (SAGNA), the recommendations of the International Nuclear Data Committee (INDC) and International Fusion Research Council (IFRC), and the assistance of a wide range of external expertise.

The adoption and use of credible atomic and nuclear data are crucial to the confident deployment of nuclear technology in a wide range of applications. Such data provide accurate and trustworthy descriptions of the underlying atomic and nuclear processes that are harnessed in both energy generation and non-energy studies. Concerted efforts by the Agency are essential to foster and coordinate atomic and nuclear data development, compilation and evaluation in order to produce the important, fundamental data libraries and to provide database services to users around the world. Over the 2010–2011 biennium, greater emphasis will be placed on the increasing data needs for advanced fission and fusion reactor design and in support of INPRO. Progress in the International Thermonuclear Experimental Reactor (ITER) project as well as the design of the International Fusion Materials Irradiation Facility (IFMIF) has significantly increased demand for additional atomic and nuclear data. Work related to medical applications and nuclear based analytical techniques will also continue. The recommendations of the INDC and the Atomic and Molecular Data for Fusion Sub-committee of the IFRC will continue to guide the tasks proposed in the area of atomic, molecular and nuclear data.

The role of research reactors (RR) in nuclear science development and applications has assumed a fresh focus in the face of emerging Member State interest in nuclear power in many parts of the world. The prioritized recommendations from the newly formed Technical Working Group on Research Reactors (TWGRR) will act as an important guide in selecting the tasks to be addressed. The thrust will be fourfold: (i) assistance to support sustainable and strategic utilization of reactors and encouragement of networking and coalitions among RRs with features to serve nuclear applications in developing countries; (ii) support to strengthen the management of RR operations with a view to enhancing their availability for certain vital applications like isotope production (in coordination with Subprogramme 2.5.1); (iii) assistance and guidance on infrastructure including existing RR systems, structures and components required to establish new national and regional RRs; and (iv) facilitation of the conversion of reactors to the use of low enriched uranium (LEU) fuel and LEU targets, and the return of fresh and spent highly enriched uranium (HEU) fuel to the countries where it originated. The Agency will continue to place emphasis on activities to minimize the use of HEU in research reactors and other experimental facilities, specifically supporting the Reduced Enrichment for Research and Test Reactors

(RERTR) programme and the fuel return programmes that operate under the US Global Threat Reduction Initiative (GTRI).

The application of accelerators for supporting materials research, analytical sciences and the development of nuclear energy systems remains a field of high interest for both developed and developing countries. Materials science studies using accelerators, neutron beam techniques and nuclear analytical methods are important for advanced reactors and nuclear fuel cycles, such as those addressed by INPRO, as well as for fusion research. These studies will also help create synergies benefiting nuclear power, and involving the linkage of fusion and fission technology development. Accelerator facilities represent one means of growth for nuclear science, education and training. Special attention will be given to applications involving multidisciplinary expertise, where the role of the Agency in fostering international cooperation is vital for successful development/deployment. Capacity building in the effective utilization of accelerator and other related facilities will also include support for the development and application of portable instruments and in situ analytical methodologies. Greater coordination with Programme 1.2 will be pursued in the areas of (i) accelerated ageing studies due to radiation damage of structural materials and (ii) waste characterization and on-site assessment. The training and technical information service support to Member States in the area of nuclear instrumentation and applications of nuclear spectrometry will be reoriented to include tasks of interest to nuclear energy, e.g. for environmental monitoring and allied studies in Member States embarking on nuclear power programmes, and related materials research.

The emphasis in nuclear fusion research will continue to be on the fostering of international cooperation in the two major approaches of magnetic confinement and inertial fusion. Under the guidance of the International Fusion Research Council (IFRC), topical thematic meetings will be planned to cover areas of current and emerging importance.

With the entry into force of the ITER Agreement on 24 October 2007, the construction and testing of the experimental fusion reactor ITER at Cadarache, France, will now proceed over the next decade. The ITER Council and the Agency have entered into a formal cooperation agreement that will help formalize and strengthen interactions and continued cooperation with this major international initiative in fusion power development. The involvement with the ITER Organization is necessary to keep abreast of developments for the benefit of a number of Member States with strong interest in fusion energy research outside the ITER Agreement.

Objective: To increase Member State capabilities in the development and application of nuclear science as a tool for their technological and economic development.	
Outcome	**Performance Indicator**
— Increased international cooperation in nuclear sciences for technological advancement.	— The number of institutions and number of Member States participating in the Agency's nuclear science activities and the number of resultant products/documents.

Follow-up on programme-wide lessons learned from reviews, assessment, evaluations: Closer coordination of activities with Programmes 1.1 and 1.2 will increase synergies in the areas of better understanding and development of materials for nuclear energy systems, waste characterization and site assessment. Building sustainable local and regional capabilities and cooperation will be given greater emphasis, in coordination with Programme 2.5, in the use of research reactors and accelerators.

The recommendations of the OIOS panel evaluation (of October 2007) of Subprogramme 1.4.1 on *Atomic and Nuclear Data* have been and are being addressed.

In order to facilitate more effective project management, all activities on decommissioning, including those previously under Project 1.4.2.4, will be merged and located in Programme 3.4. Research reactor ageing activities will be retained in Project 1.4.2.4 on *Research reactor operation.*

Holding Agency technical meetings alongside or back-to-back with other international scientific events and Agency involvement in major international initiatives in nuclear science, including in projects of the EU and OECD/NEA, remain means of achieving fruitful programme delivery.

Support to TC projects on established/mature nuclear techniques will be extended using expertise already created in several Member States.

1.4	2010 *at 2010 prices*	2011 *at 2010 prices*
Regular Budget	9 693 404	9 824 130
Extrabudgetary	336 332	308 332
Unfunded	105 000	—

Specific criteria for prioritization:

1. First priority is given to activities in support of emerging development needs in nuclear power and non-power applications in the areas of atomic and nuclear data and database services, materials science aspects, interdisciplinary applications of accelerators, and activities to reduce the proliferation risks of using HEU.
2. Second priority is given to activities to strengthen: (i) research reactor management and effective utilization, and (ii) advanced training for human resources development in nuclear sciences.
3. Third priority is given to activities fostering international cooperation and information exchange in nuclear fusion research and plasma physics.

Subprogramme 1.4.1 Atomic and Nuclear Data

Rationale: The adoption and use of credible atomic and nuclear data is crucial to the confident employment of nuclear technology in a wide range of applications. Such data provide accurate descriptions of the underlying atomic and nuclear processes that are harnessed in both energy generation and non-energy studies. Necessary data include reaction cross-sections, atomic and nuclear properties of the resulting reaction products, and quantification of the prompt and delayed decay characteristics. While these data are reasonably well defined for some applications, much remains to be done in other areas.

Over the 2010–2011 biennium, work related to medical applications and nuclear based analytical techniques will continue. However, greater emphasis than in previous years will be placed on the increasing data needs for advanced fission and fusion reactor design and in support of INPRO. The Agency will also contribute significantly by taking a lead role in coordinating specific international networks and undertaking in-house studies that assist greatly in the establishment and maintenance of a wide range of libraries dedicated to experimental, theoretical and evaluated atomic, molecular and nuclear data. Convenient and reliable access to these shared international databases of compiled and evaluated data is provided by the IAEA nuclear data centre, and the Agency will exploit advances in information and computer technology to improve data communications and services to all Member States.

(a) Medical applications:

Microscopic data that quantify the interactions of radiation with the human body are poorly defined — these data are essential in the quantification of radiation protection. Radiation therapy also requires sound nuclear data for photon, proton, neutron and high energy electron induced reactions.

(b) Fission reactors, including closed fuel cycles:

More accurate and detailed nuclear data will be required for critical reactor materials — minor actinides in the fast spectra of breeders and transmuters, and in soft, well-moderated spectra corresponding to different environments of closed fuel cycles. Agreed methods of producing realistic uncertainties and physically meaningful covariances for nuclear data also remain a demanding issue in reactor design.

(c) Accelerator driven systems (ADS):

All forms of ADS transmutation give rise to fuel cycles in which the same active curium and higher mass isotopes will be present. Well defined neutron cross-section data are required up to neutron energies of 300 MeV. Success in addressing nuclear data requirements above 20 MeV depends mainly on nuclear modelling simulations that will continue to be explored by the Agency.

(d) Fusion devices:

Requests have been made to extend the International Reactor Dosimetry File to neutron energies of 40 MeV and the Fusion Evaluated Nuclear Data Library to neutron energies above 60 MeV. Atomic and molecular data

needs are even more extensive, and vary from atomic data for high temperature plasma-facing alloys to stable molecular speciation at relatively modest temperatures and quantification of tritium releases and their subsequent absorption and transportation.

Beneficiaries within Member States consist of fission and fusion reactor designers and operators, reprocessing facility operators, designers of fuel transport and radwaste storage facilities, and physicists and analysts involved in various non-energy applications (e.g. radiation medicine, materials analysis and environmental monitoring).

Objective: To increase the capabilities and expertise of Member States to ensure the safe and economic adoption of all forms of nuclear technologies by providing rapid access to reliable atomic and nuclear data for energy and non-energy applications.	
Outcome	**Performance Indicator**
— Adoption by Member States and use of Agency atomic and nuclear data generated from CRPs and other routes, leading to their establishment as internationally accepted databases.	— Extent of use by Member States of Agency recommended sets of atomic and nuclear data.

Programmatic changes and trends: The subprogramme represents an important normative function within Major Programme 1 (dedicated to nuclear energy and reactor fuel cycles) and Major Programme 2 (particularly with respect to radiation medicine, analytical science and environmental monitoring). Such work constitutes a long term initiative to ensure the validity and efficacy of applying a wide range of nuclear techniques through the establishment and maintenance of the necessary norms and standards for nuclear studies. Failure to respond to the emerging atomic and nuclear data requirements through the implementation of additional resources over the next few years will result in negligible/slow efforts to achieve the Agency's vision of assembling essential, internationally approved databases for both nuclear energy and non-energy applications.

There continues to be a growing demand for high quality, non-energy related nuclear databases in, for example, nuclear medicine (for the optimum production of diagnostic and therapeutic radionuclides) and analytical science (e.g. micro-beam analysis). Many of these demands can only be achieved through well coordinated multinational efforts facilitated by means of the driver functions of the Agency. While suitable actions have been successfully implemented to ensure the provision of these types of database over forthcoming years, serious pressures on available resources are occurring as a result of advances in the international fusion programme and the newly emerging demands of advanced nuclear fission projects. While staffing levels are insufficient, these pressures are resulting in a modest shift of emphasis in the subprogramme back towards atomic and nuclear data needs for various existing and proposed nuclear power systems.

Resource changes and trends: The proposed regular budget resource requirements, at 2009 prices, reflect an increase of 4.7% (€116 876) in 2010 as compared with 2009 and an increase of 3.5% (€90 680) in 2011 as compared with 2010.

1.4.1	**2010** *at 2010 prices*	**2011** *at 2010 prices*
Regular Budget	2 709 161	2 803 711
Extrabudgetary	—	—
Unfunded	—	—

Projects

Title, duration and ranking	Main outputs
1.4.1.1 Data services, data networks and user support *Duration:* Recurrent *Ranking:* 1	Improved software based communication with users in Member States — rapid, user friendly access directly via the web and indirectly by means of Internet communications with subprogramme staff (for provision of CD-ROM and hardcopy data and reports); establishment of new and improved atomic and nuclear databases; specialists trained in Member States.
1.4.1.2 Nuclear data standards and evaluation methods *Duration:* Recurrent *Ranking:* 2	Maintenance/improvement of neutron cross-section standards to ensure their continuity and reliability, and delivery of agreed new standards databases and scientific publications.
1.4.1.3 Nuclear data for radiotherapy using radioisotopes and external radiation sources *Duration:* 2003–2011 *Ranking:* 3	Rapid communication with users in Member States (dedicated web page). New nuclear databases and related scientific publications: maintenance of phase-space database for clinical devices, and creation of database of charged particle interactions for radiotherapy.
1.4.1.4 Atomic and molecular data for fusion experiments *Duration:* Recurrent *Ranking:* 1	Rapid communication with users in Member States (dedicated web pages, e.g. ALADDIN, a web page of recommended atomic and molecular databases). New atomic and molecular data products and scientific publications, particularly atomic and molecular data for surface composition dynamics relevant to erosion processes, and atomic data for heavy element impurities in fusion reactors.
1.4.1.5 Nuclear data for reactor dosimetry and analysis *Duration:* 2005–2015 *Ranking:* 3	New nuclear data products and scientific publications: assembly and launch of reference nuclear database for ion beam analysis (IBANDL for analytical science); and maintenance and improvement of International Reactor Dosimetry File (IRDF) to ensure continued reliability.
1.4.1.6 Nuclear data for emerging issues and advanced nuclear facilities *Duration:* Recurrent *Ranking:* 2	Clear definitions of the long-term nuclear data needs as discussed and specified by an advisory group meeting of appropriate technical expertise; compendium of recently completed and ongoing measurements of minor actinide reaction data; and benchmarking of nuclear data for the Th/U fuel cycle.

Subprogramme 1.4.2 Research Reactors

Rationale: Research reactors (RRs) are essential for education and training. Priority issues in Member States are refurbishment and modernization, technology of ageing management, and planning for new national or regional replacement RRs. There is also a need to develop strategies for effective utilization on a national, regional and international basis of a significant number of RRs that are underutilized and consequently underfunded, and to enhance the availability of RRs for certain vital applications such as isotope production (in coordination with Subprogramme 2.5.1).

The number of RRs in operation is expected to decrease. It is desirable that these reactors be replaced with a smaller number of new multipurpose reactors that offer more features, use low enriched uranium fuel, and are built and/or operated under international arrangements. Member States will increasingly need Agency assistance in strategic planning and institutional arrangements for possible national and regional RRs, regional and international RR coalitions, networks and shared-user facilities, and in the management of spent fuel prior to decommissioning.

This subprogramme's focus is on helping Member States to plan and implement regional and international RR coalitions, networks and shared-user facilities to increase utilization, refurbish and replace ageing equipment, manage increasing spent fuel inventories, operate and manage existing RRs and plan and build new facilities.

The Agency will support initiatives to reduce global nuclear threats, especially in connection with civilian use of HEU. In particular this subprogramme will continue its longstanding support of the RERTR programme.

In connection with the increased interest in nuclear power, emphasis will be given to providing assistance to Member States with emerging interest, for example through guidelines to utilize RRs and allied facilities for building capabilities in nuclear technologies. The subprogramme will also promote international collaboration to assess projected needs for RRs in support of the development of evolutionary and innovative nuclear power reactors and fuel cycles.

Objectives:

— To enhance the potential of interested Member States to: implement ageing management, conduct refurbishment and modernization, and manage all RR operation issues; cope with RR fuel cycle issues and reduce proliferation risks by core and target conversion and repatriation of fuel to the country of origin; and conduct planning and building of new national and regional facilities.

— To increase the capabilities of interested Member States to: safely, reliably and efficiently carry out scientific research and technology development at RRs; and design and implement strategic and business planning and institutional arrangements for possible regional and international RR coalitions, networks and shared-user facilities.

Outcomes	Performance Indicators
— Increased use of the Agency's assistance and guidance by Member States to address issues in: RR operation; fuel cycle; non-proliferation (especially reduction in the number of reactors and applications employing HEU); ageing management; refurbishment and modernization; repatriation of fuel to the country of origin; all RR operation issues; and planning and building of new national and regional facilities.	— Number of facilities implementing one or more of the following: improved operational practices; reactors and applications converting from HEU to LEU use; successful shipments of fresh and spent fuel to the country of origin; improved spent fuel storage conditions; ageing management/ refurbishment/ modernization.
— Increased use of the Agency's assistance and guidance by Member States to address issues in: design and implementation of strategic and business planning and in implementation of institutional arrangements for possible regional and international RR coalitions, networks and shared-user facilities.	— Number of facilities planning and/or implementing one or more of the following: utilization strategies and new applications; strategic and business plans; institutional arrangements for regional and international RR coalitions, networks and shared-user facilities.

Programmatic changes and trends: The subprogramme maintains a focus on the different facets of RRs for their effective utilization and management. Following the recommendations of the IAEA International Conference on Research Reactors: Safe Management and Effective Utilization held in Sydney, Australia, in November 2007, and the recently created Technical Working Group on Research Reactors (TWGRR), the subprogramme will continue and strengthen support to:

- Member State work in the framework of the RERTR on core conversion from HEU to LEU, target conversion from HEU to LEU, the repatriation of fresh and spent research reactor fuels to the country of origin;
- Regional and interregional thematic collaboration, networking and centres of excellence for enhanced utilization of research reactors, especially for those with appropriate features for serving nuclear applications in developing countries.

To support the scientific, educational and commercial demands currently being placed on RRs, all aspects of RR operation and infrastructure (including infrastructure and institutional arrangements needed for new national and regional RRs) will be addressed by the subprogramme.

In order to facilitate more effective project management, all activities on decommissioning, including those previously under Project 1.4.2.4, will be merged and located under Programme 3.4. RR ageing activities will be retained in Project 1.4.2.4 on *Research reactor operation*.

Resource changes and trends: The proposed regular budget resource requirements, at 2009 prices, reflect an increase of 36.4% (€352 461) in 2010 as compared with 2009 and an increase of 0.6% (€8 320) in 2011 as compared with 2010.

1.4.2	**2010** *at 2010 prices*	**2011** *at 2010 prices*
Regular Budget	1 362 473	1 371 986
Extrabudgetary	336 332	308 332
Unfunded	—	—

Projects

Title, duration and ranking	Main outputs
1.4.2.1 Enhancement of utilization and applications of research reactors *Duration:* Recurrent *Ranking:* 1	Report on the strategies for networking for RR utilization; organization of international conference on RRs (cooperation among NA, NE and NS); report on materials testing and development; report on effective use of intense neutron fluxes of RRs; catalogue on products and services of RRs; report on utilization and specific applications of RRs.
1.4.2.2 Research reactor infrastructure, planning and innovation *Duration:* 2005–2013 *Ranking:* 1	Management of the Research Reactor Data Base (RRDB); proceedings, working material; research results, RCM reports; technical inputs to planning and implementation of technical cooperation projects.
1.4.2.3 Addressing research reactor fuel cycle issues *Duration:* 2005–2014 *Ranking:* 1	Publications on: RR spent fuel inventories and their problems; shipments of RR fuel to its country of origin; interim CRP results; good practices for the management and storage of RR spent fuel; and conversion of RRs from HEU to LEU.
1.4.2.4 Research reactor operation *Duration:* 2006–2012 *Ranking:* 1	Draft and final publications containing results of workshops and meetings; technical inputs to planning and implementation of technical cooperation projects; research results, RCM report.

Subprogramme 1.4.3 Accelerators and Nuclear Spectrometry for Materials Science and Analytical Applications

Rationale: The ongoing benefits afforded by accelerators and nuclear instrumentation derive principally from their ability to adapt to and keep pace with evolving changes in user demands. The trend in advanced countries is to acquire special purpose accelerators, dedicated and optimized to support a specific high technology application area. The main demand from researchers is for high quality X ray, neutron and ion beams to engage in cutting-edge research in energy, food and agriculture, biology and medicine, and materials science. This demand is already strong and is expected to increase. Developing countries in many cases tend to use their facilities as a national flagship. Increased technical support will be provided to help establish collaborating centres to provide effective support on nuclear instrumentation for the least developed countries and other interested developing Member States, while reducing the provision of training services in basic electronics skills. Similarly, tasks in the area of nuclear instrumentation and applications of nuclear spectrometry will be reoriented to include topics of interest to nuclear energy, e.g. for environmental monitoring and allied studies in Member States embarking on nuclear power programmes. There is a strong need for scientists and experts from all Member States to be in closer proximity to the mainstream scientific community, and stronger alignment with Major Programme 1 activities for the development of advanced reactors and fuel cycles and in support of INPRO, especially in the area of materials science implemented during the 2008–2009 programme cycle, will continue. Greater coordination in the areas of accelerated ageing studies due to radiation damage of structural materials, and of waste characterization, as well as on-site assessment will be pursued. A focus on fostering interdisciplinary efforts for holistically using the potential of nuclear techniques exploiting accelerators and allied instrumentation will underpin activities in non-energy topics.

Objective: Increase capabilities of Member States to adopt and benefit from the application of particle accelerators, nuclear spectrometry and instrumentation in materials science and analytical services.	
Outcome	**Performance Indicator**
— Well functioning and optimized nuclear infrastructures established in interested Member States and operated by experts.	— Number of publications/reports resulting from utilization of accelerators, nuclear spectrometry and instrumentation in Member States.

Programmatic changes and trends: Closer coordination of activities with the waste technology area will be pursued towards better understanding and development of materials for nuclear energy systems, waste characterization and site assessment. Building sustainable networks in the use of accelerator facilities will be supported in order to create greater regional capabilities in nuclear techniques and their applications. Support to adapting established/mature nuclear techniques by interested Member States will be facilitated using expertise established in several developing Member States. Provision of training in basic electronics skills and related services will be reduced.

Resource changes and trends: The proposed regular budget resource requirements, at 2009 prices, reflect an increase of 9.4% (€211 894) in 2010 as compared with 2009 and an increase of 1.7% (€42 000) in 2011 as compare with 2010.

1.4.3	**2010** *at 2010 prices*	**2011** *at 2010 prices*
Regular Budget	2 546 002	2 588 517
Extrabudgetary	—	—
Unfunded	105 000	—

Projects

Title, duration and ranking	Main outputs
1.4.3.1 Accelerator techniques for modification and analysis of materials for nuclear technologies *Duration:* 2007–2013 *Ranking:* 1	Publications containing results of technical meetings and conferences; reports of CRPs on accelerator techniques for materials analysis.
1.4.3.2 Fostering interdisciplinary developments in accelerator applications *Duration:* 2008–2012 *Ranking:* 1	Publications containing outputs of TMs, RCMs and CRPs related to interdisciplinary research and applications using accelerator based nuclear techniques.
1.4.3.3 Sustainable use of nuclear instrumentation for environmental and other applications *Duration:* Recurrent *Ranking:* 2	Guidelines on protection and effective utilization of nuclear instruments; guidelines on network of regional centres and laboratories in the field of nuclear instrumentation; distance learning/training tools and new training programmes in support of environmental and other applications; technical staff trained for operation, calibration and effective utilization of nuclear instruments.
1.4.3.4 Nuclear spectrometry for analytical applications *Duration:* 2006–2013 *Ranking:* 2	Publications on new developments and use of nuclear spectrometries, including the *XRF Newsletter*, and on integration of nuclear spectrometries for better characterization of materials, including those of interest to nuclear energy systems; computer based modules for learning and teaching spectrometry and its applications in energy and non-energy fields.

Subprogramme 1.4.4 Nuclear Fusion Research

Rationale: Recent advances in plasma physics, in materials science and in fusion related technology have provided a solid basis for the construction of large facilities with the goal of achieving 'positive energetic balance', where the output thermal energy produced by fusion exceeds the input energy to sustain the fusion plasma. The most recent visible achievement of magnetic confinement fusion research efforts is the ITER Organization, established in 2007 as an international cooperation project for construction of the International Thermonuclear Experimental Reactor in Cadarache, France. Two main projects based on the inertial confinement concept involving a multi-billion dollar R&D effort are also being pursued: the Laser Mega Joule (LMJ) project in France and the National Ignition Facility (NIF) project in the United States of America. With the construction and operation of these devices, the fusion community aims to establish the physics and technology necessary to build a DEMO fusion power plant. An accompanying programme on materials research has been initiated and will include the design and construction of the International Fusion Material Irradiation Facility (IFMIF) to help develop the materials necessary to build a fusion power plant. The Agency will continue to support international cooperation on fusion research activities and foster the exchange of scientific results among different partners. In particular, the Agency will help to establish networks of cooperation among small and large laboratories working on fusion, providing means for knowledge sharing and dissemination through technical meetings, Coordinated Research Projects and the regular series of Fusion Energy Conferences. In cooperation with other institutions such as the Abdus Salam International Centre for Theoretical Physics (ICTP), the subprogramme will organize workshops and schools on fusion and plasma physics and atomic and molecular data, in close cooperation with the ITER parties.

Objective: To strengthen international cooperation and coordinate scientific and technology development activities on fusion among institutions and among researchers; to broaden the number of Member States involved in international cooperation with leading fusion laboratories.

Outcome	Performance Indicators
— Increased collaboration and information exchange in the fusion community.	— Number of cost-free participants in Agency sponsored meetings on fusion. — Number of participants in CRPs and joint experiments.

Programmatic changes and trends: Planning for this subprogramme has incorporated advice from the IFRC and suggestions by major international fusion organizations. Activities are envisaged to support developing Member States interested in being associated with mainstream fusion research to bolster the science and technology efforts necessary for building a fusion power plant. New technical resources such as databases are being developed for better knowledge management and activity planning.

Resource changes and trends: The proposed regular budget resource requirements, at 2009 prices, reflect an increase of 10.4% (€58 769) in 2010 as compared with 2009 and a decrease of 2.4% (€15 000) in 2011 over 2010.

1.4.4	**2010** *at 2010 prices*	**2011** *at 2010 prices*
Regular Budget	639 306	623 454
Extrabudgetary	—	—
Unfunded	—	—

Projects

Title, duration and ranking	Main outputs
1.4.4.1 Supporting plasma physics and fusion research *Duration:* 2004–2013 *Ranking:* 1	Proceedings of the 23rd Fusion Energy Conference; publications containing the results of meetings and CRPs.
1.4.4.2 Cooperation with ITER	Reports to ITER parties disseminated; reports produced on ITER related activities.

Title, duration and ranking	Main outputs
Duration: Recurrent *Ranking:* 2	

Subprogramme 1.4.5 Support to the Abdus Salam International Centre for Theoretical Physics (ICTP)

Rationale: With the endorsement of the Agency's General Conference and Board of Governors, in 1953 the Italian Government and the Agency signed an agreement "concerning the establishment of the Abdus Salam International Centre for Theoretical Physics (ICTP), in Trieste". In 1970, UNESCO joined the Agency as a full partner in the management of ICTP and, on 1 January 1996, the primary administrative responsibility for ICTP was transferred from the Agency to UNESCO. The aims of ICTP were and remain to: help in fostering advanced studies and research in physical and mathematical sciences, especially in developing countries; provide an international forum for scientific contacts between scientists from all countries; and provide facilities to conduct original research to its visitors, associates and fellows, principally from developing countries.

From the basic fields of high energy physics, mathematics and physics of condensed matter, the programme of ICTP has expanded over the years to cover several other related fields including areas of high interest for the Agency such as atomic and molecular physics, energy systems, plasma physics and nuclear fusion, medical physics, synchrotron radiation and climate change. Several scientific events (schools, workshops, training courses) are organized by ICTP each year, including events with the direct involvement of the Agency. Topics for the workshops, seminars and advanced training events cover areas of interest to Agency Member States in nuclear science, nuclear energy, nuclear safety and nuclear applications. There is a need for continued close interaction with the ICTP to ensure an adequate number of such topical events for the mutual benefit of the IAEA Member States and ICTP. These activities, which cover information exchange, research and training, have involved the participation of more than 4000 scientists per year from developing and developed countries.

In addition, ICTP implements the "Sandwich Training and Education Programme" (STEP), through the Agency's Technical Cooperation Fund, whereby scientists from developing countries are offered three year fellowships at ICTP in order to prepare a doctoral thesis in one of the fields covered by the Agency's TC programme. The fellows can work with their supervisors at their home institute and a core supervisor at ICTP, strengthening the scientific capabilities of Member States and avoiding the brain drain that has negatively impacted so many developing countries.

Objective: To enhance the scientific capability of Member States, particularly developing countries, through training and exchange of knowledge between scientists from developing and developed countries in the nuclear field, as well as fields related to the applications of nuclear science and technology.

Outcome	Performance Indicators
— Scientists from developing and developed Member States making use of knowledge obtained through their participation in the scientific programmes of ICTP.	— Number of scientists benefiting from ICTP programmes in fields related to Agency programmes and using the information in their home institutions. — Number of publications and degrees awarded to scientists participating in ICTP scientific events.

Programmatic changes and trends: The yearly programme of activities will be approved, as foreseen in the Agreement between the Italian Government, UNESCO and the Agency, by the ICTP Steering Committee upon the recommendation of the Scientific Council. Topics for the workshops, conferences, seminars and training events will cover areas of interest to Agency Member States in nuclear science, nuclear energy, nuclear safety and nuclear applications. In addition, topics for research and studies to be carried out by ICTP scientists and associates to support the Agency's scientific and technical programmes will be identified and implemented.

Resource changes and trends: The proposed 2010–2011 regular budget resource requirements, at 2009 prices, are at the same level as the 2009 budget. No increase or decrease is foreseen in the scientific events of relevance to the Agency's programmes that will be implemented by ICTP.

1.4.5	2010 *at 2010 prices*	2011 *at 2010 prices*
Regular Budget	2 436 462	2 436 462
Extrabudgetary	—	—
Unfunded	—	—

Projects

Title, duration and ranking	Main outputs
1.4.5.1 Support to ICTP *Duration:* Recurrent *Ranking:* 1	Training material on topics covered by workshops and seminars; scientists from developing countries trained; publications in international journals of the results of the research and studies conducted.

Major Programme 1 - Nuclear Power, Fuel Cycle and Nuclear Science

Summary of Programme Structure and Resources

(excluding Major Capital Investments)

Table 13

	Project / Subprogramme / Programme	2010			2011 preliminary estimates		
		Regular Budget at 2010 prices	Extra-budgetary	CAURBs Unfunded	Regular Budget at 2010 prices	Extra-budgetary	CAURBs Unfunded
1.0.0.1	Overall Management, Coordination and Common Activities	1 056 341	-	-	1 056 394	-	-
		1 056 341	**-**	**-**	**1 056 394**	**-**	**-**
1.1.1.1	Engineering support for design, operation, maintenance, and plant life management for safe long term operation	1 066 079	-	-	1 092 221	-	-
1.1.1.2	Strengthening integrated management of human resources	313 682	-	-	282 461	-	-
1.1.1.3	Support plant performance improvement by information exchange	332 395	-	-	338 059	-	-
	Subprogramme 1.1.1 - Integrated Support for Operating Nuclear Facilities	**1 712 156**	**-**	**-**	**1 712 741**	**-**	**-**
1.1.2.1	Preparations for adding nuclear power plants	353 371	-	-	362 724	-	-
1.1.2.2	Management, implementation and engineering support for new nuclear power plant projects	292 500	-	-	300 916	-	-
1.1.2.3	Utilization of advanced technologies for new nuclear power plant projects	182 470	-	-	164 976	-	-
	Subprogramme 1.1.2 - Support for Expansion of Nuclear Power Plants	**828 341**	**-**	**-**	**828 616**	**-**	**-**
1.1.3.1	Infrastructure support for Member States interested in nuclear power	732 005	743 004	-	734 197	743 004	-
1.1.3.2	Planning and support for Member States' first nuclear power project	330 195	168 401	-	353 831	168 401	-
1.1.3.3	Development of future nuclear infrastructure arrangements	95 225	29 467	-	130 529	29 467	-
	Subprogramme 1.1.3 - Infrastructure and Planning for the Introduction of Nuclear Power Programmes	**1 157 425**	**940 872**	**-**	**1 218 557**	**940 872**	**-**
1.1.4.1	Coordination and implementation of INPRO activities	308 206	971 292	-	328 263	1 007 292	-
1.1.4.2	Management of INPRO	293 557	609 936	-	298 572	609 936	-
	Subprogramme 1.1.4 - Coordination of the International Project on Innovative Nuclear Reactors and Fuel Cycles (INPRO)	**601 763**	**1 581 228**	**-**	**626 835**	**1 617 228**	**-**
1.1.5.1	Technology Support for Near Term Deployment	319 236	30 000	67 000	331 774	30 000	61 000
1.1.5.2	Technology advances in water cooled reactors for improvements in economics and safety	433 347	45 000	46 000	443 378	20 000	70 000
1.1.5.3	Support for Innovative Fast Reactor Technology Development and Deployment	455 369	195 879	85 000	455 369	170 879	110 000
1.1.5.4	Technology advances for gas cooled reactors (GCRs)	270 562	-	-	277 324	-	-
1.1.5.5	Common technologies and issues for small and medium sized reactors (SMRs)	386 177	52 000	40 000	390 749	60 000	40 000
	Subprogramme 1.1.5 - Technology Development for Advanced Reactor Lines	**1 864 691**	**322 879**	**238 000**	**1 898 594**	**280 879**	**281 000**
1.1.6.1	Support for demonstration of nuclear seawater desalination	256 755	-	-	256 755	-	-
1.1.6.2	Nuclear hydrogen production	199 376	-	-	199 376	-	-

Major Programme 1 - Nuclear Power, Fuel Cycle and Nuclear Science

Summary of Programme Structure and Resources
(excluding Major Capital Investments)
Table 13

	Project / Subprogramme / Programme	2010 Regular Budget at 2010 prices	2010 Extra-budgetary	2010 CAURBs Unfunded	2011 preliminary estimates Regular Budget at 2010 prices	2011 preliminary estimates Extra-budgetary	2011 preliminary estimates CAURBs Unfunded
1.1.6.3	Industrial applications of nuclear power	63 107	-	10 000	77 120	-	-
	Subprogramme 1.1.6 - Support for Non-electric Applications of Nuclear Power	**519 238**	**-**	**10 000**	**533 251**	**-**	**-**
Programme 1.1 - Nuclear Power		**6 683 614**	**2 844 979**	**248 000**	**6 818 594**	**2 838 979**	**281 000**
1.2.1.1	Updating uranium resources, production and demand and nuclear fuel cycle databases	830 923	-	-	836 905	-	-
1.2.1.2	Supporting good practices in the uranium production cycle in particular for new countries	453 885	-	-	453 468	-	-
	Subprogramme 1.2.1 - Uranium Resources and Production and Databases for the Nuclear Fuel Cycle	**1 284 808**	**-**	**-**	**1 290 373**	**-**	**-**
1.2.2.1	Nuclear power reactor fuel research and development, design and manufacturing	302 519	-	-	308 540	-	-
1.2.2.2	In-reactor behaviour and operational experience of fuel for nuclear power reactors	312 616	-	-	326 527	-	-
	Subprogramme 1.2.2 - Nuclear Power Reactor Fuel Engineering	**615 135**	**-**	**-**	**635 067**	**-**	**-**
1.2.3.1	Promoting strategies for spent fuel management for established and newcomer nuclear countries	236 860	-	-	246 591	-	-
1.2.3.2	Providing technical guidance on good practices for long term management of spent fuel	305 985	-	-	314 864	-	-
	Subprogramme 1.2.3 - Management of Spent Fuel from Nuclear Power Reactors	**542 845**	**-**	**-**	**561 455**	**-**	**-**
1.2.4.1	Supporting emerging Nuclear Fuel Cycle technologies for Advanced and Innovative Reactors	390 288	-	144 110	390 516	-	154 110
1.2.4.2	Supporting Development of Proliferation Resistant Fuel Cycles	297 771	343 657	55 573	322 193	343 657	55 573
	Subprogramme 1.2.4 - Topical Issues of Nuclear Fuels and Fuel Cycles for Advanced and Innovative Reactors	**688 059**	**343 657**	**199 683**	**712 709**	**343 657**	**209 683**
Programme 1.2 - Nuclear Fuel Cycle and Materials Technologies		**3 130 847**	**343 657**	**199 683**	**3 199 604**	**343 657**	**209 683**
1.3.1.1	Energy, electricity and nuclear power economics: Databanks on status and trends	455 170	-	-	455 165	-	-
1.3.1.2	Energy models and capacity building for sustainable energy development	1 197 455	-	-	1 197 456	-	-
	Subprogramme 1.3.1 - Energy Modelling, Data and Capacity Building	**1 652 625**	**-**	**-**	**1 652 621**	**-**	**-**
1.3.2.1	Technoeconomic analysis	744 135	-	-	744 137	-	-
1.3.2.2	Topical issues related to sustainable energy development	688 986	-	-	688 987	-	-
	Subprogramme 1.3.2 - Energy Economy Environment (3E) Analysis	**1 433 121**	**-**	**-**	**1 433 124**	**-**	**-**

Major Programme 1 - Nuclear Power, Fuel Cycle and Nuclear Science

Summary of Programme Structure and Resources

(excluding Major Capital Investments)

Table 13

	Project / Subprogramme / Programme	2010 Regular Budget at 2010 prices	2010 Extra-budgetary	2010 CAURBs Unfunded	2011 preliminary estimates Regular Budget at 2010 prices	2011 preliminary estimates Extra-budgetary	2011 preliminary estimates CAURBs Unfunded
1.3.3.1	Implementing methodology and guidance for nuclear knowledge management	732 934	-	-	744 439	-	-
1.3.3.2	Facilitating sustainable education and training in nuclear science and technology	701 105	-	-	689 599	-	-
1.3.3.3	Providing products and services in nuclear knowledge management	620 762	-	-	620 763	-	-
	Subprogramme 1.3.3 - Nuclear Knowledge Management	**2 054 801**	**-**	**-**	**2 054 801**	**-**	**-**
1.3.4.1	INIS production, content management, quality assurance and preservation	2 136 585	-	-	2 187 430	-	-
1.3.4.2	INIS services, partnerships and capacity building	1 098 309	-	-	1 099 308	-	-
	Subprogramme 1.3.4 - International Nuclear Information System (INIS)	**3 234 894**	**-**	**-**	**3 286 738**	**-**	**-**
1.3.5.1	Development and maintenance of the IAEA Library's information resources	1 595 866	-	-	1 647 761	-	-
1.3.5.2	Provision of library services and information support	1 255 146	-	-	1 255 146	-	-
	Subprogramme 1.3.5 - Library and Information Support	**2 851 012**	**-**	**-**	**2 902 907**	**-**	**-**
	Programme 1.3 - Capacity Building and Nuclear Knowledge Maintenance for Sustainable Energy Development	**11 226 453**	**-**	**-**	**11 330 191**	**-**	**-**
1.4.1.1	Data services, data networks and user support	1 254 162	-	-	1 272 967	-	-
1.4.1.2	Nuclear data standards and evaluation methods	225 626	-	-	243 661	-	-
1.4.1.3	Nuclear data for radiotherapy using radioisotopes and external radiation sources	218 435	-	-	240 042	-	-
1.4.1.4	Atomic and molecular data for fusion experiments	461 354	-	-	457 002	-	-
1.4.1.5	Nuclear data for reactor dosimetry and analysis	193 340	-	-	204 073	-	-
1.4.1.6	Nuclear data for emerging issues and advanced nuclear facilities	356 244	-	-	385 966	-	-
	Subprogramme 1.4.1 - Atomic and Nuclear Data	**2 709 161**	**-**	**-**	**2 803 711**	**-**	**-**
1.4.2.1	Enhancement of utilization and applications of research reactors	437 828	-	-	441 223	-	-
1.4.2.2	Research reactor infrastructure, planning, and innovation	291 769	53 000	-	301 070	23 000	-
1.4.2.3	Addressing research reactor fuel cycle issues	323 831	283 332	-	323 787	285 332	-
1.4.2.4	Research reactor operation	309 045	-	-	305 906	-	-
	Subprogramme 1.4.2 - Research Reactors	**1 362 473**	**336 332**	**-**	**1 371 986**	**308 332**	**-**
1.4.3.1	Accelerator techniques for modification and analysis of materials for nuclear technologies	595 851	-	25 000	632 201	-	-
1.4.3.2	Fostering interdisciplinary developments in accelerator applications	455 664	-	55 000	456 035	-	-
1.4.3.3	Sustainable use of nuclear instrumentation for environmental and other applications	749 113	-	-	729 550	-	-

Major Programme 1 - Nuclear Power, Fuel Cycle and Nuclear Science

Summary of Programme Structure and Resources
(excluding Major Capital Investments)
Table 13

	Project / Subprogramme / Programme	2010 Regular Budget at 2010 prices	2010 Extra-budgetary	2010 CAURBs Unfunded	2011 preliminary estimates Regular Budget at 2010 prices	2011 preliminary estimates Extra-budgetary	2011 preliminary estimates CAURBs Unfunded
1.4.3.4	Nuclear spectrometry for analytical applications	745 374	-	25 000	770 731	-	-
	Subprogramme 1.4.3 - Accelerators and Nuclear Spectrometry for Materials Science and Analytical Applications	**2 546 002**	**-**	**105 000**	**2 588 517**	**-**	**-**
1.4.4.1	Supporting plasma physics and fusion research	465 543	-	-	453 526	-	-
1.4.4.2	Cooperation with ITER	173 763	-	-	169 928	-	-
	Subprogramme 1.4.4 - Nuclear Fusion Research	**639 306**	**-**	**-**	**623 454**	**-**	**-**
1.4.5.1	Support to ICTP	2 436 462	-	-	2 436 462	-	-
	Subprogramme 1.4.5 - Support to the Abdus Salam International Centre for Theoretical Physics (ICTP)	**2 436 462**	**-**	**-**	**2 436 462**	**-**	**-**
Programme 1.4 - Nuclear Science		**9 693 404**	**336 332**	**105 000**	**9 824 130**	**308 332**	**-**
Major Programme 1 - Nuclear Power, Fuel Cycle and Nuclear Science		**31 790 659**	**3 524 968**	**552 683**	**32 228 913**	**3 490 968**	**490 683**

Major Programme 1 - Nuclear Power, Fuel Cycle and Nuclear Science

Core Activities Unfunded in the Regular Budget
Table 14

	Project Title and Description of Activities	2010 CAURBs Unfunded	2011 CAURBs Unfunded
1.1.5.1	Technology Support for Near Term Deployment		
1.1.5.1/01	*Facilitate networking among users planning near term deployment in areas of common interest, and including discussions with technology holders*	20 000	22 000
1.1.5.1/04	*Develop and maintain guidance and advanced tools to assist countries in assessing technologies and in planning and scheduling new plant activities and provide support*	5 000	5 000
1.1.5.1/05	*Assimilate feedback from operating experience to improve reliability and materials for new water cooled NPPs*	20 000	22 000
1.1.5.1/15	*Identify development gaps and facilitate technology development of grid appropriate systems*	22 000	12 000
1.1.5.2	Technology advances in water cooled reactors for improvements in economics and safety		
1.1.5.2/02	*Prepare NE series report on design features to facilitate IAEA safeguards in advanced water cooled NPP designs (jointly with Division of Concepts and Planning, Dept. of Safeguards)*	5 000	5 000
1.1.5.2/03	*Facilitate establishment of design principles for advanced HWRs (in conjunction with NSNI)*	12 000	20 000
1.1.5.2/05	*Maintain and update the IAEA THERPRO data base of thermophysical properties of reactor materials*	7 000	5 000
1.1.5.2/16	*Consult with Member States and hold meetings of the Technical Working Groups on Light Water Reactors and Heavy Water Reactors (TWG-LWR and TWG-HWR) in 2011*	-	15 000
1.1.5.2/17	*Prepare an NE series document on simulation results for HWR small break loss of coolant accidents (SB LOCAs)*	7 000	20 000
1.1.5.2/18	*Application of CFD codes for NPP design and safety analysis (jointly with NSNI)*	15 000	5 000
1.1.5.3	Support for Innovative Fast Reactor Technology Development and Deployment		
1.1.5.3/02	*Identify innovative fast neutron systems development gaps and technology challenges and provide coordinated responses and solutions (partly unfunded)*	10 000	10 000
1.1.5.3/03	*Provide a forum for discussion of fast reactor deployment issues, e.g.* *- Impact of institutional and regulatory issues* *- Impact of industrial and manufacturing issues* *- Societal issues and public acceptance of fast reactors (partly unfunded/partly extrabudgetary)*	20 000	20 000
1.1.5.3/05	*Support methods verification, validation and qualification activities*	20 000	20 000
1.1.5.3/11	*Coordinate a CRP on the Source Term for Radioactivity Release Under Fast Reactor Core Disruptive Accident (CDA) Situations (new) (2010-2012) (partly unfunded)*	35 000	10 000
1.1.5.3/12	*Coordinate a CRP on Optimum Plant Parameters for Metallic and MOX Fuelled Fast Reactors (new) (2011-2013) (partly unfunded)*	-	35 000
1.1.5.3/20	*Prepare NE series document on innovative negative reactivity feedback design features of sodium cooled fast reactors*	-	15 000
1.1.5.5	Common technologies and issues for small and medium sized reactors (SMRs)		
1.1.5.5/03	*Provide coordinated responses and solutions to innovative SMR technological challenges (in conjunction with 1.1.5.2, 1.1.5.4, 1.1.5.5, and 1.1.6)*	20 000	20 000
1.1.5.5/10	*Contribute to a NE series report on "Application of 3D Thermal-Hydraulic Computer Codes for NPP Design and Analysis" by producing a chapter on development status and prospects for advanced computation methodologies using computation fluid dynamics for single- and two-phase coolant flow (in conjunction with 1.1.5.2, 1.1.5.2 leads)*	20 000	20 000
	Subprogramme 1.1.5 - Technology Development for Advanced Reactor Lines	238 000	281 000

Major Programme 1 - Nuclear Power, Fuel Cycle and Nuclear Science

Core Activities Unfunded in the Regular Budget
Table 14

	Project Title and Description of Activities	2010 CAURBs Unfunded	2011 CAURBs Unfunded
1.1.6.3	Industrial applications of nuclear power		
1.1.6.3/02	*Conduct a workshop on the safety and suitability of nuclear reactors for industrial applications*	10 000	-
	Subprogramme 1.1.6 - Support for Non-electric Applications of Nuclear Power	10 000	-
Programme 1.1 - Nuclear Power		**248 000**	**281 000**
1.2.4.1	Supporting emerging Nuclear Fuel Cycle technologies for Advanced and Innovative Reactors		
1.2.4.1/02	*Prepare NE series reports on high temperature gas-cooled reactor fuel and fuel cycle (2010-2012)*	40 000	40 000
1.2.4.1/03	*Prepare NE series reports on advanced partitioning methods (2010-2012)*	20 000	15 000
1.2.4.1/08	*Organize a workshop and prepare NE series report on management of fissile and fertile materials (2010-2012)*	10 000	25 000
1.2.4.1/14	*Prepare NE series objective document on nuclear fuel cycle and materials area*	5 000	5 000
1.2.4.1	*Additional human resources to expand the programme on advanced fuels and fuel cycle*	69 110	69 110
1.2.4.2	Supporting Development of Proliferation Resistant Fuel Cycles		
1.2.4.2/02	*Identify technical and political challenges associated with multinational co-operation in nuclear fuel cycle facilities (2006-2011)*	4 500	4 500
1.2.4.2/04	*Prepare NE series report on fuel and fuel cycle options for small and medium size reactors (including with very long-life core) (2009-2011)*	5 000	5 000
1.2.4.2	*Additional human resources to expand the programme on advanced fuels and fuel cycle*	46 073	46 073
	Subprogramme 1.2.4 - Topical Issues of Nuclear Fuels and Fuel Cycles for Advanced and Innovative Reactors	199 683	209 683
Programme 1.2 - Nuclear Fuel Cycle and Materials Technologies		**199 683**	**209 683**
1.4.3.1	Accelerator techniques for modification and analysis of materials for nuclear technologies		
1.4.3.1/04	*Prepare a report on utilization of accelerator-based real time methods in investigation of materials with high technological importance*	25 000	-
1.4.3.2	Fostering interdisciplinary developments in accelerator applications		
1.4.3.2/07	*Support workshops on accelerator related issues*	30 000	-
1.4.3.2/09	*Prepare an educational and training handbook on nuclear physics experiments using accelerators and research reactors*	25 000	-
1.4.3.4	Nuclear spectrometry for analytical applications		
1.4.3.4/13	*Support an IAEA/ICTP workshop on plasma diagnostic techniques based on X-ray spectroscopy methods (in cooperation with NAPC)*	25 000	-
	Subprogramme 1.4.3 - Accelerators and Nuclear Spectrometry for Materials Science and Analytical Applications	105 000	-
Programme 1.4 - Nuclear Science		**105 000**	**-**
Major Programme 1 - Nuclear Power, Fuel Cycle and Nuclear Science		**552 683**	**490 683**

Major Programme 2
Nuclear Techniques for Development and Environmental Protection

Introduction

Major Programme 2 assists Member States in attaining the Millennium Development Goals, in line with the Agency's mandate to accelerate and enlarge the contribution of atomic energy to peace, health and prosperity throughout the world. There are growing opportunities for partnering with Member States in food and agriculture, human health, water resources, the marine and terrestrial environment, and industrial development, where nuclear and isotopic techniques can make a difference.

Efforts continue towards enhancing integration and synergies between programmes in thematic areas, while also responding to emerging challenges such as the global food crisis, the rise in non-communicable diseases, climate change and world energy demand. For example, in the fight against cancer, this integrated approach is directly applicable via PACT and the new WHO/IAEA Joint Programme on Cancer Control, the *Human Health* programme and technical cooperation. There are additional synergies such as activities related to climate change in the *Environment*, *Food and Agriculture* and *Water Resources* programmes. Enhanced coordination among major programmes includes activities related to an integrated approach to land, water and energy planning with Major Programme 1, and quality assurance and radiation protection of patients with Major Programme 3.

Maximizing the impact of Major Programme 2 requires increased cooperation with external partners. The partnership between the Agency and FAO in food and agriculture is a long standing and successful example of such cooperation. Increased cooperation with WHO will enhance the impact of cancer control efforts in Member States. Cooperation with other organizations in the United Nations system, government and intergovernmental agencies, non-governmental organizations and the private sector will be strengthened, and funds mobilization activities will be increased. The private sector is particularly critical to the success of technology development. Thus, Major Programme 2 will make greater efforts to attract private sector support for technology transfer. PACT continues to lead the way in identifying innovative funds mobilization approaches to facilitate cancer control activities for Member States. This can be replicated in other areas.

Developing partnerships requires effective outreach and strategic communication among internal and external stakeholders. In 2010–2011, Major Programme 2 will use strategic and participatory communication activities to support the pedagogical and facilitating role of the Agency for using nuclear science and technology for development.

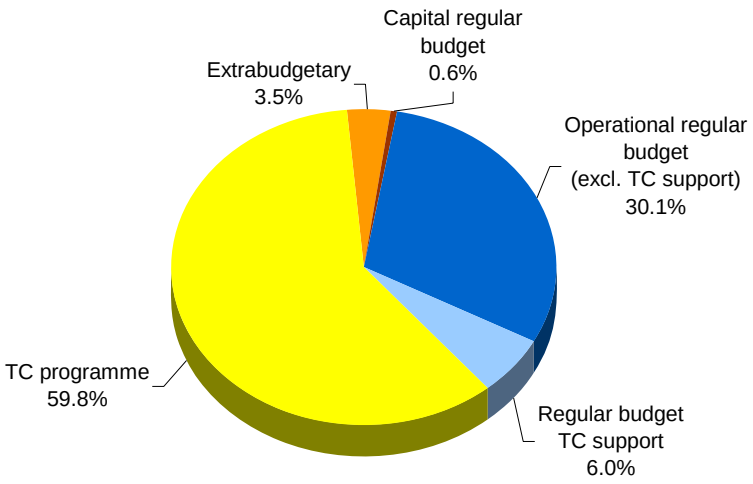
The Agency's laboratories will play an important role in delivering the benefits of nuclear technologies and will focus more on normative and networking activities that maximize sustainability and capitalize on the Agency's technical expertise and multilateral mandate. This includes a new subprogramme on IAEA *Reference Products for Science and Trade* that will improve the ability of Member State laboratories to independently and reliably carry out scientific measurements while increasing efficiency by consolidating Agency reference product activities. The Agency's role in operational activities that can be undertaken by other actors, such as routine laboratory analysis, will be further reduced. Important programmatic requirements will continue to be based on research for development, and the laboratories in Seibersdorf and Monaco will maintain key capacities to meet these needs.

Given the growing emphasis on utilizing existing capabilities in Member State institutions and expanding the use of networks for programme delivery, it is foreseen that the IAEA Collaborating Centre scheme will expand.

Objective	Performance Indicators
— To enhance the capacity of Member States to meet basic human needs and to assess and manage the marine and terrestrial environments through the integration of nuclear and isotopic techniques, where they have comparative advantages, into sustainable development programmes.	— Use by Member States of Agency recommended techniques and standards in agricultural production, prevention, diagnosis and treatment of diseases, water resources management, industrial processes and environmental studies. — Use by Member States of new or modified applications of radiation and isotope technologies. — The number of institutions/organizations in Member States that have a sustainable capacity to use radiation and isotope applications.

Outcome	Performance Indicator
— Increased use by Member States of nuclear and isotopic techniques for effecting improvements in food security, human health, water resources management, managing the marine and terrestrial environments, and industrial development.	— Use by Member States of Agency recommended techniques and standards in food production, health care, water resources management, industrial processes, and marine and terrestrial environmental management.

2010–2011 Resources for Nuclear Techniques for Development and Environmental Protection[1]



Programmes	2010 *at 2010 prices*	2011 (preliminary estimates) *at 2010 prices*	Total for biennium
Overall management, coordination and common activities	4 502 838	4 524 161	9 026 999
Management of the Coordinated Research Activities	688 359	688 341	1 376 700
Food and Agriculture	11 209 046	11 209 117	22 418 163
Human Health	9 015 728	9 307 189	18 322 917
Water Resources	3 291 307	3 386 254	6 677 561
Environment	5 723 602	5 821 946	11 545 548
Radioisotope Production and Radiation Technology	2 120 951	2 117 714	4 238 665
Operational regular budget	36 551 831	37 054 722	73 606 553
Capital regular budget	—	1 198 890	1 198 890
Total regular budget	**36 551 831**	**38 253 612**	**74 805 443**
Extrabudgetary	3 585 516	3 630 481	7 215 997
TC programme	62 582 408	59 413 051	121 995 459
Total resources	**102 719 755**	**101 297 144**	**204 016 899**

[1] Excludes unfunded activities of €3 274 084.

2.0.0.1 Overall management, coordination and common activities

Description	Main outputs
Coordination and advisory activities within the major programme are necessary to ensure that linkages between diverse programmes and subprogrammes are effective and efficient. Coordination on technical issues is necessary for the relevant activities in Major Programmes 1, 3 and 6, and for managerial issues in Major Programme 5. Coordination between programmes is also needed for preparation of the *Nuclear Technology Review* and the *Annual Report*, programme performance assessment reviews, preparation of documents for the Board of Governors and General Conference, and support to the Standing Advisory Group on Nuclear Applications (SAGNA). The facilitation of partnerships is needed in order to enhance programme delivery, including the cooperation with IAEA Collaborating Centres. An advisory and supporting role is foreseen in the area of communication, to ensure consistency, coherence and quality of outputs for internal and external dialogue, information and outreach.	Preparation of the *Nuclear Technology Review* relating to nuclear applications; coordination reports; advisory group reports; policy on coordinated research. Policy-making Organs documents. Inputs to inter-departmental initiatives. Communication products. Partnership agreements.

Resource changes and trends: The proposed regular budget resource requirements, at 2009 prices, reflect an increase of 6.4% (€262 850) in 2010 as compared with 2009, and an increase of 0.5% (€20 000) in 2011 as compared with 2010.

2.0.0.1	**2010** *at 2010 prices*	**2011** *at 2010 prices*
Regular Budget	4 502 838	4 524 161
Extrabudgetary	—	—
Unfunded	—	—

2.0.0.2 Management of the coordinated research activities

Description	Main outputs
The Coordinated Research Activities fulfil Article III of the Agency's Statute, which mandates that the Agency encourage and assist research on, and development and practical application of, atomic energy for peaceful uses throughout the world and foster the exchange of scientific and technical information, as well as the exchange of scientists in the field of peaceful uses of atomic energy. The Coordinated Research Activities have been designed to stimulate and coordinate the undertaking of research in selected nuclear fields by scientists in Agency and FAO Member States. The Research Contracts Administration Section manages all aspects of the Coordinated Research Activities for all major programmes, including financial and programmatic planning and implementation relating to some 1500 research, technical and doctoral contracts and research agreements, an average of 130 Coordinated Research Projects (CRPs) and approximately 80 Research Coordination Meetings (RCMs).	Completed CRPs; completed research, technical, doctoral contracts and research agreements; Research Coordination Meetings (RCMs); publications, databases and techniques dissemination.

2.0.0.2	**2010** *at 2010 prices*	**2011** *at 2010 prices*
Regular Budget	688 359	688 341
Extrabudgetary	—	—
Unfunded	—	—

Programme 2.1 Food and Agriculture

Rationale According to FAO estimates, there are approximately 960 million undernourished people worldwide. The persistence of widespread food insecurity and malnutrition, especially after the 2008 global food crisis, is influenced by many emerging trends that are likely to accelerate in the future. Chief among these are climate change (including extreme weather events), land use change, water scarcity, transboundary animal and plant pests and disease, loss of biodiversity in agricultural production, and increasing demands for biofuels. Driven by population growth and economic development, natural resources such as soil, water and plants will come increasingly under pressure on the national, international and global scales from conflicting demands from the agricultural, energy and other growing economic sectors. Intensification of agricultural practices will have to be balanced with environmental concerns to be sustainable.

Globalization has brought the opportunities and benefits of open markets to consumers. It has also brought new risks through the spread of exotic plant and animal insect pests and diseases, and through expanding urbanization and increased international trade that can result in greater exposure to a variety of food safety hazards. Food and waterborne diarrhoeal diseases are estimated to kill more than 2 million people a year, primarily children, in developing countries.

Nuclear techniques combined with applications of modern biotechnology, as in the case of sterile insect technique (SIT), provide unique solutions to existing and foreseeable challenges to food safety, food security and sustainable agricultural development. These technologies may exceed conventional technologies, as with plant mutation breeding and isotopic tracer techniques, and provide added value or alternatives to conventional technologies, as exemplified by food irradiation and nuclear techniques in animal production. The effective transfer of existing or improved nuclear techniques and expertise to developing countries can greatly enhance the prospects for sustainably improving agricultural productivity. The programme offers a mix of strategic and applied research, technical cooperation and decision support initiatives consistent with the Agency's Statute and FAO's Constitution, and in support of their respective medium term strategies. Overall, these strategies seek to ensure global, national and household food security and to enhance the resilience and sustainability of food production systems in the medium and long term, while responding to emerging and serious challenges such as climate change and biofuel demand.

Objectives: To promote and contribute to the improvement of food security and safety to enhance Member State capabilities in the application of nuclear techniques for sustainable agricultural development.	
Outcomes	**Performance Indicators**
— Increased use of Agency recommended techniques, guidelines and information products in agricultural research and development.	— Number of Member States using Agency recommended techniques, guidelines and products in their agricultural research and development.
— Use of Agency recommended norms and procedures by international organizations.	— Number of Agency recommended norms and procedures adopted or approved and promoted by international organizations.

Follow-up on programme-wide lessons learned from reviews, assessment, evaluations: In response to the recommendations of the Independent External Evaluation of FAO in 2007, in addition to subsequent reviews and assessments, greater efforts are being made to raise awareness, in particular among Member States and FAO counterparts, of the potential value and impact of programmatic activities and achievements. In addressing food security and safety, as well as enhanced resilience and sustainability of the agricultural production system, the growing medium and long term challenges posed by climate change have become a primary focus.

2.1	2010 *at 2010 prices*	2011 *at 2010 prices*
Regular Budget	11 209 046	11 209 117
Extrabudgetary	2 167 839	2 167 839
Unfunded	682 547	702 547

Specific criteria for prioritization:

1. First priority is given to projects that promote global food security through the use of nuclear and related techniques, and that create new knowledge and technology options to enhance resilience and sustainability of agricultural production systems, while conserving natural and genetic resources.
2. Second priority is given to projects that address adaptation to climate change, specifically through risk management and risk reduction.
3. Third priority is given to projects that assist Member States in improving food safety through standards underpinning international agreements, such as the International Plant Protection Convention (IPPC) and Codex Alimentarius.

Subprogramme 2.1.1 Sustainable Intensification of Crop Production Systems

Rationale: In the next 50 years, global population and economic trends will exert increasing pressure on crop production and vital natural resources such as land and water through expanding demands for food, feed, fibre and energy. These trends will be compounded by the intensifying effects of climate change, which is negatively impacting crop productivity and land and water resources through increasingly variable and extreme conditions. These include elevated temperatures, irregular precipitation patterns and outbreaks of global pest epidemics. As rising global energy needs increase the demand for biofuels, competition between agricultural production and energy production for land and water resources, as well as for financial and human resources, is further impacting crop production. In order, therefore, to support the sustainable intensification of agricultural production and socioeconomic development in Member States, it is critical to improve land and water management to ensure soil health, to arrest land degradation, in particular desertification in agro-ecosystems, and to protect the natural resource base.

In this subprogramme, plant genetic resources will be expanded by developing new varieties and mutant germplasm through mutation induction. Such resources will offer higher yield potential, more productive biomass as a by-product, better adaptation to climate change and better nutrient composition for human health.

While new or improved crop varieties directly improve food security, enhanced and sustainable crop production must also address widespread and deficient land–water management practices that can lead not only to land and water degradation but also to greenhouse gas (GHG) emissions that contribute to climate change. Worldwide soil and land degradation is currently estimated at 1.9 billion hectares and is increasing at a rate of 5 to 7 million hectares each year. Soil degradation and food insecurity are intricately linked with long term social, economic and environmental impacts. By 2020, 60 million people are likely to migrate from desertified areas of sub-Saharan Africa towards North Africa and Europe. The use of nuclear techniques to improve soil health, which in turn supports food security and natural resource sustainability, will help to stem human migration, enhance sustainable economic development and improve the livelihoods of the poor.

Objectives: To enhance Member States' capabilities to ensure agricultural and environmental sustainability under climate change and variability conditions, while intensifying and diversifying crop production systems, through the development and application of nuclear techniques.

Outcomes	Performance Indicators
— Enhanced Member State capability to mitigate the impact of climate change and land use activities on land degradation, soil erosion and water scarcity on food and biomass production.	— Number of innovative land–water management packages developed and adapted for improving water use efficiency, soil quality and soil resilience to climate change.

Outcomes	Performance Indicators
— Increased Member State capacity to mitigate climate change through reduction in GHG emissions and increase in carbon dioxide capture and storage in soil under both marginal and productive lands.	— Areas of farm lands under restorative land uses/management practices that promote carbon farming and reduce GHG emissions.
— Enhanced Member State capacity to reduce the vulnerability of the food production potential, and increased biodiversity for food and agriculture.	— Number of advanced mutant lines from local landraces, varieties and elite crops with enhanced adaptability to climate change and variability, and increased biomass productivity.

Programmatic changes and trends: The subprogramme will increasingly focus its activities on monitoring the impact of climate change and developing and implementing response strategies. Technology packages will monitor and respond to the impacts of climate change, as well as land use activities, on soil quality and water availability for crop and livestock production. New plant varieties with tolerance to variable climate and soil conditions will provide the means to adapt to changing climatic conditions. The programme will decrease activities that support mutation breeding of crops that are addressed by the private sector. There will also be a decreased emphasis on routine analytical services and activities related to fertilizer evaluation and assessment of biological nitrogen fixation. There will be enhanced cooperation with the *Water Resources* programme.

Resource changes and trends: The proposed regular budget resources, at 2009 prices, reflect an increase of 4% (€154 298) in 2010 as compared with 2009, and a decrease of 3% (€120 378) in 2011 as compared with 2010. Collaboration will be strengthened with regional research and training centres to enhance efficiency in crop production activities, and resources will be shifted accordingly.

2.1.1	**2010** *at 2010 prices*	**2011** *at 2010 prices*
Regular Budget	4 117 276	3 991 246
Extrabudgetary	614 233	614 233
Unfunded	402 547	372 547

Projects

Title, duration and ranking	Main outputs
2.1.1.1 Soil management and conservation for sustainable agriculture and environment *Duration:* 2006–2013 *Ranking:* 2	Quality assured nuclear data on critical areas of land degradation and sources of soil losses through the use of isotopic techniques (FRN and CSIA); data on the effectiveness of improved land management practices to reduce negative on- and off-site impacts of agricultural activities; publication in peer reviewed journals; biannual newsletter; support for 15 technical cooperation projects; training for fellows at Seibersdorf and at other institutions.
2.1.1.2 Technologies and practices for sustainable use and management of water in agriculture *Duration:* 2006–2013 *Ranking:* 1	Guidelines on crop water productivity and nuclear and isotopic methodologies to measure various sources, flow paths and losses of water through crops and soils; data on crop-water productivity; data inputs for pilot testing and validation of FAO crop-water productivity model, simulation models and decision support systems for irrigation scheduling and design of cropping systems to reduce unproductive water losses; training for ten fellows at Seibersdorf and other institutions; inputs to technical cooperation projects.

Title	Main outputs
2.1.1.3 Crop improvement for high yield and enhanced adaptability to climate change *Duration:* 2008–2014 *Ranking:* 1	Mutant germplasm for integration into breeding schemes, with higher adaptability to climatic stresses, and higher yield, with enhanced quality, nutritional and commercial traits, enhanced micronutrient contents and other nutritional factors, and/or decreased contents of antinutrients in crops; informational material; training of Member State personnel.
2.1.1.4 Integrated and efficient mutation technologies for crop breeding and genetics *Duration:* 2008–2014 *Ranking:* 1	Protocols and guidelines for enhancing the efficiency of mutation induction and genetic resources; trained scientists; characterized mutant genetic resources available for distribution.
2.1.1.5 Integrated soil-water-plant approaches to enhance food production and biomass productivity *Duration:* Recurrent *Ranking:* 1	Evaluation methods based on nuclear techniques for carbon capture and storage analyses; improved mutants with tolerance to environmental stress combined with good agricultural practices to increase land and biomass productivity; two newsletters; technical inputs to technical cooperation projects; training for fellows.

Subprogramme 2.1.2 Sustainable Intensification of Livestock Production Systems

Rationale: Systems of livestock production in developing countries are becoming progressively more intensified as producers and traders respond to increasing demands from consumers in urbanized societies for milk, meat, other livestock products and animals. At the same time, government authorities and their institutions have to address the risks accompanying this 'livestock revolution'. This includes the challenges of increasing productivity without degrading feed and genetic resources, and of ensuring that diseases of a transboundary and zoonotic nature that affect trade, and veterinary and human health are brought under control or eradicated. Greatly increasing demand can only be met through the selection of animals that give more meat and milk, and show disease resistance and heat tolerance; the optimal utilization of local resources that simultaneously protects animal biodiversity and the environment; and the protection of animals from diseases. Maximizing genetic capacity with improved breeding and reproductive management and development of alternative feeding strategies, e.g. use of plants resistant to harsh conditions accompanying global warming; and the rapid diagnosis of animal diseases, including those that infect humans, are among the most promising options.

It is necessary to assess and manage the risks and the opportunities arising from intensification and to control emerging and re-emerging animal diseases to minimize adverse effects on farmers' livelihoods. In turn, this requires developing capacities to adapt and foster the application of the appropriate production and protection enhancing technologies, as well as sound and mutually supportive policies.

Activities in this subprogramme will assist Member States in the development and use of nuclear applications, used independently or in combination with advanced biomolecular techniques, for: (i) early and rapid diagnosis and control of transboundary animal diseases (TADs) and those of a zoonotic nature; (ii) optimal use of local natural resources (water, land, plant/feed); (iii) optimal reproduction and breeding/biodiversity strategies; and (iv) minimization of climate change effects on animal production and health. These activities involve substantial international harmonization of protocols, standards and policies, and therefore contribute to building partnerships with international organizations involved in the trade and poverty alleviation aspects of livestock development (e.g. FAO, WHO, AU, PAAT, PATTEC, UNIDO, and CGIAR centres such as ILRI, ICARDA and INRA).

Objective: To enhance Member State capabilities to sustainably intensify livestock production systems and to assess, control and manage risks from transboundary animal diseases (TADs) and those of a zoonotic nature, by developing and applying nuclear and related techniques.	
Outcomes	**Performance Indicators**
— Increased use of Agency recommended locally available feed resources and appropriate reproductive management practices that improve livestock productivity in smallholder production systems.	— Number of livestock farms using Agency recommended standards and techniques in feeding and reproductive management.
— Improved control of TADs and increased use of quality management systems for managing risks from TADs.	— Number of Member States reporting to the World Organization for Animal Health (OIE) and/or obtaining recognition of freedom from TADs, and number of veterinary laboratories having quality management systems in place and meeting international accreditation.
— Increased capacity to promote self-reliance in livestock production.	— Number of scientists from developing countries trained and their output in the scientific literature.

Programmatic changes and trends: There continues to be a programmatic shift from classical surveillance and diagnosis towards the molecular and nuclear-based early and rapid diagnosis of TADs, enabling Member States to respond to the risks posed by such events earlier and with greater effectiveness. In addition, the use of inactivated/killed disease pathogens as vaccine components and the use of stable isotopes to trace molecules in a non-invasive way will form the basis of new trends introduced in this biennium. The subprogramme will address these new trends through consultation with Member States and leaders in the fields of diagnostic technologies, vaccinology and molecule tracing, molecular characterization and introgression, and climatic change. There will be a phasing out of technologies that are either mature (e.g., radio-immuno assay), or do not have a direct nuclear link (e.g., ELISAs that do not include a nuclear component). In addition, Project 2.1.2.3 on *Molecular technologies for improving productivity in smallholder livestock systems* will be replaced with Project 2.1.2.4 *Innovative nuclear based approaches to maintain biodiversity and enhance livestock productivity*.

Resource changes and trends: The proposed regular budget resource requirements, at 2009 prices, reflect an increase of 4.4% (€86 932) in 2010 as compared with 2009, and a decrease of 4% (€82 135) in 2011 as compared with 2010. Greater efficiencies will be sought through partnerships with external institutions and efforts will be made to secure external funding.

2.1.2	**2010** *at 2010 prices*	**2011** *at 2010 prices*
Regular Budget	2 129 779	2 046 442
Extrabudgetary	364 480	364 480
Unfunded	30 000	—

Projects

Title, duration and ranking	Main outputs
2.1.2.1 Integrated management of animal nutrition, reproduction and health *Duration:* 2008–2014 *Ranking:* 2	Technical procedures for using an integrated approach for improving smallholder market oriented animal production; publications on strategies for using an integrated approach for improving smallholder market oriented animal production; integrated computer database — Livestock Information Management Application — for recording and evaluating farm and production data; newsletters; technical inputs to technical cooperation projects.

Title, duration and ranking	Main outputs
2.1.2.2 Reducing risk from transboundary animal diseases (TADs) and those of zoonotic importance *Duration:* 2008–2014 *Ranking:* 1	Nuclear and related technologies for the diagnosis of TADs and diseases of a zoonotic nature; publications, guidelines and standard operating procedures; laboratory networks using validated protocols and procedures; quality management systems supported in Member State laboratories; harmonized protocols for identification and analysis of TADs; technical inputs to technical cooperation projects; diagnostic procedures and the training of veterinary personnel at Seibersdorf.
2.1.2.3 Molecular technologies for improving productivity in smallholder livestock systems *Duration:* 2004–2010 *Ranking:* 1	Tools and methodologies for animal biodiversity utilization and characterization of animal genetic resources; characterization of disease causing pathogens; publications and methodologies to improve the efficiency of smallholder livestock systems; inputs to technical cooperation projects; biodiversity/genomic/genetic based procedures and the training of veterinary personnel at Seibersdorf.
2.1.2.4 Innovative nuclear based approaches to maintain biodiversity and enhance livestock productivity *Duration:* 2011–2017 *Ranking:* 1	Tools and methodologies for animal biodiversity utilization and characterization of animal genetic resources in Member States; procedures to monitor and manipulate methanogenic and fibre degrading microbes in ruminants; improved and confirmed diagnosis and control of livestock diseases through identification of disease causing pathogens, genetic characterization and data distribution; publication and transfer of methodologies to Member States to improve the efficiency of smallholder livestock systems; scientists trained in the relevant technologies for improving productivity of smallholder livestock; biodiversity/genomic/genetic based procedures; training of veterinary personnel at Seibersdorf; inputs to technical cooperation projects.

Subprogramme 2.1.3 Improving Food Safety and Consumer Protection

Rationale: Food safety is impacted by global trends and agricultural practices throughout the food production chain. Extreme precipitation events and droughts driven by climate change are predicted to impact on both pest/vector populations and crop production and will result in increased use of agrochemicals, changes in their usage patterns and development of new chemical products that are effective under changed environmental conditions. The increased incidence of flooding and other severe weather events can also result in the deposition of sediments containing environmental contaminants such as persistent organic pollutants in crop or grazing areas, or aquatic systems.

Along with climate change, changes in the structure of the livestock industry and breeding and husbandry practices, and international trade in animals and animal products will also increase the prevalence and transmission of animal and zoonotic diseases, requiring increased use of antibiotics and other veterinary drugs. Predicted future climatic conditions in many countries are also likely to favour the production of mycotoxins in agricultural products. All of these factors increase the risk of chemical contamination of food and feeds, and consequently jeopardize consumer protection and limit access to national and international food commodity markets.

To fully address these challenges it is necessary to apply holistic farm to fork food safety systems. Integrated monitoring and surveillance of food and the environment is critical for the early identification of emerging problems and changing trends, and the tracing back of contaminated products to their origin is a vital link in control of the contamination. Nuclear technologies play a unique role in the detection, monitoring, tracing and control of these hazards throughout the food production chain.

Activities in food safety will focus primarily on: (i) the development of agricultural product and contaminant traceability mechanisms using stable isotope techniques and the detection of multiple contaminants in complex food matrices using novel radioassay and isotope dilution techniques; (ii) supporting the increased Member State use of irradiation for phytosanitary applications, especially those applications related to quarantine measures, and new approaches for dealing with existing and emerging problems; (iii) emergency planning and

response to nuclear emergencies and radiological events to minimize the risk of pollution or contamination of the environment and the food supply. Collaborative efforts between UN system organizations and other relevant governmental and non-governmental organizations will be a critical aspect of this work.

Objective: To improve food safety and quality in Member States and to enhance international trade through the use of nuclear and related techniques, and to strengthen preparedness and response to nuclear emergencies potentially affecting food and agriculture.

Outcomes	Performance Indicators
— Increased application of irradiation for consumer protection and facilitation of trade.	— Number of country approvals/countries with facilities applying irradiation for food safety and phytosanitary purposes. — Estimated volume of irradiated products traded.
— Use of traceability and authentication techniques for agricultural produce to improve food safety and strengthen international food trade.	— Number of Member State laboratories researching analytical techniques for the implementation of traceability and product origin control programmes.
— Use of quality assurance and quality controlled analytical procedures by Member State laboratories to control residues and contaminants in foods for compliance with maximum residue limits.	— Number of laboratories reporting residue and contaminant data applying international quality management criteria. — Number of validated multiplex analytical methods and procedures for residues and contaminants in foods transferred to Member States.
— Enhanced internal and external cooperation and collaboration in the application of harmonized administrative arrangements and procedures related to nuclear/radiological emergency preparedness and response.	— Guidance on agricultural countermeasures distributed to Member States in response to exercises or actual nuclear emergencies and radiological events. — Number of Agency basic safety standards revised (in relation to food and agriculture). Revisions to the Joint Radiation Emergency Management Plan of the International Organizations (JPLAN) and the Cooperative Arrangements between FAO and IAEA on Information Exchange and Technical Support. — In collaboration with Major Programme 3 and FAO, establishment of qualifications and an emergency roster list of experts in the application of agricultural countermeasures.

Programmatic changes and trends: Food traceability is a critical element in ensuring food security through the improvement of food quality and safety and in facilitating international trade in foodstuffs. A new field of activity is the application of isotopic techniques for tracing contaminated food products to their origin, assisting in the identification of the source of contamination and its remediation. This is complementary to the continuing activities in analytical methodology for detection of contaminants, providing a more complete food safety framework. Detection strategies will focus more on efficient multiresidue and multitarget (multiplex) analytical methodologies employing nuclear, bioassay and physicochemical techniques. Efforts will be expanded in responding to nuclear accidents and radiological events resulting in the radionuclide contamination of foodstuffs. In view of the phasing out of traditional fumigation techniques and the increasing implementation of quarantine controls, it is also anticipated that demands for phytosanitary applications of ionizing radiation will increase. The subprogramme will increasingly play a coordinating role to assist Member States in the application of international standards to establish food safety policy and regulatory control programmes. This will also involve the IAEA Collaborating Centre(s) in terms of hosting distance learning and training courses. Additional efforts could include supporting the establishment of national and regional food control laboratories.

Resource changes and trends: The proposed regular budget resource requirements, at 2009 prices, reflect a decrease of 14.6% (€250 715) in 2010 as compared with 2009, and an increase of 11.3% (€165 466) in 2011 as compared with 2010. Activities in pesticide residue analysis and sanitary applications of food irradiation will be reduced.

2.1.3	**2010** *at 2010 prices*	**2011** *at 2010 prices*
Regular Budget	1 510 550	1 682 986
Extrabudgetary	595 635	595 635
Unfunded	130 000	185 000

Projects

Title, duration and ranking	Main outputs
2.1.3.1 Post-harvest phytosanitary applications of food irradiation to facilitate international trade *Duration:* 2010–2015 *Ranking:* 1	International standards for the application of single generic irradiation doses for specific insect groups. Revision and maintenance of databases on food irradiation clearances and food irradiation facilities.
2.1.3.2 Traceability as an approach to control food contaminants and improve food safety *Duration:* 2008–2015 *Ranking:* 1	Methods developed for traceability of food products. Laboratory scientists and technicians trained. Validated methods and procedures for the detection of residues/contaminants in food and the environment.
2.1.3.3 Preparedness and response to nuclear emergencies and radiological events affecting food and agriculture *Duration:* Recurrent *Ranking:* 2	Strengthened collaboration in the management of intra- and interagency response to nuclear accidents and radiological events, including the provision of advice to Member States regarding the application of agricultural countermeasures. Guidelines and standards related to radiation protection of the public and on interagency management procedures. Emergency roster list of experts in the application of agricultural countermeasures.

Subprogramme 2.1.4 Sustainable Control of Major Insect Pests

Rationale: Insect pests threaten food security through losses caused to crops and livestock, the transmission of diseases to livestock and humans, and diminished potential for the development of intensified and trade oriented production systems. These losses can be as high as 30–40% and are likely to increase as globalization of international trade in agricultural commodities results in the increasing movement of important invasive species, and climate change supports their survival in previously inhospitable regions. Consequently, insecticide use is still growing, and while these compounds are generally highly effective, their toxicity and lack of specificity, coupled with residues in food and the environment, raise public concerns. Insecticide residues can also be a serious barrier to the development of trade in agricultural products. There is therefore a need to develop pest control interventions that are more environment friendly and that can promote trade. SIT is a nuclear technology that, as part of an area-wide integrated pest management (AW-IPM) approach, can be used for insect suppression, containment and/or eradication. AW-IPM can be used to establish pest-free areas and areas of low pest prevalence, thereby providing better options to address International Plant Protection Convention (IPPC) standards and to overcome technical barriers to trade covered by the Sanitary and Phytosanitary Agreement under the World Trade Organization.

This subprogramme addresses insect pests of concern to agriculture, livestock and human health, but also the increasing spread and establishment of new exotic or invasive pests that represent a major threat to agriculture and the environment. Furthermore, the activities of this subprogramme will assist Member States in overcoming regulatory barriers to trade in agricultural commodities without having to achieve complete elimination of a pest population. A series of interrelated strategies and activities will serve to coordinate strategic and applied research for the improvement of, and decision support for, planning and implementation of intervention programmes. Activities will also focus on the development of standards, manuals and guidelines on AW-IPM

and the coordination of research on methods for insect mass rearing, sterilization and release. Increased attention will also be focused on modern biotechnological methods to improve the effectiveness of AW-IPM programmes.

Objective: To increase Member State capacity in area-wide suppression, containment or eradication of key pests of crops and livestock by developing and integrating SIT with other methods.	
Outcome	**Performance Indicator**
— Increased use by Member States of improved sterile insect and related techniques and decision support systems.	— Number of Member States using improved technologies, feasibility and decision support studies, guidelines and standard operating procedures (SOPs).

Programmatic changes and trends: The project to develop the SIT against malaria transmitting mosquitoes has been transferred from the *Human Health* programme to this subprogramme, since all activities are being carried out in conjunction with the other entomological projects, thereby creating synergies and increased effectiveness. Furthermore, the project is being expanded to include some activities on other mosquito vectors, such as the *Aedes* species, that transmit diseases other than malaria.

There is a continued gradual shift in emphasis, particularly in the plant pest areas, from using sterile insects mainly for creating pest-free areas to applying an AW-IPM approach to pest suppression, combined with post-harvest treatments and other measures to facilitate international trade. Therefore, the project now includes cross-cutting activities with the *Improving Food Safety and Consumer Protection* subprogramme on the development of post-harvest quarantine treatments based on generic irradiation doses that guarantee pest-free agricultural commodities to importing countries. In order to facilitate the establishment of areas of low pest prevalence and systems approaches for trade, the subprogramme will expand its role in providing technical support to the setting of international phytosanitary standards under the auspices of the IPPC Secretariat in FAO.

Resource changes and trends: The proposed regular budget resource requirements, at 2009 prices, reflect an increase of 11.6% (€349 485) in 2010 as compared with 2009, and an increase of 1.1% (€37 047) in 2011 as compared with 2010. Resource changes reflect the consolidation of mosquito SIT activities into this subprogramme as well as new activities on the use of nuclear and related methods to begin addressing other mosquito-borne diseases.

2.1.4	**2010** *at 2010 prices*	**2011** *at 2010 prices*
Regular Budget	3 451 441	3 488 443
Extrabudgetary	593 491	593 491
Unfunded	120 000	145 000

Projects

Title, duration and ranking	Main outputs
2.1.4.1 SIT to control exotic insect plant pests of agriculture and the environment *Duration:* 2006–2014 *Ranking:* 1	Decision model for codling moth SIT; enhanced quality control procedures for moth pests; manual on pink bollworm moth SIT; improved marker and molecular genetic sexing strains; assessment of role of protein diet and improved rearing methods for *Anastrepha* and *Bactrocera* pest species; population genetics of *B. dorsalis* species complex; guidelines on modelling in support of SIT programmes; Chinese edition of SIT book; newsletters and web site maintenance; training and capacity building; technical support to technical cooperation projects.
2.1.4.2 Area-wide suppression of native insect plant pests to reduce insecticide use and facilitate international trade *Duration:* 2008–2015 *Ranking:* 3	Genetics and mating compatibility among populations of *Anastrepha* and *Bactrocera* pest species assessed; manual on olive fly rearing; international phytosanitary standards; parasitoid rearing manual using radiation; updated international quality control manual; updated and expanded expert database of fruit fly workers; sterile sperm marking methods; model on integration of male annihilation and SIT; protocols

Title, duration and ranking	Main outputs
	to optimize irradiation timing; GIS tutorial for managers; risk assessment of use of transgenic insects; dosimetry for X-ray irradiation; assessment of methods to manage founder colonies; post-mating isolation assessed among *Anastrepha* populations; training and capacity building; technical support to technical cooperation projects.
2.1.4.3 Strengthening capacities to use SIT in area-wide control of tsetse and screwworm populations *Duration:* 2006–2012 *Ranking:* 1	Computer simulations of population dynamics; GIS-based planning tools and information; evaluation of stable isotopes, guidelines for X-ray irradiation, sex separation and blood decontamination processes; harmonized approaches and concepts among key partners; improved strain and blood management; improved population genetic tools for tsetse and screwworm; assessment of anti viral agents and vector refractoriness to trypanosome infection; technical inputs to technical cooperation projects; training of tsetse and screwworm personnel at Seibersdorf and other institutions.
2.1.4.4 Development of the SIT for the control of disease transmitting mosquitoes *Duration:* 2010–2017 *Ranking:* 2	Methodologies and guidelines for the production, sexing, handling and sterilization of *Anopheles arabiensis*; publications and reports on the progress of CRPs; improved strains and radiation protocols; state of the art tools to evaluate mosquito fitness and population effects (semi-field systems); training.

Programme 2.2 Human Health

Rationale: As the world population increases and life expectancies continue to rise, and with economic development and globalization altering the nature of human living, the challenges of maintaining human health are growing, particularly in developing countries. The Millennium Development Goals (MDGs) specifically identify the often overlapping burdens of malnutrition and communicable diseases as critical areas where greater efforts are needed. Chronic and non-communicable diseases, in particular cancer and cardiovascular disease, are not directly addressed by the MDGs, but both are rapidly developing into worldwide epidemics.

Nuclear and isotopic techniques and technologies offer uniquely effective means to help manage these major groups of diseases which account for more than half of the deaths worldwide, but in many countries the limited availability of technical infrastructure and financial and human resources can put these valuable technologies beyond reach. The Agency's activities in the human health field help Member States in filling these gaps to enable them to use nuclear techniques to deliver better health care. This programme reflects consideration of gender where it is relevant, as the health issues addressed affect both genders and the benefits of nuclear technology applications can be shared equally.

Undernutrition and communicable diseases are still prevalent in many countries, and in resource-poor settings the two often reinforce one another and trap individuals in a vicious cycle of disease. HIV/AIDS, malaria and tuberculosis present particular difficulties in this regard. The Agency continues to focus on these areas because of the decisive advantages isotope techniques offer in identifying nutritional disorders and recommending corrective dietary measures, and the additional promise of their use for the diagnosis and treatment of infectious diseases.

In confronting serious chronic and non-communicable diseases such as cancer and cardiovascular disease, it is crucial both to obtain precise diagnoses that enable careful prognostic assessments and appropriate therapeutic decisions, and to monitor treatment effects. Diagnostic imaging is therefore a vital component of disease management, and nuclear medicine procedures and technologies that respond to this need, such as single photon emission computed tomography (SPECT), positron emission tomography (PET) and computed tomography (CT), provide the most accurate means of imaging disease and monitoring response to treatment. The Agency assists Member States in building the capacity to use these technologies to improve their diagnostic capabilities and provide a higher standard of care.

The Agency engages in similar activities regarding radiotherapy, which remains a cost effective modality for cancer treatment and palliative care. Radiotherapy can stop or slow the progression of the disease, help to control malignancies and alleviate existing symptoms, thereby maintaining the highest quality of life possible

for cancer patients. The Agency enhances Member State capabilities to deliver quality radiotherapy services, including advanced technology applications where they are appropriate and achievable. As radiotherapy cannot be used without qualified medical physicists to ensure safe and accurate dosage and exposure, the Agency is also working to address the current worldwide shortage of these professionals.

In an effort to maximize the impact of radiotherapy, the Programme of Action for Cancer Therapy (PACT) continues to coordinate the Agency's cancer control activities to support Member States in the development of comprehensive national cancer control programmes. Such programmes encompass the spectrum of cancer control, from prevention, surveillance, early detection and diagnosis, to treatment, rehabilitation and palliative care. In this context, PACT works specifically to introduce or expand Member States' existing infrastructure and capacity in radiotherapy as an essential component of multidisciplinary cancer care by utilizing the expertise of key partners and mobilizing new resources from non-traditional donors. Emphasis will be placed on implementing the new WHO/IAEA Joint Programme on Cancer Control.

Finally, the Agency's technical and international mandate puts it in a unique position to assist Member States in addressing the critical deficit of human resources in the fields of nutrition and radiation medicine through sound educational and training initiatives.

Objectives: To enhance capabilities in Member States to address needs related to the prevention, diagnosis and treatment of health problems through the development and application of nuclear techniques within a framework of quality assurance.	
Outcomes	**Performance Indicators**
— Increased use of nuclear techniques in human health as a result of support provided by the Agency.	— Number of institutions in Member States using nuclear techniques in human health or an increase in the frequency of their use.
— Increased application of Agency standards of practice in health programmes.	— Number of institutions in Member States applying Agency standards of practice in health programmes.
— Implementation of QA procedures in health services based on nuclear techniques.	— Number of institutions in Member States implementing QA programmes in health activities based on nuclear techniques.

Follow-up on programme-wide lessons learned from reviews, assessment, evaluations: The assessment of outcomes of projects related to health care (i.e. increase in survival rate) is in many cases a highly complex task, as such efforts tend to require a long observation period of ten or significantly more years. In addition, many factors have an impact on clinical outcome, and it is difficult to reliably single out the main drivers of these outcomes. The focus will be on surrogate indicators such as the number of institutions adopting nuclear techniques in human health or increasing the frequency of their use as a result of the Agency's support. Efforts have been made to improve performance indicators in this regard. Also, core activities have been strengthened through greater emphasis in projects on quality management, and human resource capacity building efforts have been improved by focusing more on education, distance learning and 'training the trainers'.

2.2	**2010** *at 2010 prices*	**2011** *at 2010 prices*
Regular Budget	9 015 728	9 307 189
Extrabudgetary	1 096 273	1 096 273
Unfunded	575 000	567 000

Specific criteria for prioritization:

1. First priority is given to activities based on nuclear technologies and techniques that are both already proven and fit to meet the needs of Member States.
2. Second priority is given to activities designed to build human resources capacity, with greater emphasis on education, distance learning and training the trainers.
3. Third priority is given to activities based on emerging nuclear technologies that reflect priorities identified by individual Member States.

Subprogramme 2.2.1 Nutrition and Support for Infectious Disease Management

Rationale: The importance of nutrition in development is increasingly demonstrated by the growing international awareness that the magnitude of malnutrition as a global health problem will prevent many countries from achieving the Millennium Development Goals, and that potential solutions to the problem exist. Currently, 170 million children worldwide are underweight, with undernutrition an important factor in more than half of all child deaths worldwide, while more than a billion adults are overweight. This phenomenon results in a heavy burden on health systems in countries where treatment of diet related non-communicable diseases will be increasingly needed at the same time as undernutrition and communicable diseases are still prevalent.

Infectious diseases and undernutrition often overlap, as illness can result in undernutrition, while undernutrition increases susceptibility to disease. This relationship is complex and suggests that individuals living in resource poor settings are particularly vulnerable to being caught in a vicious cycle. Of these individuals, infants and young children are the most vulnerable to the devastating effects of poor nutrition and infections, as demonstrated by the fact that 99% of all young children who died in 2001 (10.6 million) lived in low and middle income countries. More than one half of these child deaths were attributable to infectious diseases (acute respiratory infection, malaria, measles, diarrhoea and HIV/AIDS) and poor nutrition contributed to one out of two deaths. Improved nutrition and infectious disease prevention and control therefore represent high priority areas on the development agenda of low and middle income countries.

Millennium Development Goal No. 6 calls for efforts "to combat HIV/AIDS, malaria and other diseases", and highlights the importance of developing and monitoring strategies for the prevention and control of infectious diseases. Approximately 40% of the world's population live in areas where malaria is transmitted and more than 40 million people are HIV positive. Reversing the spread of HIV/AIDS and malaria by 2015 is a major challenge that demands urgent action.

The Agency helps Member States to combat malnutrition and to manage infectious diseases, in particular HIV/AIDS and malaria, in close collaboration with WHO and other UN organizations. The Agency contributes technical expertise in the use of stable isotope techniques in the development and evaluation of nutrition interventions. In the area of infectious disease management, assistance is provided to Member States in the use of nuclear techniques to understand certain human genetic determinants of treatment outcomes for malaria, in molecular epidemiology and immunology to support HIV vaccine programmes, and in monitoring the mutation of the HIV-virus to predict drug resistance.

This subprogramme reflects a sound gender balance, as the health issues addressed — poor nutrition and transmission of infectious diseases — affect both genders. An increased programmatic emphasis on women's nutrition and health will contribute to gender mainstreaming.

Objective: To enhance Member State capabilities to combat malnutrition in all its forms and to manage infectious diseases.	
Outcomes	**Performance Indicators**
— Increased ability of Member States to apply stable isotope techniques in nutrition, and nuclear techniques in infectious disease management, for the development of improved strategies to combat malnutrition and infectious diseases.	— Number of Member States using stable isotope techniques in nutrition and nuclear techniques in infectious disease management with Agency support.
— Increased technology and knowledge transfer, including training of trainers, to Member States in the use of nuclear techniques in nutrition and infectious disease management.	— Number of professionals trained and availability of technical documents and other training materials.

Programmatic changes and trends: Programmatic changes include an increased focus on the interactions between nutrition and infectious diseases, in particular to reflect the recent WHO resolution (EB117.R2; WHA59.11) on nutrition and HIV/AIDS. The subprogramme will also have a stronger focus on maternal and child undernutrition to address the needs of highly vulnerable population groups.

Increased emphasis will be placed on training of trainers to contribute to sustainability in Member States; South–South and South–North networking within the framework of CRPs will also contribute to increased

capacity building. The former Project 2.2.1.4 Development of the SIT for the control of malaria-transmitting mosquitoes was transferred to Programme 2.1 to better reflect concerted activities related to insect and pest control.

Resource changes and trends: The proposed regular budget resource requirements, at 2009 prices, reflect a decrease of 6.8% (€126 892) in 2010 as compared with 2009, and an increase of 8.3% (€143 000) in 2011 as compared with 2010. The decrease is largely attributable to the phasing out of two projects on health effects of environmental and other whole body irradiations and on radiation sterilization to improve tissue banking. The increase in 2011 is attributable to the emphasis on the development of evidence based programmes and policies to address major public health problems in nutrition and infectious disease management in close collaboration with UN agencies and other major partners in nutrition and health. Efficiency gains will be achieved by focusing on fewer projects directly related to global priority areas and by further strengthening the coordination with WHO and UNICEF.

2.2.1	**2010** *at 2010 prices*	**2011** *at 2010 prices*
Regular Budget	1 784 519	1 930 857
Extrabudgetary	—	—
Unfunded	—	—

Projects

Title, duration and ranking	Main outputs
2.2.1.1 Combating the double burden of malnutrition *Duration:* 2005–2018 *Ranking:* 1	Guidelines and distance learning modules; technical reports and peer reviewed publications; input to technical cooperation projects.
2.2.1.2 Sustainable strategies to combat micronutrient deficiencies *Duration:* 2004–2018 *Ranking:* 2	Guidelines and distance learning modules; technical reports and peer reviewed publications; input to technical cooperation projects.
2.2.1.3 Nuclear techniques in the management of HIV/AIDS and other infectious diseases *Duration:* 2008–2018 *Ranking:* 1	Guidelines and distance learning modules; technical reports and peer reviewed publications; input to technical cooperation projects.

Subprogramme 2.2.2 Nuclear Medicine and Diagnostic Imaging

Rationale: The main diseases being addressed such as cardiovascular, cancer and other non-communicable diseases, affect men and women almost equally and thus will reflect gender balance. Evidence based decision making will be encouraged by developing recommendations on nuclear cardiology and PET applications for cancer patients. Nuclear cardiology will continue to be a major focus of the subprogramme as a well established technique to detect coronary artery disease and to assess left ventricular function. Nuclear cardiology procedures, in particular myocardial perfusion studies (MPS), are cost effective in several settings because they are mostly outpatient investigations of moderate cost, high diagnostic accuracy and low risk. This is an important issue of particular interest to developing countries with limited resources. Emphasis will be given for the first time to web based learning for educational purposes and to highlight implementation of quality management.

The *Human Health* and *Radioisotope Production and Radiation Technology* programmes will continue to explore new opportunities for the development of cost effective radiopharmaceuticals. A strong commitment to raising the standards of clinical practice will be made through strengthening quality management. The Nuclear Medicine Database (NUMDAB) will be redesigned and additional data will be collected. Self-auditing will be conducted through Quality Assurance in Nuclear Medicine (QUANUM). Synergies with other international organizations and partners, including the private sector, will be increased. For example, PET/CT and

SPECT/CT, which provide accurate anatomical localization of functional abnormalities, have recently been recognized not only as important research instruments but also as reliable imaging tools for diagnosis, staging of disease, therapeutic planning and monitoring of response to therapeutic interventions. Nuclear imaging and molecular biology are now providing data that are helping to characterize diseases in a way that leads to improved diagnosis and information for rational drug design.

PET, PET/CT and SPECT/CT programmes are increasingly relevant in health care delivery in a substantial number of Member States. Some developing countries already have excellent centres with highly developed infrastructure related to patient care, teaching and research in nuclear medicine. In order that they do not lag behind the rest of the developed world, it is extremely important for the subprogramme to provide support relevant to their settings and to catalyse the development of these centres into regional resources. New activities will be initiated in the field of diagnostic radiology and more specifically in CT scanning. This evolution is in line with the central role of CT scanning in diagnostic imaging, especially for cancer management.

Objective: To enhance Member State capability to address important diseases such as cardiac disease and cancer by implementing new nuclear medicine practices and/or updating existing ones.	
Outcomes	**Performance Indicators**
— Increased capacity to manage major health conditions such as cardiovascular disease and cancer, by using nuclear techniques and Agency standards/guidelines.	— Number of institutions in Member States starting new activities in nuclear cardiology and PET applications.
— Increased use by Member States of standards of clinical practice of nuclear medicine developed by the Agency.	— Number of institutes adopting Agency documents and procedures related to quality management.
— Increased capacity to promote self-reliance in developing countries in applying nuclear medicine procedures for diagnosis and therapy.	— Number of professionals and trainers from developing countries trained in the application of nuclear medicine procedures; availability of educational material.

Programmatic changes and trends: Emphasis will be given to cardiovascular disease diagnosis in order to provide guidance to Member States on the appropriate implementation of nuclear cardiology techniques in their health care schemes, in particular myocardial SPECT imaging. A new approach will deal with implementing quality management in nuclear medicine as a fundamental step in safe and efficient clinical practice. Nuclear medicine imaging devices have developed into sophisticated multimodal pieces of equipment. This technological progress is allowing safe implementation of cost-effective, minimally-invasive diagnostic and surgical treatment procedures having a low risk of complications and morbidity with improved disease management. Within this scope, the introduction of metabolic or molecular imaging provides complementary information to that from available anatomical imaging modalities required for staging, grading and treatment planning using surgery, chemotherapy or radiotherapy and for patient follow-up. To this end, Project 2.2.2.2 has been expanded to include activities related to the implementation of CT scanning techniques.

Modern targeted therapy options applying intelligent radiopharmaceuticals or non-radioactive targeted molecules in combination with other treatment modalities have led to improved survival and quality of life of patients with several types of cancer. To meet these requirements, Project 2.2.2.5 will address the issue of providing guidance and coordinating research activities on the use of the same radiopharmaceutical for both diagnostic and therapeutic applications.

Resource changes and trends: The proposed regular budget resource requirements, at 2009 prices, reflect an increase of 32% (€500 996) in 2010 as compared with 2009, and a decrease of 5.2% (€108 100) in 2011 as compared with 2010. The increase reflects the introduction of activities in the area of diagnostic radiology and more specifically CT scanning. The consolidation of web and database activities under Project 2.2.2.3 also contributes to the increase. Efficiency gains will be accomplished through better coordination with all subprogrammes within Programme 2.2 and with other programmes, notably *Radioisotope Production and Radiation Technology*. The introduction of cancer related activities in diagnostic radiology will also enhance synergies with PACT.

2.2.2	2010 *at 2010 prices*	2011 *at 2010 prices*
Regular Budget	2 130 002	2 019 028
Extrabudgetary	—	—
Unfunded	175 000	145 000

Projects

Title, duration and ranking	Main outputs
2.2.2.1 Improvement of secondary prevention in ischemic heart disease through strengthening the use of nuclear cardiology techniques *Duration:* Recurrent *Ranking:* 1	Publications and scientific papers; training of physicians and technologists in myocardial SPECT imaging; inputs to technical cooperation projects.
2.2.2.2 Clinical PET/CT, molecular imaging and multimodality approach in diagnosis and control of disease *Duration:* 2006–2015 *Ranking:* 1	Publications and scientific papers; training of physicians, radiochemists and technologists in clinical imaging by means of PET and PET-CT; introduction of PET and PET-CT and new clinical protocols and procedures in Member States; support to technical cooperation projects.
2.2.2.3 Web based tools for education, databases and quality management for professional development *Duration:* 2010–2015 *Ranking:* 2	Educational web site with current and relevant material; quality management in nuclear medicine audits, reports and review publications.
2.2.2.4 Cost effective radiopharmaceuticals: Clinical applications (complementary project to radioisotope production and radiation technology project 2.5.1.3) *Duration:* Recurrent *Ranking:* 2	Guidelines, web-based tools, completed series of WHO international pharmacopia standards with 30 additional radiopharmaceuticals, distance learning, and scientific publications.
2.2.2.5 Molecular targeted radiopharmaceuticals for diagnosis and therapy in non-communicable diseases *Duration:* 2008–2015 *Ranking:* 2	Guidelines on clinically relevant and effective diagnostic and therapeutic applications for the early diagnosis, diagnostic follow-up and treatment of benign or malignant conditions. Updated and upgraded knowledge on performing diagnostic and therapeutic procedures.

Subprogramme 2.2.3 Radiation Oncology and Cancer Treatment

Rationale: According to WHO/IARC projections for the year 2020, crude cancer incidence will increase worldwide, with the largest increases in low and middle income countries (LMICs). This will result in increased demands for cancer care services, including surgery, radiotherapy and chemotherapy, which in turn will increase demands for diagnostic and radiation therapy tools and trained experts. This will place a major burden on most health care systems. For many nations, the fight against cancer is one of the largest consumers of health care resources. There is, therefore, a global need for high quality and safety in cancer treatment, which entails the utilization of computerized systems, novel technologies and evidence-based protocols.

Radiotherapy helps to address this need as an essential and cost-effective component in the curative and palliative treatment of cancer, but access and expertise in its use must be expanded. These needs must be addressed through capacity building, transfer of technology and the introduction of evidence-based programmes and quality assurance standards. This subprogramme continues to cover the technical aspects of palliative treatments, curative treatments and developments in advanced radiotherapy. There are specific safety and

quality considerations in some Member States with regard to guidelines for good practice, and the need for validated, affordable treatment protocols for many common cancer types. Many new physical, biological and pharmaceutical tools have become available in recent years that promise to make radiotherapy safer and more effective. Efforts to train the trainers of health care professionals in radiation oncology are concentrating on helping them adapt to these newer tools for the benefit of patients. Teaching materials and distance learning tools for radiotherapy and associated professionals are being developed for these purposes.

Collaboration with international organizations (WHO, PAHO, IARC) and regional professional societies as well as interdepartmental synergies are expected to expand. The National Institute for Radiological Sciences (NIRS) in Chiba, Japan, is a designated IAEA Collaborating Centre that plays a role in the research of biological effects of low dose radiation.

This subprogramme benefits all cancer patients, since the improvement of the management of cancer is equally important for children, men and women suffering from cancer or needing treatment with advanced radiation technology applications. The subprogramme is implemented in coordination with parts of Subprogrammes 2.2.5 and 3.3.1.

Objective: To enhance Member State capabilities to establish sound policies for radiotherapy and cancer treatment, and other applications of radiation in human health, and to ensure the effective and efficient and safe utilization of current and future advanced radiotherapy technologies.

Outcomes	Performance Indicators
— Improved management of cancer patients through implementation of evidence-based approaches and Agency guidelines.	— Number of radiotherapy institutions in Member States using Agency protocols in the treatment of common cancers. — Number of radiotherapy institutions in Member States upgraded in facilities and skilled staff.
— Improved quality of education and training of radiotherapy professionals in Member States.	— Number of training materials, modules and courses made available to Member States. — Number of training courses organized for trainers in radiation oncology.
— Increased capability of Member States in their use of novel techniques and strategies related to radiotherapy and radiation applications.	— Number of centres in Member States participating in the Agency's CRPs on evidence-based and novel techniques related to radiotherapy. — Number of technical cooperation projects and training activities for tissue banking.

Programmatic changes and trends: Palliative treatments are again being emphasized, as they are the most commonly needed in developing countries. Curative treatments adapted to resources available in Member States need validation, and advanced radiotherapy activities will be evaluated for their potential benefit. Training of trainers to implement evidenced based and new approaches will be strengthened. Activities in tissue banking are being phased out, and other radiobiological activities on low dose irradiation have been consolidated into a new project.

Resource changes and trends: The proposed regular budget resource requirements, at 2009 prices, reflect a decrease of 6.8% (€116 236) in 2010 as compared with 2009, and an increase of 11.1% (€177 389) in 2011 as compared with 2010. The decrease in 2010 is largely attributable to the phasing out of the project on therapeutic applications of unsealed radioactive sources in the management of cancer and the consolidation of web and database activities in Project 2.2.2.3. Efficiency gains will be achieved by strengthening synergies with Subprogrammes 2.2.2, 2.2.4 and 2.2.5 to avoid duplication.

2.2.3	**2010** *at 2010 prices*	**2011** *at 2010 prices*
Regular Budget	1 638 113	1 819 745
Extrabudgetary	—	—
Unfunded	—	22 000

Projects

Title, duration and ranking	Main outputs
2.2.3.1 Palliative cancer management using radiotherapy *Duration:* Recurrent *Ranking:* 1	Reports and scientific publications resulting from CRPs and training courses which have been implemented to develop palliative treatment using radiotherapy; CRPs, and published guidelines and reviews for the use of radiotherapy in common palliative clinical situations.
2.2.3.2 Curative cancer management using radiotherapy *Duration:* 2003–2015 *Ranking:* 1	Reports and scientific publications resulting from CRPs on radiotherapy for site specific cancers; publications from clinical meetings; reviews for the treatment of common cancers in limited resource settings.
2.2.3.3 Advanced techniques for cancer radiotherapy *Duration:* 2006–2014 *Ranking:* 2	Published results of new CRPs on advanced radiotherapy and training the trainer's activities; publications on evaluations of new technologies.
2.2.3.4 Biological effects of ionizing radiation *Duration:* 2010–2014 *Ranking:* 3	Reports and scientific articles on health issues related to natural and human–made environmental irradiation; syllabi and teaching texts for education in radiobiology; publications on improving outcomes in radiotherapy by novel biotechnologies: prediction of responses as well as modification of normal tissue reactions including stem cell therapeutics; updated documents on quality control and tissue banking standards; updated Agency web site for tissue banking, including distance learning material; input to technical cooperation projects.

Subprogramme 2.2.4 Quality Assurance and Metrology in Radiation Medicine

Rationale: Applications in radiation medicine are expected to increase in importance as new imaging and treatment modalities are introduced and existing technologies are enhanced. Comprehensive quality assurance (QA) and independent dosimetry audits will be required to ensure appropriate clinical outcomes and to reduce the likelihood of errors, accidents and misdiagnoses.

This subprogramme addresses the physical and technical aspects of QA related to the medical use of radiation and radiation dosimetry standards. It monitors the availability of technology, equipment and human resources for the provision of imaging and treatment modalities in radiation medicine and the corresponding QA guidance for safe and effective implementation in Member States. Through collaboration with professional societies and non-governmental organizations, the Agency provides guidance to Member States for preparing infrastructure and adopting the necessary procedures to enable them to implement advanced imaging and treatment technologies. New QA modalities will be developed and tested through CRPs and will be used to harmonize and improve the Agency's QA guidance for Member States.

The Agency will focus on the development and harmonization of education and training material for medical physicists with an increased emphasis on networking and partnerships with professional societies. The need for clinically qualified medical physicists is a worldwide problem that is well recognized but is most acute in developing nations. The Agency is uniquely able to assist in both educational and training initiatives and also in clinically based training by ensuring sustainability of national education programmes through training the trainers. Addressing the need for medical physicists requires an appropriate definition of what a medical physicist is and the design of activities that support the strengthening of medical physics in developing countries. To increase representation of women in the field of medical physics, institutions in Member States will be encouraged to adopt a gender equality policy in their medical physics education programmes through interactions in meetings and training courses. This subprogramme will be implemented in coordination with parts of Subprogrammes 2.2.2, 2.2.3, 2.2.5 and 3.3.2.

Objective: To enhance the capability of Member States to implement radiation imaging and treatment modalities safely and effectively.	
Outcomes	**Performance Indicators**
— Enhanced QA and dosimetry in hospitals in Member States through a dose auditing and verification service.	— Number of facilities in Member States that have dosimetry calibrations for radiotherapy applications audited, verified and with any discrepancies corrected through Agency support.
— Increased accuracy in dosimetry in the IAEA/WHO Network of SSDLs due to the availability of calibrated radiation measurement standards.	— Number of facilities in Member States that use the Agency's calibration services for national measurement standards and/or participate in the Agency's dosimetry comparisons.
— Increased use by Member States of Agency technology for dosimetry and medical radiation physics and for establishing QA systems to optimize patient diagnosis and treatment.	— Number of Member State institutions using Agency QA procedures and dosimetry codes of practice, and following Agency guidelines for medical physics in nuclear medicine, diagnostic radiology and radiation treatment.
— Increased availability of trained clinical medical physicists in Member States to support safe and effective use of radiation in medicine.	— Number of professionals in Member States trained in medical physics. — Number of Member States adopting Agency's guidelines on education and training in medical physics, and Agency's publications.

Programmatic changes and trends: A new project in medical radiation imaging will focus on the development and harmonization of QA guidance. Following the expansion of the Agency's laboratory facilities and enhanced collaboration with professional societies involved in medical physics, the Agency will focus on the harmonization of education and training materials.

Resource changes and trends: The proposed regular budget resource requirements, at 2009 prices, reflect an increase of 4.4% (€95 687) in 2010 as compared with 2009, and a decrease of 1.1% (€25 000) in 2011 as compared with 2010. The increase is largely attributable to the need to upgrade the dosimetry laboratory by replacing outdated equipment. Efficiency gains will be accomplished by offering new calibration services in the field of standardization and dosimetry in diagnostic radiology. These new developments will complete the spectrum of Agency services in dosimetry optimized use of radiation measuring instruments by Member States. Increased cooperation with Subprogramme 3.3.2 will ensure improved rationalization of activities on patient protection and QA in radiation medicine.

2.2.4	**2010** *at 2010 prices*	**2011** *at 2010 prices*
Regular Budget	2 321 247	2 293 367
Extrabudgetary	—	—
Unfunded	—	—

Projects

Title, duration and ranking	Main outputs
2.2.4.1 Quality audits in dosimetry for radiation medicine *Duration:* Recurrent *Ranking:* 1	IAEA/WHO Thermoluminescent Dosimetry (TLD) postal dose quality audit service in radiotherapy; resolution of any discrepancies in beam calibration uncovered during dosimetry auditing; updated computerized International Dose External Audits (IDEA) database.
2.2.4.2 Calibrations and comparisons in radiation dosimetry *Duration:* Recurrent *Ranking:* 1	Agency certificates of calibration for radiation measurement equipment; Agency certificates of comparison and verification services; SSDL Newsletter; updated database on the activities of the SSDL network; reports of comparisons of radiation measurement standards conducted with international metrology organizations.

Title, duration and ranking	Main outputs
2.2.4.3 Quality assurance and guidelines for medical physics in the optimization of clinical radiation imaging *Duration:* 2005–2015 *Ranking:* 2	Publications on methodologies for improving medical radiation imaging, testing their implementation, and auditing procedures for diagnostic radiology and nuclear medicine; materials for education programmes in academic and clinical medical radiation physics applied to radiation imaging and associated patient dosimetry; and revision of the Basic Safety Standards in collaboration with Programme 3.3.
2.2.4.4 Quality assurance and medical physics developments in radiotherapy and therapeutic nuclear medicine *Duration:* 2007–2015 *Ranking:* 3	Reports on radiation therapy in resource limited settings and on physical and biological tools used in treatment planning; peer review methodology (QUATRO) to identify gaps in technology and practices; update of DIRAC database; guidelines and training material for medical physicists.

Subprogramme 2.2.5 Programme of Action for Cancer Therapy

Rationale: Cancer will be the leading cause of death globally by 2010, with WHO estimating that, without intervention, 100 million people will die in the next 10 years. Currently, more than 70% of all cancer deaths occur in low and middle income (LMI) countries, where resources for prevention, diagnosis and treatment of cancer are limited or non-existent, and this proportion is rising. These countries lack the national cancer control programmes and resources to effectively handle the expected increase in cancers in the next decades.

Over a third of all cancers can be prevented, and some of the most common ones — including cervical, breast, head and neck, and colorectal cancers — are curable if detected early. For all patients with advanced cancer, the quality of life can be improved substantially by palliative care. Radiotherapy is an essential tool for both treatment and palliative care for over 60% of cancer patients in developing countries, yet cancer patients in many countries in Africa, Asia and Latin America have limited or no access to radiotherapy services. Because past investment has not always addressed cancer comprehensively, with neither prevention nor early detection receiving adequate resources, patients with curable cancers die because they are diagnosed too late. Resource intensive investments in radiotherapy capacity meant to allow treatment towards cure are being used to palliate some of the 75% of patients in LMI countries.

Cancer control as an integrated part of a health care system encompasses a wide range of activities, from prevention, surveillance, screening and diagnosis to treatment, rehabilitation and palliative care. Cancer treatment is most effective when it is linked to a comprehensive and multidisciplinary national cancer control programme (NCCP). Such programmes — including prevention and early detection, coupled with a combination of treatments such as surgery, radiotherapy and chemotherapy — now result in increased health awareness and cancer prevention, the curing of 45% of all cancers and improved quality of life for cancer patients in developed countries.

PACT is expected to enable Member States to expand their existing infrastructure and capacity in radiotherapy in a sustainable manner and to improve or accelerate access to effective radiotherapy services as an essential part of multidisciplinary cancer care through a holistic and comprehensive approach to cancer control. This is being achieved in partnerships with other key organizations, including a new joint programme with WHO, advocacy, and mobilization of resources to assist in effective fundraising and delivery of projects to Member States.[2] These efforts include coordination of cancer activities undertaken by the Agency's *Human Health* and technical cooperation programmes, which also provide PACT with technical and capacity building support. PACT seeks to coordinate and align the Agency's cancer related activities with the efforts of WHO and other key agencies and institutions investing in the expansion of cancer control infrastructures in Member States. This includes innovative public–private partnerships, which are essential in placing cancer on the global health agenda and comprehensively addressing cancer needs in the developing world over the next 10–20 years.

PACT will continue to enhance and implement its strategic plan and fundraising activities to mobilize resources and to expand opportunities for further non-traditional donors. Implemented in overlapping stages, the

[2] PACT Partners include: the International Union Against Cancer (UICC), the International Network for Cancer Treatment and Research (UNCTR), the US National Cancer Institute (NCI), Institut National du Cancer (France), the US based National Foundation for Cancer Research (NFCR), Tata Memorial Center (India), the Open Society Institute (OSI), the American Cancer Society (ACS), the University of Oxford, Axios (USA/France), MDS Nordion (Canada), Best Medical International, Inc. (USA/Canada), Lance Armstrong Foundation, Mondofragilis Network (France), the Program for Appropriate Technology in Health (PATH), the State Office for Nuclear Safety (Czech Republic), and C-Change (USA).

programme will continue to raise awareness about cancer, assess cancer care capacity needs, develop demonstration projects and attract donors to establish effective new funding mechanisms beyond those currently available from the Agency.

Follow-up on subprogramme specific lessons learned from reviews, assessment, evaluations: In July 2008, a senior level workshop on cancer activities recognized PACT as an Agency flagship programme that commands significant attention within the Agency's overall health programme and is tasked with acting as a focal point for the Agency's cancer related activities. PACT works closely with all other relevant Agency programmes in Major Programmes 2, 3 and 6. As the umbrella programme for cancer related activities, PACT will serve as the coordinating mechanism for the Agency's contributions to the new WHO/IAEA Joint Programme on Cancer Control.

Objectives:

— To enable Member States to introduce, expand and improve their cancer care capacity by integrating radiotherapy into a comprehensive national cancer control programme (NCCP) that maximizes its therapeutic effectiveness and public health impact.
— To build a global public–private partnership of interested organizations committed to addressing the challenge of cancer in LMI Member States in all its aspects.
— To mobilize resources from charitable trusts, foundations and others in the public and private sectors to assist LMI Member States to develop and implement their diagnostic imaging and radiotherapy capacities within their NCCPs.
— To ensure the effective and sustainable transfer of diagnostic imaging and radiotherapy technologies or knowledge to all LMI Member States where unmet needs exist.

Outcomes	Performance indicators
— Increased Member State capacity to implement and manage self-sustaining comprehensive cancer control systems in developing Member States.	— Number of PACT Model Demonstration Sites (PMDS) established; number of partner organizations collaborating in their development and implementation.
— Member States develop and implement national policies, action plans and strategies for cancer prevention, management and treatment governed by the WHO comprehensive cancer control guidelines and multidisciplinary assessments of existing capacity.	— Number of national cancer control strategies and associated action plans developed and implemented in Member States with assistance through PACT.
— Regional cancer control training networks producing trained staff and training materials to support cancer control programmes in low and medium resource Member States.	— Number of cancer control training networks established or strengthened and providing training on a regional basis with assistance through PACT.
— Mobilization of significant new resources including funding, equipment and expertise from non-traditional sources for combined implementation of comprehensive cancer control in the PMDS countries and other Member States.	— Number of non-traditional donors providing significant resources for the implementation of cancer control programmes in developing countries.

Programmatic changes and trends: Particular emphasis will be placed on implementing the new WHO/IAEA Joint Programme on Cancer Control. This joint programme has the objective of enhancing and harmonizing the activities and resources of the Agency and WHO to work more effectively together and with partners in support of the development and implementation of sustainable comprehensive cancer control programmes in Member States. In response to a lack of human resources in cancer related fields, the Agency will begin work to develop a web-based Virtual University for Cancer Control (VUCC) in conjunction with Member State cancer centres, medical universities, and international partners. VUCC will eventually offer a standardized curriculum for key subject areas of cancer control, and will support multidisciplinary education and training through Regional Cancer Training Networks to be established in Africa, Asia and Latin America.

Resource changes and trends: The proposed regular budget resource requirements, at 2009 prices, reflect an increase of 79.1% (€ 490 096) in 2010 as compared with 2009, and an increase of 9% (€100 000) in 2011 over 2010. Efficiency gains will be achieved by partnering with other UN agencies such as WHO and IARC, and leading international cancer organizations.

2.2.5	**2010** *at 2010 prices*	**2011** *at 2010 prices*
Regular Budget	1 141 847	1 244 192
Extrabudgetary	1 096 273	1 096 273
Unfunded	400 000	400 000

Projects

Title, duration and ranking	Main outputs
2.2.5.1 Cancer control capacity assessment and evaluation *Duration:* Recurrent *Ranking:* 1	Assessment and evaluation tools; baseline assessments; evaluative assessments.
2.2.5.2 Establishing and coordinating model demonstration sites *Duration:* Recurrent *Ranking:* 1	Project documents outlining comprehensive cancer control strategies, including nationwide expansion of the early detection, diagnosis, treatment and palliative care services, identification and design of priority projects, and funding proposals for these priority projects.
2.2.5.3 Outreach, public–private partnership development and resource mobilization *Duration:* Recurrent *Ranking:* 1	Dynamic web site; press releases, news stories (written and audio visual) and reports, outreach pamphlets and brochures, posters; public service announcements, interviews; profiles, public service announcements; support of documentaries; articles for scholarly journals and general audiences. Partnership agreements; joint proposals; work plans; status reports. Gift request strategic plan; prospect development programme; fund raising materials; cultivation activities/events; donor recognition events and correspondence.
2.2.5.4 Promoting regional cancer training networks *Duration:* Recurrent *Ranking:* 1	Criteria, standards, list of selected training institutions and candidates, agreed programme framework, funding proposals; terms of reference for Virtual University for Cancer Control and for mentorship network, list of committed centres, proposals.

Programme 2.3 Water Resources

Rationale: Increasing population, industrial growth and irrigated agriculture together have stressed global freshwater resources over the past several decades. As development drives the need for greater energy production, water for energy — renewable as well as non-renewable — will also be an important consideration in water resources allocation and management plans. In addition, climate change is becoming a significant driver of stress on water resources. The Millenium Development Goals aim to halve the number of people without access to safe drinking water and to stop the unsustainable exploitation of water resources by the year 2015.

To sustain current and future levels of human development, governments need substantial support for their management and policy decisions related to equitable allocation of available resources, protection of resources from pollution and overexploitation, and for prevention or resolution of disputes over shared resources. Among a multitude of socioeconomic information needs, this policy support would include extensive, sound scientific information on surface water and groundwater resources, including the impacts of climate change on water availability. Scientific information and understanding of water resources for management purposes is gained by observations and measurements over a period of decades — for example, of precipitation, river flows and groundwater levels. Isotope techniques in hydrology based on fingerprints of radioactive and stable isotopes in water help to rapidly and cost effectively provide an understanding of water resource systems at local or

regional scales that can be integrated with data from other scientific methods and socioeconomic analysis for management and policy support.

There are two fundamental reasons for continued Agency activities in this field. First, sufficient capacity is still lacking in most countries for using isotopes for water resources management. Second, in order to apply isotopes at local or regional scales, and in particular to assess the impacts of climate change, methodologies and reference data sets are needed on an international scale. These data and methodologies are rarely possible without frameworks of cooperation such as those available through the Agency, which is the only international organization with a mandate in this field.

Within the UN system, the Agency's *Water Resources* programme is coordinated through UN-Water, the interagency coordination committee for freshwater, of which the Agency was a founding member in 2003. Programme formulation also takes into consideration specific areas and gaps where isotope techniques and the Agency make important contributions to the mandates and programmes of other UN agencies and international scientific research programmes, such as the World Bank and the Global Environment Facility (GEF). The IAEA–UNESCO Joint International Isotopes in Hydrology Programme (JIIHP) was launched to foster cooperation between hydrologists and isotope professionals at the national level. JIIHP has provided increased legitimacy and greater opportunities for collaboration to a number of Agency counterparts in their own countries.

The *Water Resources* programme is closely coordinated with the *Food and Agriculture* and *Environment* programmes as well as with Subprogramme 1.3.2. Collaborative activities include areas of irrigation and water use efficiency, submarine groundwater discharge, and integrated water use and energy planning.

Objective: To enable Member States to sustainably use and manage their water resources through the use of isotope technology.	
Outcome	**Performance Indicator**
— Sustainable water resources management and related policy development in Member States based on sound scientific information.	— Availability and use of isotope methodologies and global isotope data for watershed and groundwater management, including adaptation for climate change.

Follow-up on programme-wide lessons learned from reviews, assessment, evaluations: Future trends and new applications in isotope hydrology will be influenced by steady advances in analytical methods and instrumentation and the availability of satellite based global hydrological data. Viable spectroscopic methods as alternatives to conventional mass-spectrometric systems for stable isotope abundance measurement are on the cusp of becoming a routine laboratory instrument. Compared with mass-spectrometers these methods require low operational skills and basic infrastructure for operation. As a result, access to isotope measurement facilities can be expanded to all countries without being limited by a lack of highly skilled personnel or infrastructure requirements.

Space-based hydrological measurements (of precipitation, river flows, changes in groundwater volumes) are helping to overcome a number of obstacles in assessing and managing water resources on a larger scale. In order to keep its comparative advantage as a scientific discipline, isotope hydrology will need to focus on supplementing or validating space-based measurements.

There is a diminishing role for the Agency's Isotope Hydrology Laboratory in providing routine analytical services for stable isotopes and tritium. The Agency will focus more on strategies for data collection, interpretation and integration, with wider efforts on water resources management. Applications such as dam safety or geothermal energy are being phased out. A greater emphasis will be on adapting to climate change and managing variability in water availability. Larger projects where isotopes will be used as an integral part of the technology mix which will be supported with external funds will allow the Agency to lead as an international organization in the field of isotope hydrology.

2.3	**2010** *at 2010 prices*	**2011** *at 2010 prices*
Regular Budget	3 291 307	3 386 254
Extrabudgetary	—	—
Unfunded	—	—

Specific criteria for prioritization:

1. First priority is given to Member State interest in the Agency's services expressed in General Conference resolutions.
2. Second priority is given to comparative advantage of nuclear technology compared with non-nuclear alternatives for the proposed application.
3. Third priority is given to Member States' prioritization of their development needs and efforts.

Subprogramme 2.3.1 Sustainable Water Use and Services

Rationale: Water resources management efforts by Member States and their major development partners, including the World Bank, GEF and bilateral aid agencies, focus on increasing the availability of fresh water. The global per capita availability of renewable water resources in 2015 is expected to decline to about 5560m^3 per capita per year — a drop of nearly 75% compared with availability in 1950. Increasing population and water use related to irrigation and food production, industry, and energy production all contribute to the declining availability of water resources. Groundwater continues to be a major source of fresh water for drinking and irrigation worldwide, including groundwater from non-renewable aquifers. These non-renewable aquifers contain fresh water ranging in age from a few hundred to hundreds of thousands of years. A substantial number of these aquifers are depleted in a few years using motorized pumps. Determination of the age of groundwater, particularly very old groundwater, is important for planners and managers in Member States and helps them to make appropriate decisions on the sustainable use and management of their groundwater resources. In addition, Member States need assistance in using this information for water resources management strategies and policies, and in strengthening related human and institutional capacity. This subprogramme is implemented in coordination with parts of Subprogrammes 1.3.2 and 2.1.1.

Objective: To improve Member State capacity to assess and use water resources in specific regions, ecosystems and climate regimes.	
Outcome	**Performance Indicator**
— Increased ability of Member State institutions to effectively utilize isotope techniques in planning and implementation of water resources management projects.	— Number of water management and/or other technical institutions receiving Agency assistance for using isotope techniques.

Programmatic changes and trends: Project 2.3.1.1 strengthens human resources in isotope hydrology and helps disseminate information. Project 2.3.1.2 develops opportunities for partnerships with other international organizations, particularly GEF, to assist Member States in better managing their national and transboundary groundwater resources, as well as developing strategies for coping with the impact of climate change on the hydrological cycle.

Resource changes and trends: The proposed regular budget resource requirements, at 2009 prices, reflect an increase of 33.4% (€217 115) in 2010 as compared with 2009, and an increase of 16.4% (€142 147) in 2011 as compared with 2010. These changes reflect a greater emphasis on the development of training tools, an Agency symposium to be held in 2011, and initiation of new activities on water resources assessment and integrated water–energy planning.

2.3.1	**2010** *at 2010 prices*	**2011** *at 2010 prices*
Regular Budget	894 058	1 042 129
Extrabudgetary	—	—
Unfunded	—	—

Projects

Title, duration and ranking	Main outputs
2.3.1.1 Exchange of information, training and cooperation with international organizations in isotope hydrology *Duration:* 2004–2011 *Ranking:* 1	Newsletters and updated teaching and training materials including audio video products; support to Member State scientists in obtaining advanced degrees in isotope hydrology at the UNESCO-IHE in Delft, Netherlands; expanded network of Member State isotope and hydrology professionals.
2.3.1.2 Support to Member States for the management of national and transboundary groundwater resources *Duration:* 2008–2011 *Ranking:* 1	Three national or transboundary groundwater projects including partnerships with other agencies; implementation of technical cooperation projects.

Subprogramme 2.3.2 Isotope Methods for the Improved Understanding of the Water Cycle

Rationale: The characterization and quantification of hydrological fluxes within components of the water cycle and across interfaces (e.g. atmosphere–land surface, aquifers–rivers, soil–plant) are critical for the assessment and management of water resources and for understanding the impacts of climate change or variability on the hydrological cycle. As climate change becomes an increasingly significant driver of stress on water resources, isotopes will provide crucial data for adapting to changes in water availability. For example, nearly 2 billion people depend for their water needs on rivers that are fed by glaciers and snow melt. Increased variability and vulnerability of river flows in a warmer climate (due to increased melt flows and changes in precipitation patterns) would drive a need for changes in water use and management practices. As development drives the need for greater energy production, water for energy — renewable as well as non-renewable — will also be an important consideration in water resources allocation and management plans. The development and use of isotope applications for understanding the water cycle requires global isotope data.

The Johannesburg Plan of Implementation adopted at the World Summit on Sustainable Development held in 2002 specifically identified understanding of the water cycle as a critical part of the water agenda. The primary components of the Earth's hydrological cycle are precipitation, river flow, evaporation and transpiration from the land surface. The Agency has initiated and maintained (jointly with WMO) the Global Network of Isotopes in Precipitation (GNIP) for the past 40 years, which has provided critical data for simulating the water cycle in climate models. Thirty-five percent of continental precipitation is discharged into the oceans through river runoff, and isotope monitoring of river systems provides reference data for water balance studies and for the analysis of climate and environmental changes in large river basins. Although critical to the practice of isotope hydrology, global isotope reference data are not collected on a global scale, nor are they disseminated in the public domain by any other institution. This subprogramme is implemented in coordination with parts of Subprogramme 2.1.1.

Objective: To enable Member States to use isotope techniques for water resources management.

Outcome	Performance Indicator
— Increased availability of isotope data and methodologies for water cycle components for research and practical applications in Member States.	— Number of Agency provided or managed isotope databases, methodologies and networks for precipitation, rivers and groundwater.

Programmatic changes and trends: This subprogramme will focus on the use of isotopes in climate change adaptation and better watershed/groundwater modelling.

Resource changes and trends: The proposed regular budget resource requirements, at 2009 prices, reflect a decrease of 7% (€97 106) in 2010 as compared with 2009, and a decrease of 4.1% (€53 521) in 2011 as compared with 2010. These changes are due partly to the anticipated completion of CRPs during this programme cycle.

2.3.2	2010 *at 2010 prices*	2011 *at 2010 prices*
Regular Budget	1 337 815	1 283 340
Extrabudgetary	—	—
Unfunded	—	—

Projects

Title, duration and ranking	Main outputs
2.3.2.1 Isotope methods for the assessment of groundwater sustainability *Duration:* 2004–2011 *Ranking:* 1	Report on improved approaches for assessing groundwater sustainability; methods for isotope based groundwater assessments, including maps, atlases and reports; reports on isotopic methods for the age dating of base flow as a means for assessing groundwater sustainability and on relative advantages of different isotopes for quantifying groundwater recharge and age.
2.3.2.2 Development of isotope methodologies for water quality assessment and management *Duration:* 2004–2011 *Ranking:* 1	Reports and guidebooks on the use of isotopes in artificial recharge and storage, pollution assessment and mitigation in river basins; report on the use of isotopes for the assessment of oxygen availability in root zones and surface water bodies.
2.3.2.3 Isotope methods for the study of water and carbon cycle dynamics in the atmosphere and biosphere *Duration:* 2004–2011 *Ranking:* 1	Strengthened global isotope data networks managed by the Agency; improved Member State access to the data through the Internet; statistical tools and methods for better understanding the nature and causes of spatial variations in isotopes.

Subprogramme 2.3.3 Analytical Services for Isotope Hydrology

Rationale: Member States continue to request that the Agency help to strengthen their ability to conduct isotopic analyses. In addition to strengthening infrastructure and training of personnel, the Agency has made concerted efforts to help utilize this capacity for national and regional technical cooperation projects. An expanding Isotope Hydrology Analytical Network (IHAN) has been operating over the past five years and includes selected Member State laboratories that perform analytical services for Agency projects. The establishment of new isotope laboratories in Member States strengthens their self-sustainability for incorporation of isotope methods in national water resources activities. Analytical facilities supplement Member State capacities and provide high precision data for their calibration, validation and quality control, and for training purposes. In addition, analytical methods have been developed for Member State use through the Agency's Isotope Hydrology Laboratory. There are cases where similar analytical support is not commercially available or where special requirements are needed to apply these techniques in Member State projects.

Improved quality of analysis is achieved through interlaboratory comparisons of analysis using control samples provided to many laboratories. These comparisons are conducted as a part of the IHAN network of laboratories contributing to the Agency's regular budget and technical cooperation activities.

Objective: To enable Member States to provide analytical services for isotope hydrology at national and regional levels.

Outcome	Performance Indicator
— Improved Member State capacity for the isotope analysis of hydrological samples.	— Extent to which Member States are able to produce high quality isotope data in their own laboratories.

Programmatic changes and trends: The focus of this subprogramme is on increasing Member State ability to produce their own isotope data and to provide those services that facilitate a strengthening of their capacity. In addition, the subprogramme focuses on establishing a network of Member State laboratories to support technical cooperation projects. With the availability of the laser-based isotope analysis instrument, it is now possible to greatly expand this capability. The production and distribution of reference materials within the *Water*

Resources programme have been shifted to the *Environment* programme with effect from the 2010–2011 programme cycle.

Resource changes and trends: The proposed regular budget resource requirements, at 2009 prices, reflect a decrease of 15.3% (€187 009) in 2010 as compared with 2009, and no significant change in 2011 as compared with 2010. This is due to the transfer of reference material production and distribution tasks to the *Environment* programme.

2.3.3	**2010** *at 2010 prices*	**2011** *at 2010 prices*
Regular Budget	1 059 434	1 060 785
Extrabudgetary	—	—
Unfunded	—	—

Projects

Title, duration and ranking	Main outputs
2.3.3.1 Development of Member State capacity for isotope analysis of hydrological samples *Duration:* Recurrent *Ranking:* 1	Expanded network of Member State laboratories providing isotope analysis for technical cooperation projects; guidebooks and measurement protocols for a laser based instrument for the analysis of stable oxygen and hydrogen isotopes; integration of the laser instrument into Member State laboratories through the TC programme and extrabudgetary resources.
2.3.3.2 Development of helium isotope applications for water resources management *Duration:* 2004–2013 *Ranking:* 1	Improved sampling methods for helium isotope analysis; demonstration study to test and validate the use of helium isotopes for groundwater recharge estimation.

Programme 2.4 Environment

Rationale: The United Nations Conference on Environment and Development held in Rio de Janeiro in 1992 and the Millennium Development Goals explicitly call for focused efforts at the international level to address environmental issues as an integral part of the development process. The environment was further identified as a development priority in 2002 at the World Summit on Sustainable Development (WSSD) in Johannesburg. The WSSD issued comprehensive recommendations on maintaining environmental and natural resource sustainability without compromising industrial and agricultural production.

In the framework of its mandate to encourage and assist Member States in the applications of nuclear techniques for sustainable development and environmental health, and responding to Member State requests, the Agency has demonstrated that nuclear techniques have an important role to play in the management of the environment. Within this programme, the transfer and behaviour of radionuclides and non-radioactive pollutants are investigated to develop and improve models used for environmental assessments and to elaborate appropriate remediation strategies for stakeholders dealing with environmental issues. An increasingly important feature of this work is the impact of climate change on environmental sustainability and natural resources.

In pursuing these activities, the programme will support international trade, ecological sustainability, effective environmental risk assessment and remediation of polluted environments, with corresponding improvements in the analytical capabilities of the Member State laboratories involved. The programme will further provide scientific information and assistance to international organizations such as WHO, WMO, UNDP, UNEP and FAO. It will also enhance capacity building in Member States dealing with elevated levels of radioactive or other environmental contaminants, whether of natural or anthropogenic origin, for sustainable management of terrestrial, marine and atmospheric environments and their natural resources.

Objective: To enhance the capacity for understanding environmental dynamics, and the identification and mitigation of problems in the marine and terrestrial environments caused by radioactive and non-radioactive pollutants using nuclear techniques.	
Outcomes	**Performance Indicators**
— Improved understanding of environmental processes, impacts and fate of pollutants in marine and terrestrial environments of Member States through the use of nuclear techniques.	— Number of published reports and papers on the marine and terrestrial environments of Member States. — Number of fellowships/training conducted on assessment and management of the marine and terrestrial environment.
— Increased capacity of Member State analytical laboratories through the use of Agency recommended techniques for monitoring, assessment studies and environmental management, reference materials, and interlaboratory comparison exercises.	— Number of reference materials provided on request of Member States.

Follow-up on programme-wide lessons learned from reviews, assessment, evaluations: The programme has been reorganized and consolidated to achieve greater synergies between the Seibersdorf and Monaco laboratories, with the number of subprogrammes reduced from five to four and a corresponding reduction in the number of projects. The programme is further strengthening and harmonizing IAEA reference product services to better support Member State laboratories in environmental sample analysis, intercalibrations and analytical quality control. This will include consolidation of the reference product services provided by the Isotope Hydrology Laboratory that are presently managed under the *Water Resources* programme.

2.4	**2010** *at 2010 prices*	**2011** *at 2010 prices*
Regular Budget	5 723 602	5 821 946
Extrabudgetary	321 404	366 369
Unfunded	316 000	60 000

Specific criteria for prioritization:

1. First priority is given to activities that make a significant contribution to reaching the Millennium Development Goals, with a special emphasis on environmental sustainability.
2. Second priority is given to activities that support lowering technical barriers to trade and support the competitiveness of least developed and developing Member States.
3. Third priority is given to activities that assist Member State laboratories through networking and development of guidelines.

Subprogramme 2.4.1 IAEA Reference Products for Science and Trade

Rationale: International trade as well as environmental assessments, studies and actions related to mitigation of incidents depend to a large extent on measurements. Reliable, comparable and 'fit for purpose' results are therefore an essential requirement for any decision based on analytical measurements. In the case of global assessments, where decisions are made on the basis of results produced by different laboratories, these requirements become even more pronounced. The Agency is one of the few institutions providing quality assured reference products and materials to Member States. The Agency is actively involved in the production and distribution of radioactive, organic and stable isotope reference materials, and in laboratory intercomparison exercises. In the field of stable isotope ratio measurements, the variations of stable isotopic compositions of elements in a given compound reveal much about the history and origin of the material. These measurements have been used for decades in scientific fields such as geochemistry, hydrology, agriculture, environmental sciences, medicine and biology. Recently, their application has been extended to new areas, such as nutrition science, forensics and climate change, which require higher precision and more sophisticated analytical and metrological procedures.

Harmonized approaches in statistical evaluation, reporting, quantification of measurement uncertainty and metrological traceability are required if comparability of measurement results is to be achieved. The existing networks that are coordinated within this subprogramme will be further strengthened and extended. The primary objective of these networks is to support those laboratories nominated by their Member States for environmental monitoring studies, including readiness to provide assistance in emergency situations in the case of any releases of radionuclides into the environment.

The reference materials available from the Agency are of the highest international quality and are important both scientifically and economically to ensure both proper measurements in laboratories and economic decisions based on the results. Similarly, interlaboratory comparisons and proficiency tests organized by the Agency fulfil a crucial role for Member State laboratories to document their implementation of quality assurance measures, which is a basic requirement for any accreditation of measurement procedures. This subprogramme is implemented in coordination with parts of Subprogrammes 2.1.3 and 2.4.3.

Objective: To enhance the reliability and comparability of measurement results obtained by nuclear analytical techniques in Member States' laboratories.

Outcome	Performance Indicators
— Enhanced capability of Member State laboratories to carry out sampling and measurement with the assistance of reference materials provided by the Agency.	— Number of Member State scientists trained in analytical methodology and quality systems. — Number of reference materials provided on request to Member State laboratories. — Number of laboratories participating in Agency interlaboratory comparison exercises.

Programmatic changes and trends: Building on the work of a project established in the 2006–2007 biennium to harmonize approaches used in the terrestrial and marine parts of this programme, all reference material activities in Major Programme 2 will be combined and harmonized under this subprogramme.

Resource changes and trends: The proposed regular budget resource requirements, at 2009 prices, reflect an increase of 91.6% (€822 726) in 2010 as compared with 2009, and a decrease of 7.2% (€123 172) in 2011 as compared with 2010. The increase consists of resources allocated from other programmes, in particular the *Water Resources* programme. Efficiency gains are obtained by making joint use of equipment in laboratories in Seibersdorf and Monaco, and by consolidating and harmonizing procedures for reference materials production and distribution.

2.4.1	**2010** *at 2010 prices*	**2011** *at 2010 prices*
Regular Budget	1 768 589	1 639 949
Extrabudgetary	75 825	120 790
Unfunded	60 000	—

Projects

Title, duration and ranking	Main outputs
2.4.1.1 Coordination of reference product services and customer relations *Duration:* Recurrent *Ranking:* 1	Reference materials; consolidated Agency reference materials catalogue; consolidated Agency web site for customer interaction; harmonization of Agency reference materials production and certification process.
2.4.1.2 Provision of reference products for terrestrial environments and laboratory performance support *Duration:* Recurrent *Ranking:* 1	New matrix reference materials; proficiency tests and advice to Member State laboratories regarding their analytical performance; recommended procedures for the collection and analysis of terrestrial environment samples; operational ALMERA network of laboratories for rapid response in measurement of radionuclides in environmental samples; personnel trained.

Title, duration and ranking	Main outputs
2.4.1.3 Provision of reference products for the marine environment and laboratory performance support *Duration:* Recurrent *Ranking:* 2	Marine reference materials; global and regional interlaboratory studies; reports and publications on the results of interlaboratory studies; recommendations for the selection of instruments and the provision of training courses in the analysis of radioactive and non-radioactive contaminants in marine matrices.
2.4.1.4 Provision of stable isotope reference products for water and other environmental applications *Duration:* Recurrent *Ranking:* 1	Stable isotope reference materials. Production of new reference materials to replace those under high demand and with depleting stock. Improved reference values for existing reference materials. Reports on interlaboratory comparison exercises.

Subprogramme 2.4.2 Nuclear Techniques to Understand Climate and Environmental Change

Rationale: In 2007, the Intergovernmental Panel on Climate Change (IPCC) concluded that warming of the climate system is unequivocal. Approximately 80% of this warming has been absorbed by the ocean, as demonstrated by records of increasing ocean temperatures. The ocean is also affected by other climate warming effects, such as widespread melting of polar ice and global sea level rises. Hence, there are growing concerns over how climate change will affect marine ecosystems, natural marine resources and sustainable development. As the oceans also currently absorb approximately one third of the CO_2 emitted due to anthropogenic activities, an expanded and refined understanding of the role of the ocean in the global carbon cycle and how ocean CO_2 uptake will change in the future is vital for climate science. Furthermore, detailed information is needed on the transfer and fate of CO_2 in the natural marine cycle. Increasing concentrations of atmospheric CO_2 are causing corresponding increases in ocean acidity, a trend that is dangerous to many marine organisms. This is particularly true for organisms that build shells for survival, as rising acidity interferes with this process. If ocean acidification continues its current rising trend, it is expected that within roughly 50 years many marine organisms, such as corals, will no longer be able to survive.

The Agency is developing tools that use radionuclides and isotopes to track climate change. Natural and human-made radionuclides are used to track ocean circulation in key oceanic regions that are responsible for the transport of CO_2 and heat. They are also used to validate models designed to predict the future impact of climate change and ocean acidification. Radionuclides are used to date marine records such as corals and sediments that help to reconstruct past climate conditions, and to reconstruct past ecosystem health through indicators such as sediment accumulation and trends in pollution levels. Stable isotopes that are found in some organic molecules can also be used to reconstruct past climate conditions, which is fundamental to achieving a better understanding of the impacts of climate change in the oceans. This subprogramme is implemented in coordination with parts of Subprogrammes 1.3.2 and 2.3.1.

Objective: To help Member States in the development and use of nuclear techniques to achieve better understanding of climate and environmental change.

Outcomes	Performance Indicators
— Improved Member State capacity for understanding the causes and effects of climate change in their marine environments through nuclear techniques.	— Number of reports, papers, manuals and guidelines published in collaboration with Member States where appropriate, on the study of climate and marine change and its effects in the marine environment. — Number of partnerships with UN and other international organizations to study climate and environmental change.

Programmatic changes and trends: This subprogramme is being restructured to address more urgently and effectively the global issue of climate change. Greater emphasis will be placed on studying the impact of climate change in the oceans by combining the efforts of modelling and remote sensing with experimental work in key

areas. This will require greater internal collaboration with the other Agency laboratories as well as expanded efforts to collaborate with Member State laboratories, UN partners and other international organizations.

Resource changes and trends: The proposed regular budget resource requirements, at 2009 prices, reflect an increase of 32.2% (€289 854) in 2010 as compared with 2009, and an increase of 10.9% (€129 800) in 2011 as compared with 2010. Efficiency will be gained by consolidating and coordinating climate and environmental change activities under this subprogramme, and by strengthening collaboration with other programmes.

2.4.2	**2010** *at 2010 prices*	**2011** *at 2010 prices*
Regular Budget	1 217 122	1 352 690
Extrabudgetary	42 984	42 984
Unfunded	68 000	30 000

Projects

Title, duration and ranking	Main outputs
2.4.2.1 Isotopic tools and models to study climate change *Duration:* Recurrent *Ranking:* 2	Publications (technical reports, Agency and non-Agency publications).
2.4.2.2 Isotopic tracers of climate and environmental change *Duration:* 2006–2015 *Ranking:* 1	Technical reports, Agency and non-Agency publications.
2.4.2.3 Monitoring and assessment of Carbon cycling in the Oceans *Duration:* Recurrent *Ranking:* 1	Technical reports, Agency and non-Agency publications.

Subprogramme 2.4.3 Nuclear Techniques for the Sustainable Development of Marine and Coastal Ecosystems

Rationale: Increasing global demand for aquaculture production is putting pressure on marine ecosystems, thereby creating the need for sustainable management strategies. This demand is impacting estuarine, coastal and oceanic marine systems where the biodiversity that sustains fisheries can be adversely affected by land-based contaminants released by these activities and harmful algal blooms that occur as a consequence. The land-based contaminants of concern include radionuclides, metals and other chemical pollutants that enter the marine environment via surface waters and submarine groundwater discharge. These contaminants will have an impact on biological productivity in combination with the predicted effects of climate change, such as increased temperatures, reduced oxygen levels and the potentially detrimental effects of ocean acidification. Nuclear techniques are key to understanding many of the relevant marine processes, including sources and sinks of pollutants, their transport pathways and their ultimate fate in sediments. In this context, harmonized methodologies and strategies for monitoring and risk assessment are required by Member State marine laboratories to support environmental and radiological monitoring and the use of radiotracer applications in pollution studies and marine sustainability studies. This subprogramme is implemented in coordination with parts of Subprogrammes 2.1.3 and 2.3.1 and Programme 3.4.

Objective: To improve Member State capabilities to use nuclear techniques to understand and assess changes in coastal and marine ecosystems and to manage marine natural resources.	
Outcomes	**Performance Indicators**
— Enhanced capability of Member States to use nuclear and isotopic techniques to understand and assess impacts of radioactive and non-radioactive contaminants in their marine and coastal environments.	— Publications including peer reviewed journal papers, training manuals, guidelines and reports, in collaboration with Member States, where appropriate.
— Enhanced capability of Member States to use nuclear and isotopic techniques for seafood safety investigations.	— Number of Member States using nuclear and isotopic techniques as a result of Agency assistance to investigate the impacts of contaminants on seafood species, their consumption and production. — Number of partnerships with other relevant UN organizations.
— Improved reliability and comparability of marine radioactivity data, produced by Member State laboratories, based on harmonized methodologies.	— Data in MARIS marine radioactivity database.

Programmatic changes and trends: Changes in delivery mechanisms will include formal and informal partnerships with other UN system organizations and marine and coastal zone management institutions, especially in the aquaculture and fisheries industries. Through these partnerships, it is hoped that significant extrabudgetary support will be obtained. The mix of expanded programmatic work will include some further reductions in classical radioecological studies and considerably enhanced activity in ecological impacts of contaminants in submarine groundwater discharge and the use of radiotracers to experimentally investigate exposure pathways of priority contaminants to seafood. Closer synergy will be achieved with the Agency laboratories in Seibersdorf and Vienna, and with Programmes 2.1 and 2.3.

Resource changes and trends: The proposed regular budget resource requirements, at 2009 prices, reflect a decrease of 11.4% (€276 693) in 2010 as compared with 2009, and an increase of 1.7% (€36 400) in 2011 as compared with 2010. Greater synergies will be achieved through closer collaboration with other Agency laboratories and programmes.

2.4.3	**2010** *at 2010 prices*	**2011** *at 2010 prices*
Regular Budget	2 215 223	2 253 209
Extrabudgetary	202 595	202 595
Unfunded	153 000	—

Projects

Title, duration and ranking	Main outputs
2.4.3.1 Nuclear techniques to understand coastal and estuarine processes *Duration:* Recurrent *Ranking:* 2	Published reports, papers, manuals and guidelines on radionuclide techniques in coastal environmental studies reflecting increased knowledge of land–ocean interaction in the water cycle; isotopic methods for environmental studies.
2.4.3.2 Marine pollution and impact assessment *Duration:* 2006–2015 *Ranking:* 1	Manuals on radioecological techniques; increased knowledge of radiation impacts on marine biodiversity.

Title, duration and ranking	Main outputs
2.4.3.3 Radioecological techniques for seafood safety *Duration:* Recurrent *Ranking:* 2	Manual on seafood safety assessment using nuclear techniques; increased knowledge of contaminant bio-accumulation in seafoods, to support trade.
2.4.3.4 Marine Radioactivity Measurement and Assessment *Duration:* Recurrent *Ranking:* 1	Reports and guidelines on measurement and assessment of radionuclides in the marine environment; publications; contributions to Agency publications and electronic training material.

Subprogramme 2.4.4 Understanding and Protecting the Terrestrial and Atmospheric Environments

Rationale: Industrial and mining activities often result in the release of radionuclides and other pollutants to the environment. Subsequent exposure of humans and biota can have negative impacts on health and ecosystem sustainability. Public concerns have also been expressed regarding the environmental impact of nuclear material (depleted uranium) used in conventional ammunition, potential releases of radioactivity caused by terrorist acts (dirty bombs) and elevated levels of natural radioactivity in general. The fate and impact of contamination in a variety of ecosystems therefore need to be studied to provide effective preventive, diagnostic and remediation measures.

Member States need site specific information on the present level of radionuclides and other potential pollutants in the terrestrial environment in order to evaluate trends and to study transfer processes and environmental changes, occurrence, processes and impacts of land degradation and soil erosion. This requires the quantification of natural and anthropogenic sources, modelling of the dispersion of contaminants in air, soils and water, and studies of their impact. The development of such models will enable Member States to predict future conditions, which will facilitate decision making and, where needed, the development of remediation strategies. Nuclear and isotopic techniques promote sound environmental management by providing cost-effective tools for investigating release processes and contamination on a quantitative basis and assessing land degradation and soil erosion. Demand-driven programmes that provide assistance in quality management, capacity building and training, and the design and implementation of environmental monitoring programmes and remediation strategies will further improve the understanding of environmental processes. The Agency serves as a clearinghouse of information and provider of advisory services for regional and international bodies such as WHO, WMO, UNEP, UNDP and IUR, and for Member States affected by radioactive contamination, including the Arctic and Antarctic areas. This subprogramme is implemented in coordination with parts of Subprogrammes 1.4.3, 2.1.1, 2.4.3 and 3.4.2.

Objective: Increased Member State capacities to apply nuclear techniques for understanding and protecting terrestrial and aquatic ecosystems.

Outcome	Performance Indicator
— Enhanced Member State capability to use nuclear techniques to understand and assess change in terrestrial and atmospheric environments and to adopt and assess suitable and sustainable remediation strategies, where needed.	— Number of Agency reports giving guidance to Member States on the use of nuclear techniques for terrestrial and atmospheric environmental assessment and management.

Programmatic changes and trends: More activities are directed towards the use of nuclear techniques in the study of environmental processes. In addition, greater emphasis will be given to the development of guidelines and standard methodologies. These increases will be offset by reduction in work on terrestrial radioecology and ecotoxicology. Work on the scientific and technical basis of remediation will be conducted in coordination with, and in many cases jointly with, Major Programmes 1 and 3.

Resource changes and trends: The proposed regular budget resource requirements, at 2009 prices, reflect an increase of 167.8% (€317 386) in 2010 as compared with 2009, and an increase of 10.2% (€51 546) in 2011 as compared with 2010. Efficiency gains will be realized through close cooperation with relevant projects in Major Programmes 1 and 3.

2.4.4	**2010** *at 2010 prices*	**2011** *at 2010 prices*
Regular Budget	522 668	576 098
Extrabudgetary	—	—
Unfunded	35 000	30 000

Projects

Title, duration and ranking	Main outputs
2.4.4.1 Methodologies for understanding environmental processes in terrestrial and surface water ecosystems *Duration:* 2010–2015 *Ranking:* 1	Data for radionuclide transfer parameters; personnel trained; reports, publications and conference proceedings.
2.4.4.2 Methodologies for monitoring air pollution and investigating atmospheric processes *Duration:* 2010–2015 *Ranking:* 3	Publications on the use of nuclear techniques in air pollution studies; personnel trained.
2.4.4.3 Scientific and technical basis of contaminated site remediation planning *Duration:* Recurrent *Ranking:* 2	New and improved methods for remediation planning and assessment; data from site specific cases; guidelines on remediation efficiency assessment; personnel trained.

Programme 2.5 Radioisotope Production and Radiation Technology

Rationale: Radioisotope products and radiation technology are essential components for applications in such fields as medicine, industry, agriculture and the environment. Their use has led to significant contributions towards sustainable development and improvements in the quality of life in Member States. The demand for the most used radioisotopes is generally increasing (5–10% per annum), and radiation techniques for medical and industrial applications are also showing continued growth. Consequently, many countries continue to seek the Agency's support in integrating these technologies as a part of their development plans.

The ability to economically produce radioisotopes and radiopharmaceuticals close to user centres is critical to bring beneficial but often unavailable medical diagnostic tools and treatments within the reach of a greater number of patients in developing Member States. Industrial efforts towards this end need to be supplemented by enhanced national capabilities. This will have the further benefit of enhancing the security of supplies by reducing dependence on imports from a limited number of distant centres and/or aged facilities that are more vulnerable to disruptions in production. Agency activities will encourage strategies and actions that promote worldwide availability of products, will strengthen QA practices and regulatory compliance, and will facilitate human resources development. Special attention is necessary in the cases of molybdenum-99, which is needed for the most widely used diagnostic tracer, technetium-99m; of radioisotopes for therapeutic uses such as yttrium-90 and lutetium-177; and of emerging positron emitter tracers such as copper-64, iodine-124 and gallium-68.

Ionizing radiation can be a powerful tool for the deactivation of microbes either to address threats to public health and safety that might be posed by deliberate or inadvertent biohazard contamination, or to treat wastewaters for reuse in the industrial, agricultural and horticultural sectors. Radiation treatment of volatile organic compounds and hazardous chemical agents can also be highly effective in neutralizing harmful pollutants. Support in the use of radiation processing in developing and studying polymer composites and nano materials is another emerging and innovative area of interest in the development plans of many countries.

Furthermore, radiation techniques are uniquely effective for visualizing multiphase flow in complex industrial systems, and therefore can assist Member States in enhancing quality assurance (QA) systems and the safety of industrial processes in strategic industries.

Given the multidisciplinary expertise required in the above fields, the Agency's role as the only UN organization working to foster international cooperation in radiation technology is crucial. The CRPs and other activities under this programme are aimed at providing guidelines, protocols, procedures and training materials for capacity building in fostering radioisotope and radiation techniques and radiopharmaceutical development and local production capabilities, and providing technical support to more than 100 technical cooperation projects in Member States.

Objective: To contribute to improved health care and to safe and clean industrial development in Member States by strengthening national capabilities in the production of radioisotope products and in the use of radioisotopes and radiation technology.	
Outcome	**Performance Indicators**
— Enhanced Member State capability in the application of radioisotope products and radiation technology as tools for sustainable development.	— Number of Member State laboratories involved in adapting/contributing to developing and improving the methodologies for various products, techniques and applications. — Number of technical documents on the above topics made available to Member States.

Follow-up on programme-wide lessons learned from reviews, assessment, evaluations: The recent OIOS evaluation of the performance of this programme during the years 2002–2007 noted the valuable contributions made and recommended continuing attention to the above topics as identified needs for Member States. Closer coordination with the *Human Health* programme will continue in the area of radiopharmaceuticals to deliver more holistic support to Member States interested in building sustainable local capabilities. Tasks designed to contribute to increased availability of reactor-based radioisotopes will be implemented in close coordination with the *Nuclear Science* programme. Regular budget activities related to technologies that are mature and established in developing countries, such as non-destructive testing, as well as to certain nuclear analytical techniques and routine industrial radiation techniques, will be phased out. Support to technical cooperation projects will be rendered, to the extent possible, using expertise already created in several Member States.

2.5	**2010** *at 2010 prices*	**2011** *at 2010 prices*
Regular Budget	2 120 951	2 117 714
Extrabudgetary	—	—
Unfunded	185 495	185 495

Specific criteria for prioritization:

1. First priority is given to activities that contribute to developing Member State capabilities in essential areas of radioisotopes and radiation technology applications, where these techniques have established utility and distinct advantage in meeting the needs and interests of Member States.
2. Second priority is given to projects that support or enhance the Agency's role in increasing access for developing Member States to new and emerging radioisotopes and radiation technology and in providing associated services and transfer of know-how.

Subprogramme 2.5.1 Support to Radioisotope Products for Medical and Industrial Applications

Rationale: The demand for radioisotopes for medical and industrial applications continues to grow. The success of many recent clinical trials using therapeutic radiopharmaceuticals is enhancing the demand for therapeutic radionuclides. It is necessary to foster efforts to accelerate the development and introduction of more widely available and easily produced products for this purpose. This will support sustainability as well as the growth in the application of therapeutic radiopharmaceuticals in oncology. Further, the establishment of an increasing number of PET centres around the world (with or without a dedicated medical cyclotron) has revived the interest

in using several positron emitter-based tracers for PET imaging in addition to the well established fluorine-18. For centres that do not have cyclotrons, the use of radioisotope generator systems is of added interest as a method of deriving the benefits of PET in clinical practice. There are growing concerns related to the security of supplies of some established radioisotopes, such as molybdenum-99, due to the ageing reactors in use and the limited number of large processing facilities. In response, the Agency will facilitate interactions for greater international cooperation among stakeholders to strengthen the production capacity and assist in identifying potential additional reactors and national laboratories in this regard.

In view of the above, the focus of Agency activities will be on: (i) products of lutetium-177, yttrium-90 and to a lesser extent rhenium-188, for radionuclide therapy; (ii) fluorine-18 based radiopharmaceuticals other than FDG; (iii) copper-64, iodine-124 and gallium-68 derived from germanium-68/ gallium-68 generators; and (iv) the fostering of international cooperation to enhance the security of supplies of vital radioisotopes. Efforts are now directed towards scaling up the technology for production of reliable and user friendly generator systems for yttrium-90 as well as the preparation of radiopharmaceuticals with yttrium-90, lutetium-177 and to a lesser extent rhenium-188.

In the diagnostic field, increases in the number of medical cyclotron and PET facilities and entry of more fluorine-18 based radiopharmaceuticals into regular clinical use are expected. Copper-based radiopharmaceuticals are cited as an important need for both diagnostic and therapeutic use in the future, and scope exists for producing copper-64 using spare time available in the case of many medical cyclotrons. Gallium-68, derived from germanium-68/ gallium-68 generators, is quickly being established as a useful PET isotope for labelling peptides for diagnosing different types of cancer. There is also interest in the development and use of germanium-68/ gallium-68 generators for non-medical industrial applications.

With further respect to industrial applications, the development and support of strategies for increasing the availability of radiotracers on-site in developing countries will contribute to improved troubleshooting and earlier restoration of disrupted operations in vital industries.

The subprogramme is implemented in coordination with Subprogrammes: 1.4.1, 1.4.2, 2.2.2 and 2.2.3.

Objective: To improve Member State capabilities in health care and industry by supporting the production and use of radioisotope products.

Outcome	Performance Indicators
— Enhanced capability of Member States to locally produce and use radioisotope products and radiopharmaceuticals for medical, industrial and other applications.	— Number of Member State laboratories involved in developing and utilizing the methodologies for radioisotope and radiopharmaceutical production. — Number of technical documents on the above topics made available to Member States.

Programmatic changes and trends: This subprogramme was restructured in the 2008–2009 biennium, and most activities started in that cycle will continue as planned without major changes. During this biennium there will be greater synergies with Programmes 2.2 and 1.4. There will be joint tasks on radiopharmaceuticals with Subprogramme 2.2.2. Activities on the development of production methods using cyclotrons for emerging PET tracers such as copper-64 and generator-based positron emitters are being expanded. Another emphasis will be on the fostering of networking and international cooperation among reactor operators and isotope producers. Activities in this biennium will lead to the completion of development and introduction of a few therapeutic products of yttrium-90 and lutetium-177 into clinical use based on Agency coordinated R&D work. Finally, there will be an increasing focus on the compilation and publication of technical manuals and guidelines.

Resource changes and trends: The proposed regular budget resource requirements, at 2009 prices, reflect an increase of 8% (€64 468) in 2010 as compared with 2009, and an increase of 9.3% (€81 000) in 2011 as compared with 2010. Efficiency gains are to be achieved through further synergies and coordination of activities with the *Human Health* programme and by focusing the subprogramme activities and optimizing the staff profile on areas that contribute to needs based developments and normative functions to facilitate capacity building.

2.5.1	2010 *at 2010 prices*	2011 *at 2010 prices*
Regular Budget	898 456	983 368
Extrabudgetary	—	—
Unfunded	—	—

Projects

Title, duration and ranking	Main outputs
2.5.1.1 Fostering the availability of radioisotopes and generators and development of emerging products for medical and industrial applications *Duration:* 2004–2013 *Ranking:* 1	Better practices involving targetry for liquid and gas irradiation in cyclotrons; guidelines on and requirements for production of molybdenum-99 from LEU based targets; technical reports covering methodologies and standard procedures for the production and QC of radioisotopes and radionuclide generators, including one together with Subprogramme 1.4.2, on production of LEU based molybdenum-99; publication of CRP findings.
2.5.1.2 Supporting development, production and quality control of emerging diagnostic products *Duration:* 2007–2014 *Ranking:* 1	Methodologies and protocols for the development and production of fluorine-18 labelled products; report on specific radiopharmaceuticals with a focus on imaging cancer; guidelines for QA and good manufacturing practices; publication of CRP findings.
2.5.1.3 Cost effective radiopharmaceuticals: Development (complementary project to Project 2.2.2.4 of the *Human Health* programme) *Duration:* 2006–2014 *Ranking:* 2	Guidebook and methodologies applicable for therapeutic radiopharmaceuticals; publication of CRP findings.

Subprogramme 2.5.2 Radiation Technology Support for Material Development and Analysis and Pollutant Treatment

Rationale: The rapid economic growth and aspirations of many Member States are leading to intensifying industrial activity worldwide. This trend is giving rise to an expanding awareness of the need to effectively and sustainably manage industrial processes. Sustainable industrial process management should include strategies to optimize production, to develop more value-added products, to remove and safely dispose of harmful wastes and effluents, and to recycle these to obtain products of practical utility. Radiation-based techniques can promote better use of precious resources, improve productivity and support a cleaner environment. While some of these efforts are driven by the private sector, there are industries in developing Member States that depend upon Agency support for access to and support of relevant radiation technologies.

Radiation treatment using electron beam or gamma sources can be highly effective in minimizing the effect of harmful waste products and contaminants, and may also have valuable applications in the recycling of treated wastewaters and sludge for horticultural and agricultural purposes. It also is very useful in the development of value-added products from low-cost natural and human-made raw materials. Multiphase systems are indispensable in many modern industrial and environmental processes, and their optimization is important for ensuring efficiency and environmental safety. In many cases, radioisotope technology is the only, or best, way of investigating these systems. Emerging radioisotope techniques such as gamma ray transmission and emission tomography, radioactive particle tracking and specific phase tracing methods will be of considerable interest to emerging economies actively engaged in large scale industrialization. Agency support for the development and validation of environmentally safe radiation technology applications will facilitate their objective assessment and adoption by interested Member States. Compositional analysis of materials and archaeological and geological objects often requires application of radiation based techniques.

The emphasis in this subprogramme will be on assisting national institutions to achieve self-sustainability. The subprogramme aims to produce guidelines, procedures, protocols and materials for human resources development and will assist in building up infrastructure and the knowledge base for utilizing radiation technology, while supporting more than 60 technical cooperation projects. Part of the subprogramme is implemented in coordination with Subprogramme 1.4.3.

Objective: To strengthen Member State national capabilities in the use of radiation technology, radioisotope applications and nuclear techniques for the development of value added products and for improving industrial process management.	
Outcome	**Performance Indicators**
— Increased Member State knowledge and expertise in the application of radiation technology and nuclear techniques for improving industrial process efficiency and safety, development of value-added products, and treatment of pollutants/hazardous materials.	— Number of Member State laboratories involved in developing and utilizing the methodologies for radiation processing, compositional analysis and industrial applications of radioisotope techniques. — Number of technical documents made available to Member States.

Programmatic changes and trends: The project on *"Strengthening capabilities for detection of explosives and illicit materials and for compositional analysis"* has been phased out. Continuing activities related to the application of radioanalytical techniques for compositional analysis have been merged into Project 2.5.2.1 with a revised structure and updated objectives. During this biennium there will be an expansion of activities in radiation technology to support the production of advanced composites and value-added materials, remediation of biohazard contaminants and preservation of valuable cultural heritage such as wood objects and papers. There will also be activities to strengthen QA practices and the reliable utilization of emerging radiation and nuclear techniques, including field applications. Enhancing the awareness of the applicability as well as the limitations in using radiation-based techniques for compositional analysis of materials and archaeological and geological objects will be addressed. Finally, there will also be an increasing focus on the compilation and publication of technical manuals and guidelines.

Resource changes and trends: The proposed regular budget resource requirements, at 2009 prices, reflect an increase of 4.4% (€50 532) in 2010 as compared with 2009, and a decrease of 7.2% (€86 000) in 2011 as compared with 2010. The decrease in 2011 reflects the phasing out of Project 2.5.2.4 and transfer of this project's continuing activities related to compositional analysis of materials to Project 2.5.2.1. Efficiency gains are to be achieved as a result of the reduction of the number of projects and the focus will shift to areas where the comparative advantages of radiation technology can make a more significant difference for Member States.

2.5.2	**2010** *at 2010 prices*	**2011** *at 2010 prices*
Regular Budget	1 222 495	1 134 346
Extrabudgetary	—	—
Unfunded	185 495	185 495

Projects

Title, duration and ranking	Main outputs
2.5.2.1 Strengthening capabilities to adapt radiation based techniques for industrial process management and compositional analysis of materials/objects. *Duration:* 2004–2013 *Ranking:* 2	Manuals, training materials and methodologies for radioisotope and radiation applications in industrial process management. Publication of CRP findings.
2.5.2.2 Radiation technology support for materials development and nanoscience *Duration:* 2007–2015 *Ranking:* 1	Methodologies and standard procedures for the application of radiation processing techniques in the development of value-added products; publication of CRP findings.
2.5.2.3 Remediation of pollutants using radiation technology *Duration:* 2005–2015 *Ranking:* 1	Procedures and guidelines on the application of radiation processing techniques in the treatment of pollutants; personnel training; publication of CRP findings.

Major Programme 2 - Nuclear Techniques for Development and Environmental Protection

Summary of Programme Structure and Resources
(excluding Major Capital Investments)
Table 15

	Project / Subprogramme / Programme	2010			2011 preliminary estimates		
		Regular Budget at 2010 prices	Extra-budgetary	CAURBs Unfunded	Regular Budget at 2010 prices	Extra-budgetary	CAURBs Unfunded
2.0.0.1	Overall Management, Coordination and Common Activities	4 502 838	-	-	4 524 161	-	-
2.0.0.2	Management of the Coordinated Research Activities	688 359	-	-	688 341	-	-
		5 191 197	-	-	**5 212 502**	-	-
2.1.1.1	Soil management and conservation for sustainable agriculture and environment	750 379	117 126	107 547	691 953	117 126	142 547
2.1.1.2	Technologies and practices for sustainable use and management of water in agriculture	989 167	10 464	60 000	956 265	10 464	30 000
2.1.1.3	Crop Improvement for high yield and enhanced adaptability to climate change	697 622	181 960	80 000	865 815	181 960	120 000
2.1.1.4	Integrated and efficient mutation technologies for crop breeding and genetics	693 886	152 918	40 000	568 256	152 918	-
2.1.1.5	Integrated soil-water-plant approaches to enhance food production and biomass productivity	986 222	151 765	115 000	908 957	151 765	80 000
	Subprogramme 2.1.1 - Sustainable Intensification of Crop Production Systems	**4 117 276**	**614 233**	**402 547**	**3 991 246**	**614 233**	**372 547**
2.1.2.1	Integrated management of animal nutrition, reproduction and health	389 313	123 247	-	410 349	123 247	-
2.1.2.2	Reducing risk from transboundary animal diseases (TADs) and those of zoonotic importance	972 700	142 528	30 000	775 919	142 528	-
2.1.2.3	Molecular technologies for improving productivity in smallholder livestock systems	767 766	98 705	-	-	-	-
2.1.2.4	Innovative nuclear based approaches to maintain biodiversity and enhance livestock productivity.	-	-	-	860 174	98 705	-
	Subprogramme 2.1.2 - Sustainable Intensification of Livestock Production Systems	**2 129 779**	**364 480**	**30 000**	**2 046 442**	**364 480**	**-**
2.1.3.1	Post-harvest phytosanitary applications of food irradiation to facilitate international trade	480 599	147 964	-	476 339	147 964	-
2.1.3.2	Traceability as an approach to control food contaminants and improve food safety	905 932	395 329	130 000	1 112 001	395 329	185 000
2.1.3.3	Preparedness and Response to Nuclear Emergencies and Radiological Events affecting Food and Agriculture	124 019	52 342	-	94 646	52 342	-
	Subprogramme 2.1.3 - Improving Food Safety and Consumer Protection	**1 510 550**	**595 635**	**130 000**	**1 682 986**	**595 635**	**185 000**
2.1.4.1	SIT to control exotic insect plant pests of agriculture and the environment	733 241	214 161	65 000	773 588	214 161	25 000
2.1.4.2	Area-wide suppression of native insect plant pests to reduce insecticide use and facilitate international trade	901 146	171 798	35 000	905 890	171 798	-
2.1.4.3	Strengthening capacities to use SIT in area-wide control of tsetse and screwworm populations	1 326 487	162 776	-	1 273 515	162 776	120 000
2.1.4.4	Development of the SIT for the control of human disease-transmitting mosquitoes	490 567	44 756	20 000	535 450	44 756	-
	Subprogramme 2.1.4 - Sustainable Control of Major Insect Pests	**3 451 441**	**593 491**	**120 000**	**3 488 443**	**593 491**	**145 000**
Programme 2.1 - Food and Agriculture		**11 209 046**	**2 167 839**	**682 547**	**11 209 117**	**2 167 839**	**702 547**
2.2.1.1	Combating the double burden of malnutrition	834 409	-	-	858 977	-	-

Major Programme 2 - Nuclear Techniques for Development and Environmental Protection

Summary of Programme Structure and Resources
(excluding Major Capital Investments)
Table 15

	Project / Subprogramme / Programme	2010			2011 preliminary estimates		
		Regular Budget at 2010 prices	Extra-budgetary	CAURBs Unfunded	Regular Budget at 2010 prices	Extra-budgetary	CAURBs Unfunded
2.2.1.2	Sustainable strategies to combat micronutrient deficiencies	445 329	-	-	534 652	-	-
2.2.1.3	Nuclear techniques in the management of HIV/AIDS and other infectious diseases	504 781	-	-	537 228	-	-
2.2.1.4	PHASED OUT	-	-	-	-	-	-
2.2.1.5	PHASED OUT	-	-	-	-	-	-
	Subprogramme 2.2.1 - Nutrition and Support for Infectious Disease Management	**1 784 519**	**-**	**-**	**1 930 857**	**-**	**-**
2.2.2.1	Improvement of secondary prevention in ischemic heart disease through strengthening the use of nuclear cardiology techniques	412 924	-	25 000	389 718	-	-
2.2.2.2	Clinical PET/CT, molecular imaging and multimodality approach in diagnosis and control of disease	668 836	-	-	619 734	-	-
2.2.2.3	Web based tools for education, databases and quality management for professional development	398 549	-	20 000	418 171	-	-
2.2.2.4	Cost-effective radiopharmaceuticals: Clinical applications (complementary project to radioisotope production and radiation technology project 2.5.1.3)	288 164	-	40 000	269 343	-	85 000
2.2.2.5	Molecular targeted radiopharmaceuticals for diagnosis and therapy in non-communicable diseases	361 529	-	90 000	322 062	-	60 000
2.2.2.6	PHASED OUT	-	-	-	-	-	-
	Subprogramme 2.2.2 - Nuclear Medicine and Diagnostic Imaging	**2 130 002**	**-**	**175 000**	**2 019 028**	**-**	**145 000**
2.2.3.1	Palliative cancer management using radiotherapy	402 312	-	-	490 549	-	-
2.2.3.2	Curative cancer management using radiotherapy	730 681	-	-	824 026	-	-
2.2.3.3	Advanced techniques for cancer radiotherapy	233 926	-	-	246 528	-	22 000
2.2.3.4	Biological effects of ionising radiation	271 194	-	-	258 642	-	-
2.2.3.5	PHASED OUT	-	-	-	-	-	-
	Subprogramme 2.2.3 - Radiation Oncology and Cancer Treatment	**1 638 113**	**-**	**-**	**1 819 745**	**-**	**22 000**
2.2.4.1	Quality audits in dosimetry for radiation medicine	474 751	-	-	517 642	-	-
2.2.4.2	Calibrations and comparisons in radiation dosimetry	773 138	-	-	645 060	-	-
2.2.4.3	Quality assurance and guidelines for medical physics in the optimization of clinical radiation imaging	516 992	-	-	568 197	-	-
2.2.4.4	Quality assurance and medical physics developments in radiotherapy and therapeutic nuclear medicine	556 366	-	-	562 468	-	-
	Subprogramme 2.2.4 - Quality Assurance and Metrology in Radiation Medicine	**2 321 247**	**-**	**-**	**2 293 367**	**-**	**-**
2.2.5.1	Cancer Control Capacity Assessment and Evaluation	125 551	184 040	-	140 329	184 040	-
2.2.5.2	Establishing and Coordinating Model Demonstration Sites	455 688	505 354	-	481 886	505 354	-
2.2.5.3	Outreach, Public-Private Partnership Development and Resource Mobilization	297 409	321 442	-	320 360	321 442	-
2.2.5.4	Promoting Regional Cancer Training Networks	263 199	85 437	400 000	301 617	85 437	400 000
	Subprogramme 2.2.5 - Programme of Action for Cancer Therapy	**1 141 847**	**1 096 273**	**400 000**	**1 244 192**	**1 096 273**	**400 000**
Programme 2.2 - Human Health		**9 015 728**	**1 096 273**	**575 000**	**9 307 189**	**1 096 273**	**567 000**
2.3.1.1	Exchange of information, training and cooperation with international organizations in isotope hydrology	299 423	-	-	387 442	-	-
2.3.1.2	Support to Member States for the management of national and transboundary groundwater resources	594 635	-	-	654 687	-	-
	Subprogramme 2.3.1 - Sustainable Water Use and Services	**894 058**	**-**	**-**	**1 042 129**	**-**	**-**

Major Programme 2 - Nuclear Techniques for Development and Environmental Protection

Summary of Programme Structure and Resources
(excluding Major Capital Investments)
Table 15

	Project / Subprogramme / Programme	2010 Regular Budget at 2010 prices	2010 Extra-budgetary	2010 CAURBs Unfunded	2011 preliminary estimates Regular Budget at 2010 prices	2011 preliminary estimates Extra-budgetary	2011 preliminary estimates CAURBs Unfunded
2.3.2.1	Isotope methods for the assessment of groundwater sustainability	664 499	-	-	664 876	-	-
2.3.2.2	Development of isotope methodologies for water quality assessment and management	395 451	-	-	390 221	-	-
2.3.2.3	Isotope methods for the study of water and carbon cycle dynamics in the atmosphere and biosphere	277 865	-	-	228 243	-	-
	Subprogramme 2.3.2 - Isotope Methods for the Improved Understanding of the Water Cycle	**1 337 815**	**-**	**-**	**1 283 340**	**-**	**-**
2.3.3.1	Development of Member State capacity for isotope analysis of hydrological samples	701 477	-	-	712 072	-	-
2.3.3.2	Development of helium isotope applications for water resources management	357 957	-	-	348 713	-	-
	Subprogramme 2.3.3 - Analytical Services for Isotope Hydrology	**1 059 434**	**-**	**-**	**1 060 785**	**-**	**-**
Programme 2.3 - Water Resources		**3 291 307**	**-**	**-**	**3 386 254**	**-**	**-**
2.4.1.1	Coordination of reference product services and customer relations	240 897	-	-	217 210	-	-
2.4.1.2	Provision of reference products for terrestrial environments and laboratory performance support	719 133	-	-	720 382	-	-
2.4.1.3	Provision of reference products for the marine environment and laboratory performance support	314 604	75 825	60 000	363 215	120 790	-
2.4.1.4	Provision of stable isotope reference products for water and other environmental applications	493 955	-	-	339 142	-	-
	Subprogramme 2.4.1 - IAEA Reference Products for Science and Trade	**1 768 589**	**75 825**	**60 000**	**1 639 949**	**120 790**	**-**
2.4.2.1	Isotopic tools and models to study climate change	294 063	5 480	-	293 822	5 480	-
2.4.2.2	Isotopic tracers of climate and environmental change	545 855	21 641	-	634 925	21 641	30 000
2.4.2.3	Monitoring and assessment of Carbon cycling in the Oceans	377 204	15 863	68 000	423 943	15 863	-
	Subprogramme 2.4.2 - Nuclear Techniques to Understand Climate and Environmental Change	**1 217 122**	**42 984**	**68 000**	**1 352 690**	**42 984**	**30 000**
2.4.3.1	Nuclear techniques to understand coastal and estuarine processes	443 529	32 459	40 000	437 539	32 459	-
2.4.3.2	Marine pollution and impact assessment	450 329	99 073	70 000	574 912	99 073	-
2.4.3.3	Radioecological techniques for seafood safety	537 294	65 583	43 000	528 415	65 583	-
2.4.3.4	Marine Radioactivity Measurement and Assessment	784 071	5 480	-	712 343	5 480	-
	Subprogramme 2.4.3 - Nuclear Techniques for the Sustainable Development of Marine and Coastal Ecosystems	**2 215 223**	**202 595**	**153 000**	**2 253 209**	**202 595**	**-**
2.4.4.1	Methodologies for understanding environmental processes in terrestrial and surface water ecosystems	148 994	-	35 000	154 190	-	-
2.4.4.2	Methodologies for monitoring air pollution and investigating atmospheric processes	221 978	-	-	266 204	-	30 000
2.4.4.3	Scientific and technical basis of contaminated site remediation planning	151 696	-	-	155 704	-	-
	Subprogramme 2.4.4 - Understanding and Protecting the Terrestrial and Atmospheric Environments	**522 668**	**-**	**35 000**	**576 098**	**-**	**30 000**
2.4.5.1	PHASED OUT	-	-	-	-	-	-
2.4.5.2	PHASED OUT	-	-	-	-	-	-
2.4.5.3	PHASED OUT	-	-	-	-	-	-
	Subprogramme 2.4.5 - PHASED OUT	**-**	**-**	**-**	**-**	**-**	**-**
Programme 2.4 - Environment		**5 723 602**	**321 404**	**316 000**	**5 821 946**	**366 369**	**60 000**

Major Programme 2 - Nuclear Techniques for Development and Environmental Protection

Summary of Programme Structure and Resources

(excluding Major Capital Investments)

Table 15

	Project / Subprogramme / Programme	2010 Regular Budget at 2010 prices	2010 Extra-budgetary	2010 CAURBs Unfunded	2011 preliminary estimates Regular Budget at 2010 prices	2011 preliminary estimates Extra-budgetary	2011 preliminary estimates CAURBs Unfunded
2.5.1.1	Fostering the availability of radioisotopes and generators and development of emerging products for medical and industrial applications	296 959	-	-	386 007	-	-
2.5.1.2	Supporting development, production and quality control of emerging diagnostic products	353 491	-	-	334 765	-	-
2.5.1.3	Cost-effective radiopharmaceuticals: development (complementary project to Human Health project 2.2.2.4)	248 006	-	-	262 596	-	-
	Subprogramme 2.5.1 - Support to Radioisotope Products for Medical and Industrial Applications	**898 456**	**-**	**-**	**983 368**	**-**	**-**
2.5.2.1	Strengthening capabilities to adapt radiation-based techniques for industrial process management and compositional analysis of materials/objects.	494 919	-	85 000	448 653	-	85 000
2.5.2.2	Radiation technology support for materials development and nanoscience	438 590	-	70 346	336 039	-	70 346
2.5.2.3	Remediation of pollutants using radiation technology	288 986	-	30 149	349 654	-	30 149
	Subprogramme 2.5.2 - Radiation Technology Support for Material Development and Analysis and Pollutant Treatment	**1 222 495**	**-**	**185 495**	**1 134 346**	**-**	**185 495**
Programme 2.5 - Radioisotope Production and Radiation Technology		**2 120 951**	**-**	**185 495**	**2 117 714**	**-**	**185 495**
Major Programme 2 - Nuclear Techniques for Development and Environmental Protection		**36 551 831**	**3 585 516**	**1 759 042**	**37 054 722**	**3 630 481**	**1 515 042**

Major Programme 2 - Nuclear Techniques for Development and Environmental Protection

Core Activities Unfunded in the Regular Budget
Table 16

	Project Title and Description of Activities	2010 CAURBs Unfunded	2011 CAURBs Unfunded
2.1.1.1	Soil management and conservation for sustainable agriculture and environment		
2.1.1.1/03	*Develop a framework and methodologies for assessing impacts of changes in land uses and land management practices on energy balance in agricultural ecosystems and the contribution to climate change (greenhouse gas emissions)*	107 547	107 547
2.1.1.1/09	*Plan and coordinate a CRP on sediment budgets at the watershed scale and sediment-related impacts on downstream environmental degradation (2008-2012)*	-	35 000
2.1.1.2	Technologies and practices for sustainable use and management of water in agriculture		
2.1.1.2/09	*Co-ordinate a CRP on: Strategic placement and area-wide evaluation of water conservation zones in agricultural catchments for biomass production, water quality and food security (2008-2012)*	-	30 000
2.1.1.2/10	*Organize a regional seminar on: "Use of constructed wetland for water conservation in water-limited environment" in Africa.*	60 000	-
2.1.1.3	Crop Improvement for high yield and enhanced adaptability to climate change		
2.1.1.3/07	*Interregional networking to utilize mutants for tolerance to adverse effects of climate change and variability*	60 000	50 000
2.1.1.3/08	*Regional networking for the identification and distribution of mutant pre-breeding germplasm in Europe for enhanced adaptability to climate change and variability*	20 000	70 000
2.1.1.4	Integrated and efficient mutation technologies for crop breeding and genetics		
2.1.1.4/10	*Organize an interregional network for training and capacity building in mutation induction and efficiency enhancing bio-/molecular techniques*	40 000	-
2.1.1.5	Integrated soil-water-plant approaches to enhance food production and biomass productivity		
2.1.1.5/11	*Plan and Coordinate a CRP on Mitigation of climate change through integrated soil-plant management to promote carbon and nitrogen capture and storage in agroecosystems (2010-2014)*	115 000	80 000
	Subprogramme 2.1.1 - Sustainable Intensification of Crop Production Systems	402 547	372 547
2.1.2.2	Reducing risk from transboundary animal diseases (TADs) and those of zoonotic importance		
2.1.2.2/04	*Develop and validate biotechnologies for the control of transboundary animal diseases (TADs)*	30 000	-
	Subprogramme 2.1.2 - Sustainable Intensification of Livestock Production Systems	30 000	-
2.1.3.2	Traceability as an approach to control food contaminants and improve food safety		
2.1.3.2/01	*Provide technical input to Codex for the development of international standards and guidelines related to the integrated control of food and environmental hazards*	40 000	-
2.1.3.2/06	*CRP on Integrated Analytical Approaches to Assess Indicators of the Effectiveness of Pesticide Management Practices at a Catchment Scale (D5.20.35/2006-2011)*	-	85 000

Major Programme 2 - Nuclear Techniques for Development and Environmental Protection

Core Activities Unfunded in the Regular Budget
Table 16

	Project Title and Description of Activities		2010 CAURBs Unfunded	2011 CAURBs Unfunded
	2.1.3.2/09	*Inter-regional Seibersdorf "train the trainers" course on analysis of pesticides, including laboratory quality assurance and quality control procedures.*	90 000	-
	2.1.3.2/10	*Inter-regional Seibersdorf "train the trainers" course on screening and confirmatory methodologies for the analysis of veterinary drug residues.*	-	70 000
	2.1.3.2/11	*Regional workshops on integrated analytical approaches to monitor, control and comply with maximum limits for residues and contaminants*	-	30 000
	Subprogramme 2.1.3 - Improving Food Safety and Consumer Protection		130 000	185 000
2.1.4.1	SIT to control exotic insect plant pests of agriculture and the environment			
	2.1.4.1/06	*Develop a public information brochure on successful stories in relation to SIT programmes*	25 000	25 000
	2.1.4.1/14	*Assess role of protein feeding in mating competitiveness of sterile Anastrepha spp. males*	20 000	-
	2.1.4.1/16	*Publish results of the CRP on " Development of mass rearing for New World (Anastrepha) and Asian (Bactrocera) fruit fly pests in support of SIT" D4.10.21*	20 000	-
2.1.4.2	Area-wide suppression of native insect plant pests to reduce insecticide use and facilitate international trade			
	2.1.4.2/06	*Develop fruit fly parasitoid rearing procedures that incorporate use of radiation*	15 000	-
	2.1.4.2/11	*Evaluate the use of X-rays for insect sterilization including dosimetry and bio-assays*	20 000	-
2.1.4.3	Strengthening capacities to use SIT in area-wide control of tsetse and screwworm populations			
	2.1.4.3/24	*Enhance capacity building through an interregional course on area-wide pest management*	-	120 000
2.1.4.4	Development of the SIT for the control of human disease-transmitting mosquitoes			
	2.1.4.4/14	*Review opportunities and requirements for implementing a CRP on "Effects of mosquito production and release methods on male competitiveness"*	20 000	-
	Subprogramme 2.1.4 - Sustainable Control of Major Insect Pests		120 000	145 000
Programme 2.1 - Food and Agriculture			**682 547**	**702 547**
2.2.2.1	Improvement of secondary prevention in ischemic heart disease through strengthening the use of nuclear cardiology techniques			
	2.2.2.1/05	*Develop publication resulting from CRP E1.30.32 on performance of rest myocardial perfusion imaging in the management of acute chest pain in the emergency room*	25 000	-
2.2.2.3	Web based tools for education, databases and quality management for professional development			
	2.2.2.3/02	*Develop common guidelines on QUANUM for radiation regulators including safety of radiopharmaceuticals (jointly with NSRW) and streamline national and regional efforts to accredit nuclear medicine services using QUANUM process*	20 000	-
2.2.2.4	Cost-effective radiopharmaceuticals: Clinical applications (complementary project to radioisotope production and radiation technology project 2.5.1.3)			
	2.2.2.4/02	*Establish pre-qualification scheme for quality of radiopharmaceuticals*	25 000	-
	2.2.2.4/03	*Coordinate a CRP on radiolabelled generator based alpha emitters (2010-2014) (in conjunction with 2.5.1.3)*	15 000	85 000

Major Programme 2 - Nuclear Techniques for Development and Environmental Protection

Core Activities Unfunded in the Regular Budget
Table 16

	Project Title and Description of Activities	2010 CAURBs Unfunded	2011 CAURBs Unfunded
2.2.2.5	Molecular targeted radiopharmaceuticals for diagnosis and therapy in non-communicable diseases		
2.2.2.5/03	*Coordinate a CRP on the use of targeted radiolabelled peptides for the diagnosis and treatment of solid tumours (2010-2013) (jointly with 2.5.1.3)*	90 000	60 000
	Subprogramme 2.2.2 - Nuclear Medicine and Diagnostic Imaging	175 000	145 000
2.2.3.3	Advanced techniques for cancer radiotherapy		
2.2.3.3/03	*Organize a Technical meeting on evidence-based clinical applications and efficacy of protons and ions for cancer treatment (in conjunction with 2.2.4.4)*	-	22 000
	Subprogramme 2.2.3 - Radiation Oncology and Cancer Treatment	-	22 000
2.2.5.4	Promoting Regional Cancer Training Networks		
2.2.5.4	Other unfunded needs	400 000	400 000
	Subprogramme 2.2.5 - Programme of Action for Cancer Therapy	400 000	400 000
Programme 2.2 - Human Health		**575 000**	**567 000**
2.4.1.3	Provision of reference products for the marine environment and laboratory performance support		
2.4.1.3/02	*Organize interlaboratory studies and proficiency tests for radionuclides, heavy metals and organic contaminants in marine samples*	60 000	-
	Subprogramme 2.4.1 - IAEA Reference Products for Science and Trade	60 000	-
2.4.2.2	Isotopic tracers of climate and environmental change		
2.4.2.2/04	*Coordinate a CRP on Global Trends in Pollution of Coastal Ecosystems*	-	30 000
2.4.2.3	Monitoring and assessment of Carbon cycling in the Oceans		
2.4.2.3/03	*Initiate a CRP on the use of isotopes to study the variability of carbon flux in the oceans, including field experiments and models.*	68 000	-
	Subprogramme 2.4.2 - Nuclear Techniques to Understand Climate and Environmental Change	68 000	30 000
2.4.3.1	Nuclear techniques to understand coastal and estuarine processes		
2.4.3.1/04	*Investigate the impacts of submarine groundwater discharges on coastal environments*	40 000	-
2.4.3.2	Marine pollution and impact assessment		
2.4.3.2/03	*Investigate bioaccumulation and biological impacts of radionuclides in marine biota*	70 000	-
2.4.3.2/04	*Investigate bioaccumulation and biological impacts of metals and organic compounds in marine biota*	-	-
2.4.3.3	Radioecological techniques for seafood safety		
2.4.3.3/02	*Investigate bioaccumulation of priority contaminants in seafoods*	43 000	-
	Subprogramme 2.4.3 - Nuclear Techniques for the Sustainable Development of Marine and Coastal Ecosystems	153 000	-

Major Programme 2 - Nuclear Techniques for Development and Environmental Protection

Core Activities Unfunded in the Regular Budget
Table 16

	Project Title and Description of Activities	2010 CAURBs Unfunded	2011 CAURBs Unfunded
2.4.4.1	Methodologies for understanding environmental processes in terrestrial and surface water ecosystems		
2.4.4.1/02	*Prepare a guidance document and training materials on soil and vegetation sampling methods for radioactivity surveys*	10 000	-
2.4.4.1/07	*Prepare an Agency document on methodologies for assessment of the impact of uranium mining on downstream water quality*	25 000	-
2.4.4.2	Methodologies for monitoring air pollution and investigating atmospheric processes		
2.4.4.2/07	*Organise a technical meeting on advanced source identification and source apportionment techniques in support of air quality management*	-	30 000
	Subprogramme 2.4.4 - Understanding and Protecting the Terrestrial and Atmospheric Environments	35 000	30 000
Programme 2.4 - Environment		**316 000**	**60 000**
2.5.2.1	Strengthening capabilities to adapt radiation-based techniques for industrial process management and compositional analysis of materials/objects.		
2.5.2.1/05	*Coordinate a CRP on radiometric methods for measuring and modeling multiphase systems towards process management (2009-2013)*	30 000	55 000
2.5.2.1/06	*Initiate a CRP on evaluation of the use of transportable neutron sources for applications of nuclear techniques(2010-2013)*	55 000	30 000
2.5.2.2	Radiation technology support for materials development and nanoscience		
2.5.2.2	Other unfunded needs	70 346	70 346
2.5.2.3	Remediation of pollutants using radiation technology		
2.5.2.3	Other unfunded needs	30 149	30 149
	Subprogramme 2.5.2 - Radiation Technology Support for Material Development and Analysis and Pollutant Treatment	185 495	185 495
Programme 2.5 - Radioisotope Production and Radiation Technology		**185 495**	**185 495**
Major Programme 2 - Nuclear Techniques for Development and Environmental Protection		**1 759 042**	**1 515 042**

Major Programme 3
Nuclear Safety and Security

Introduction

This major programme promotes the worldwide achievement of high levels of nuclear safety and security to protect people, society and the environment. In the current global situation, there are rising expectations for nuclear technologies to meet energy demands and human needs for well-being and sustainable development. The global situation cannot afford the consequences of a serious nuclear incident or of nuclear terrorism. Such an event would undermine any significant nuclear expansion.

The Agency's work under this major programme directly executes the Agency's statutory functions of establishing standards of safety and providing for their application to its own operations and to the activities of Member States, upon request. In addition, this major programme responds to the requirements of relevant international instruments in nuclear security to establish guidelines, promote their use and support their application. Under this major programme, the Agency establishes high quality safety standards and security guidelines, conducts peer reviews and advisory services, maintains knowledge networks that support the global nuclear safety and security regime, and undertakes capacity building activities. Continuous improvement and effective use of the global nuclear safety and security regime will help ensure the safe and secure expansion of nuclear programmes and technologies worldwide, particularly in the light of the increasingly multinational nature of nuclear technology development and activities. However, the risk of a serious nuclear accident and the threat of nuclear terrorism cannot be entirely eliminated. Therefore, this major programme also provides for international capacities and preparedness for effectively responding to and mitigating the consequences of a nuclear accident or of nuclear terrorism, should such an event occur. Major Programme 3 is the Agency's programmatic response to Goal B of the Medium Term Strategy 2006–2011.

While the global situation is changing and existing facilities and activities require continuous improvements, there has been a pivotal change in the perception of security concerns that require urgent attention. In summary, there are four key considerations that have resulted in adjustments and changes to this major programme when contrasted to previous cycles.

The first consideration is the increasing importance and need of States to establish and provide for long term sustained improvements in nuclear security. This requires regular and assured resources. The Agency is restructuring its security programme to respond and give priority to establishing an effective information management platform and to developing additional security guidance and services to help States evaluate systems and approaches and further assist them in their capacity building efforts. However, while the change in structure will address identified priorities for regular budget funding, additional funding through the NSF will continue to be required to address past lacunae and to fund major expenditure beyond the scope of the regular budget.

The second consideration is to enhance the capabilities of the IEC to respond to large scale emergencies and to help build and strengthen capacities for emergency preparedness and response in Member States.

The third consideration is the globalization of the nuclear industry and business. Such globalization requires that the Agency expand its efforts to foster and maintain effective international knowledge networks so that Member States can share knowledge and experience for mutual learning and the promotion of harmonized approaches to safety and security.

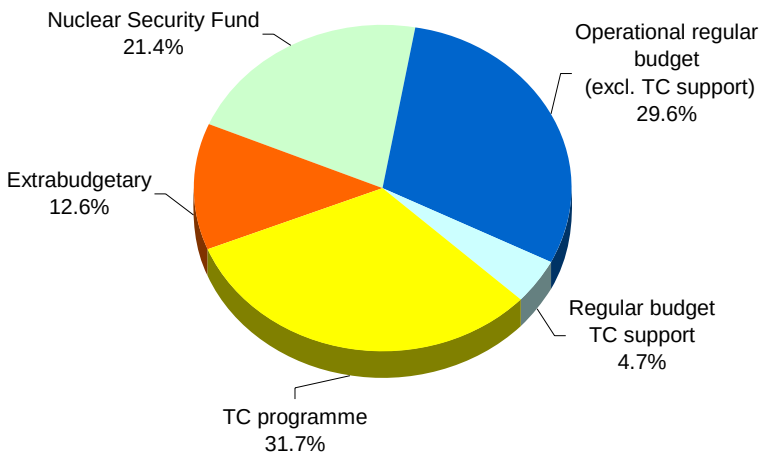
The fourth consideration is the focus on ensuring that both existing and emerging nuclear programmes alike develop and sustain the necessary organizational and human capacity to ensure nuclear safety and security well into the future. In addition to the knowledge networks noted above, the Agency is strengthening its training and capacity building programmes in both safety and security.

A general consideration is the safety, security and emergency preparedness and response of new entrant nuclear power programmes. With new players entering the global nuclear safety and security regime, the Agency is pursuing enhancements to its standards, guidelines, peer reviews and advisory services to ensure that they can be effectively applied by Member States in both existing nuclear programmes as well as in emerging programmes. In this regard, greater attention needs to be given to the possibility that uncontrolled radioactive materials may circulate in the public domain, and to the means of detecting and acting upon such illicit movement or use.

Objectives	Performance Indicators
— To continuously improve global safety and security through the establishment and wide application of safety standards and security guidelines, worldwide subscription to international legal instruments, integrated and modular peer reviews and services, capacity building and networking. — To continuously enhance national, regional and international capabilities and arrangements for ensuring a high level of safety and security and emergency planning and response.	— Number of countries using the elements of the global nuclear safety and security regime. — Number of countries using the Agency's guidance materials and participating in events to promote and facilitate the use of the guidance material.

Outcomes	Performance Indicators
— Improved nuclear safety and security capabilities at national, regional and international levels.	— Number of good practices and positive conclusions of reviews and services.
— Established a current, comprehensive and complete suite of safety standards and security guidelines.	— Percentage of approved safety standards and security guidelines and other documents.
— Established a global communications and knowledge sharing network.	— Number of issues resolved through communication networks.

2010–2011 Resources for Nuclear Safety and Security[1]



Programmes	2010 *at 2010 prices*	2011 (preliminary estimates) *at 2010 prices*	Total for biennium
Enhancing the Global Nuclear Safety and Security Regime	755 029	749 288	1 504 317
Fostering Safety and Security Infrastructure and Improving Capacity Building	224 350	229 130	453 480
Strengthening Communication and Knowledge Management	236 661	239 124	475 785
Incident and Emergency Preparedness and Response	3 307 712	3 723 816	7 031 528
Safety of Nuclear Installations	9 405 649	9 371 506	18 777 155
Radiation and Transport Safety	5 710 816	5 663 449	11 374 265
Management of Radioactive Waste	6 714 011	6 739 036	13 453 047
Nuclear Security	3 194 822	4 737 402	7 932 224
Operational regular budget	29 549 050	31 452 751	61 001 801
Total regular budget	**29 549 050**	**31 452 751**	**61 001 801**
Extrabudgetary	11 061 088	11 378 528	22 439 616
Nuclear Security Fund	19 875 940	18 234 037	38 109 977
TC programme	29 449 249	27 013 826	56 463 075
Total resources	**89 935 327**	**88 079 142**	**178 014 469**

[1] Excludes unfunded activities of €848 744.

3.0.0.1 Enhancing the global nuclear safety and security regime

Description	Main outputs
Through this project, support and coordination are provided for the nuclear safety and security programmes and activities within the regime to ensure that the Agency's safety standards and security guidance constitute a comprehensive, up-to-date, coherent and authoritative suite of internationally accepted references. Similarly, support and coordination will be provided for all of the regime's safety and security elements to facilitate harmonized and integrated application of these standards and guidance, and to maximize opportunities for knowledge sharing and for continuous improvements through the appropriate feedback mechanisms. Particular focus will be devoted to enhancing the synergies between safety and security where appropriate. Policy support and coordination will be included for the Commission on Safety Standards (CSS) and any directly related interactions with the safety committees. This project is also in line with the Agency's vision that embraces the CSSs' roadmap for the long term structure of safety standards and related policies. A particular effort will be dedicated to further improve the user friendliness of the safety standards and to maintain a manageable number of publications that will be revised based on a more systematic collection and analysis of the feedback from the use of the safety standards in the Member States and from the safety services. Due to the nature of this project, its coordination and collaboration cuts across all of Major Programme 3.	Policies, standards and guidelines. Databases and promotional products (e.g. web site, brochures, etc.).

3.0.0.1	**2010** *at 2010 prices*	**2011** *at 2010 prices*
Regular Budget	755 029	749 288
Extrabudgetary	178 568	178 568
Unfunded	—	—

3.0.0.2 Fostering safety and security infrastructure and improving capacity building

Description	Main outputs
This project places emphasis on the needs of countries interested in deploying nuclear technologies for the first time. Consistent with GC(52)/RES/9, GC(51)/RES/11 and GC(51)/RES/14 and building on recent INSAG publications (INSAG-22 on safety infrastructure and INSAG-24 dealing with interfaces between safety and security), this project, in close coordination and cooperation with other Agency activities, aims at enhancing the awareness of Member States: (i) of the need for long term commitment for nuclear safety and security and for the implementation and maintenance of an effective and sustainable safety and security infrastructure in line with their national nuclear energy strategy; (ii) that safety and security cannot be fully outsourced and that national capabilities and human resources need to be developed in a timely manner; (iii) to be prepared to effectively assume their national responsibility for safety and security and to fully understand the necessity to be or become	Integrated Safety and Security Infrastructure Review Services, education and training packages for countries in Phase 1 and for countries in Phase 2, TECDOC on national human resources programme for safety and security capacity building, process for quality management system.

Description	Main outputs
effective participants in the global nuclear safety and security regime; (iv) coordinating Agency activities to support capacity building and improve related policies, approaches and methodologies. Due to the nature of this project, it coordinates and collaborates with many other projects across this major programme. In addition, this project is in collaboration with Subprogramme 1.1.3, *Infrastructure and Planning for Introduction of Nuclear Power Programmes* in Major Programme 1.	

3.0.0.2	**2010** *at 2010 prices*	**2011** *at 2010 prices*
Regular Budget	224 350	229 130
Extrabudgetary	—	—
Unfunded	—	—

3.0.0.3 Strengthening communication and knowledge management

Description	Main outputs
Through this project, support and coordination will be provided to ensure that the Agency's nuclear safety and security activities are conducted and communicated to key internal and external stakeholders in an open and transparent manner to the maximum extent practicable. Particular emphasis will be placed on improving message clarity and document quality. Where appropriate, information technology resources will be utilized or enhanced to improve the timeliness and effectiveness of the major programme's communication activities. For Member States and external stakeholders, the benefit is a clear and transparent understanding of the substantive value added from the effective application of Agency standards, security guidance, peer reviews and advisory services. In addition, support and coordination will be provided to further build the technical and programmatic capacity of the Agency's staff by enhancing the sharing of knowledge, information and lessons gained through the execution of the Agency's mission. For the benefit of Member States, this project will provide support and coordination related to the promotion of knowledge management in nuclear safety and security programmes worldwide. Where appropriate, information technology resources will be utilized to enhance the effectiveness of knowledge management activities. Both internal and external knowledge management approaches will be supported. The tools in this context will be the Global Nuclear Safety Network, which links existing networks and information resources worldwide, and other regional networks such as the Asian Nuclear Safety Network and the Ibero-American Nuclear Safety Network. Due to the nature of this project, its coordination and collaboration cuts across all of Major Programme 3.	Communications plan with near term and long term strategies, *Nuclear Safety Review*, Board of Governors documents, and safety and security contributions to the Agency's *Annual Report*, enhanced safety and security web site on iaea.org, enhanced networking for nuclear safety and security.

3.0.0.3	2010 *at 2010 prices*	2011 *at 2010 prices*
Regular Budget	236 661	239 124
Extrabudgetary	3 862 939	3 862 939
Unfunded	—	—

Programme 3.1 Incident and Emergency Preparedness and Response

Rationale: Despite best efforts, radiation related incidents and emergencies continue to occur that may affect the public, workers, patients, property and/or the environment. These events can range from severe accidents at nuclear power plants to events with no radiological consequences, but with considerable media and public interest and concern, including severe distress and panic. Malicious acts or threats involving radioactive material, including detonation of a so-called dirty bomb or sabotage of a nuclear facility, are also scenarios that must be addressed.

Effective national and global response capabilities and arrangements are essential to minimize the impacts of nuclear and radiological incidents and emergencies and to build public trust in the safety and security of nuclear technology. The expansion in the use of nuclear energy cannot occur without enhanced national, regional and international capabilities and arrangements to respond to an incident or emergency. The provision of technical assistance, sharing of information from past events, and development of effective international arrangements for sharing information and capabilities will benefit all Member States.

An effective response to incidents and emergencies requires a coherent initial assessment followed by adequate crisis management, all of which can only be achieved through coordinated preparedness and response activities. However, adequate preparedness to respond to radiation incidents and emergencies is not a capability shared by all Member States.

The Agency has specific obligations and functions under the Convention on Early Notification of a Nuclear Accident, the Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency and the Convention on Physical Protection of Nuclear Material related to the preparedness and response to radiation emergencies. The Agency also has a statutory function to develop safety standards in the area of emergency preparedness and response (EPR) and to provide for their application. Finally, the Agency has an important role in assessing radiation events and helping in the communication of the significance of these events to the public.

Objectives:

— To establish effective and compatible national, regional and international EPR capabilities and arrangements for early warning and timely response to actual, potential or perceived nuclear or radiological incidents and emergencies independent of whether the incident or emergency arises from an accident, negligence or malicious act.

— To improve provision/sharing of information on incidents and emergencies among Member States, international organizations and the public/media.

Outcomes	Performance Indicators
— Enhanced EPR capabilities and arrangements at national, regional and international levels.	— Decreased number of deficiencies identified in EPR capabilities and arrangements at national, regional and international levels.
— Improved provision/sharing of information on radiation incidents and emergencies.	— Number of incidents and emergencies reported to the Incident and Emergency Centre (IEC).

Follow-up on programme-wide lessons learned from reviews, assessment, evaluations: This programme is also based on relevant General Conference resolutions and oversight authority recommendations. The EPR is a cross-cutting area, explicitly or implicitly part of most of the Agency's programmes. To ensure a consistent in-house approach to the EPR, coordination will be carried out through and by the IEC.

3.1	2010 *at 2010 prices*	2011 *at 2010 prices*
Regular Budget	3 307 712	3 723 816
Extrabudgetary	129 205	129 205
Unfunded	—	—

Specific criteria for prioritization:

1. First priority is given to activities necessary to fulfil obligations under the previously listed conventions.
2. Second priority is given to activities that are linked to the conventions, but not required (e.g. Response Assistance Network (RANET); provision of assistance).
3. Third priority is given to activities enhancing EPR for States and regions embarking on new nuclear power programmes.

Subprogramme 3.1.1 National Preparedness and Response Capabilities

Rationale: The Agency has a statutory function to develop safety standards and provide for their application. In the EPR area, provision for the application of standards is also implemented within the framework of obligations under the Assistance Convention (Article 5): to collect and disseminate to States Parties and Member States information concerning methodologies, techniques and available results of research relating to response to nuclear accidents or radiological emergencies; to assist a State Party or a Member State when requested in developing appropriate training programmes for personnel to deal with nuclear accidents and radiological emergencies; and to assist a State Party or a Member State when requested in preparing emergency plans in the case of nuclear accidents and radiological emergencies.

The Agency aims to strengthen the global emergency preparedness regime by: (i) promoting compliance with current standards through the implementation of country specific action plans based on national threat assessment analysis, which will include preparedness for response to malicious acts, and appraisals of national response capabilities (Emergency Preparedness Review (EPREV) missions); (ii) developing or refining safety standards and guidelines based on the lessons identified in past responses; (iii) implementing regional and national training and exercises (the priority will be on the newcomers to nuclear power generation); and (iv) improving event reporting and sharing of information in both routine and emergency situations. It also aims to build and consolidate regional EPR arrangements and capabilities consistent with national emergency management systems.

In addition, there is a pressing need to have in place an effective, integrated system through which Member States, their competent authorities, international organizations, technical experts and the Secretariat can effectively share information and experience.

Objectives:

— To strengthen national and regional EPR arrangements and capabilities through development and assistance in application of the safety standards, operational guidelines and tools.

— To have in place an effective and integrated global system for event reporting and sharing of information and experience.

Outcomes	Performance Indicators
— Strengthened national and regional EPR arrangements and capabilities.	— Decreased number of deficiencies identified in the EPR systems of Member States and regions.
— Improved event reporting and sharing of information, experience and lessons learned.	— Number of reports on events received from Member States.

Programmatic changes and trends: This is a follow-up subprogramme from the previous two year programme cycle developed on lessons and needs identified through the assessment and evaluation of the global EPR. The IEC will focus on building: (i) EPR capabilities and arrangements in Member States pursuing new nuclear power programmes; (ii) an integrated global system for event reporting and sharing of information, experience and lessons learned; and (iii) a global monitoring data exchange system based on existing emergency monitoring systems in Member States and development of a verification system for reporting events under Agency conventions.

Resource changes and trends: The proposed regular budget resource requirements, at 2009 prices, reflect an increase of 73.9% (€544 316) in 2010 as compared with 2009 and an increase of 1.8% (€22 524) in 2011 as compared with 2010. The increase in the regular budget will allow for support to Member States in the implementation of country specific action plans, delivery of EPREV missions, elaboration of consistent and coordinated safety standards and guides to cover the entire spectrum of preparedness and response activities, and the implementation of a coordinated regional and national training and exercise regime. Capital investment needs within its subprogramme will consist of field response and training equipment, which will be used in the regional and national training sessions to be delivered by the IEC and expert teams within the RANET network.

3.1.1	**2010** *at 2010 prices*	**2011** *at 2010 prices*
Regular Budget	1 322 853	1 346 122
Extrabudgetary	129 205	129 205
Unfunded	—	—

Projects

Title, duration and ranking	Main outputs
3.1.1.1 Supporting national capacity building for emergency response *Duration:* Recurrent *Ranking:* 1	National and regional experts trained in EPR; EPREV and Integrated Regulatory Review Service (IRRS) mission reports; national emergency response plans; programmes on developing adequate EPR in Member States embarking on nuclear power; EPR activities coordinated with relevant international organizations (e.g. International Commission on Radiological Protection (ICRP), WHO; OECD/NEA, etc.); reports on EPR issues.
3.1.1.2 Developing standards and guidelines for emergency preparedness and response *Duration:* Recurrent *Ranking:* 1	Safety standards, operational guidelines, technical manuals, training materials, e-learning tools, computer tools (software) in the EPR area; data on Member State needs and feedback from the application of Agency publications in the EPR area.
3.1.1.3 Enhancing event reporting and information analysis *Duration:* Recurrent *Ranking:* 1	Unified incident and emergency portal for receipt, validation and sharing of information on incidents and emergencies; knowledge management tools for simplifying processing, assessment and dissemination of information; enhanced methodology for identifying necessary conditions for early warning and response; maintaining INES as the tool for communicating the safety significance of events to the media, the public and the technical community; coordinated reporting arrangements and mechanisms for public information on incidents and emergencies; trends and lessons learned (based on the unified database); mechanisms for communications.

Subprogramme 3.1.2 International Response Capabilities and Arrangements

Rationale: The responsibility for responding to radiation incidents and emergencies and for protecting the public, property and the environment remains within the affected State at the local and national levels. The Early Notification and Assistance Conventions and the Convention on Physical Protection of Nuclear Material, in addition to specific obligations placed on their States Parties, also confer obligations for a response on the Agency. In incidents and emergencies, the Agency has functions related to: (i) the international exchange of real-time information; (ii) the prompt provision of advice and assistance; and (iii) the timely provision of relevant, accurate and coherent information to the media and public. In order to carry out these functions appropriately, efficiently and promptly, the Secretariat must be adequately prepared. In addition, it should be able to respond with urgency to radiation safety and/or security related requests from Member States, relevant intergovernmental organizations, the media and the public.

Although the conventions assign specific response functions and responsibilities to the Agency and the Parties, various international organizations have — by virtue of their statutory functions or of related legal instruments — general functions and responsibilities that encompass aspects of preparedness and response. The Inter-Agency Committee on Response to Nuclear Accidents (IACRNA), for which the Agency provides the Secretariat,

coordinates preparedness arrangements of the relevant international intergovernmental organizations. Part of this subprogramme covers these obligations and activities.

Objectives:

— To have in place adequate in-house EPR capabilities and arrangements, whereby Member States and international organizations can confidently obtain relevant information and assistance; and a sustainable process for their further and continuous improvement.

— To have in place adequate EPR capabilities and arrangements at the intergovernmental and interagency level; and a sustainable process for their further and continuous improvement.

Outcomes	Performance Indicators
— Improved EPR capabilities and arrangements at the Secretariat level.	— Decreased number of deficiencies identified in the Secretariat's response to radiation incidents and emergencies.
— Improved EPR capabilities and arrangements at the intergovernmental and interagency levels.	— Decreased number of deficiencies identified in the interagency response to radiation emergencies.

Programmatic changes and trends: This subprogramme represents the continuation and consolidation of relevant activities from the preceding two year cycle. The IEC will enhance its capability to respond and assist, in particular for large scale emergencies. A solid and sustainable Agency wide incident and emergency response system will be developed. At the international level, response arrangements will be strengthened and will consolidate the leading role to be played by the Agency in response to major emergencies.

Resource changes and trends: The proposed regular budget resource requirements, at 2009 prices, reflect an increase of 181.2% (€1 241 823) in 2010 as compared with 2009 and an increase of 19.8% (€381 444) in 2011 as compared with 2010. The IEC will invest in information technology communication systems. The IT communication systems will be upgraded to the required standards in terms of reliability and security. The IEC will replace and upgrade communication and technical assessment computers. This will enable a more capable nuclear safety and security technical assessment at the level of the Agency during an evolving emergency situation, including emergencies with a security component. The IEC will purchase and install hardware to facilitate multiple video conference connections over the Internet. Additionally, the IEC will invest in field response equipment, which will be used in assistance missions initiated at the request of Member States.

3.1.2	**2010** *at 2010 prices*	**2011** *at 2010 prices*
Regular Budget	1 984 859	2 377 694
Extrabudgetary	—	—
Unfunded	—	—

Projects

Title, duration and ranking	Main outputs
3.1.2.1 Responding to incidents and emergencies *Duration:* Recurrent *Ranking:* 1	Up to date Secretariat preparedness and response plan and arrangements; Emergency Notification and Assistance Technical Operations Manual (ENATOM), 2011 edition; regular exercise reports; assistance mission reports; information, advice and assistance in the case of a radiation incident or emergency.
3.1.2.2 Enhancing in-house response capacities *Duration:* Recurrent *Ranking:* 1	Revised and enhanced Response Plan for Incident and Emergencies (REPLIE) to cover additional functions to be performed by the IEC related to both external and in-house radiological emergencies; trained staff engaged in the on-call/on-duty activities managed by the IEC; enhanced reliable communication/IT systems addressing the issue of instant business continuity.

Title, duration and ranking	Main outputs
3.1.2.3 Strengthening international response arrangements *Duration:* Recurrent *Ranking:* 1	Joint Plan, 2011 edition; RANET, 2010 edition; report of the meeting of competent authorities identified under the Early Notification and the Assistance Conventions in 2011; two IACRNA meetings reports; report on international exercise ConvEx-3b (2010); scenarios for table top interagency exercises; refined protocols with relevant international organizations; IEC bulletins; maintenance of IEC web site.

Programme 3.2 Safety of Nuclear Installations

Rationale: The revival of interest in nuclear power is likely to translate into a growing number of requests in the future from Member States for assistance and capacity building. In particular, there will be a requirement for the Agency to assist in developing and sustaining the necessary nuclear safety infrastructure and to support worldwide regulatory cooperation. A global nuclear safety regime is the framework for achieving worldwide implementation of a high level of safety at nuclear installations based on the Agency's safety standards. Its objective is to strengthen the independence, transparency, openness, technical competence and effectiveness of regulatory bodies; critical knowledge needs to be maintained, experience and lessons learned need to be exchanged. No country utilizing nuclear power should remain outside the global nuclear safety regime. In particular, adherence to international binding and non-binding instruments, such as conventions and codes of conduct, is essential to promote openness, transparency, benchmarking, sharing of practices and learning from experience.

There is also a call for the Agency to lead an international effort to establish and sustain a global nuclear safety network. For many of the countries that have expressed interest in constructing and operating nuclear power plants for the first time, and in some cases for those starting or resuming construction of new plants, the existing legal and regulatory frameworks will not feature all of the organizational, staff and technical skills, or safety culture, necessary to effectively develop and implement regulations for new nuclear applications, including siting, construction, licensing, and operation of nuclear power plants and other fuel cycle facilities, to support this development. Also, countries resuming or starting construction of plants may not have used the relevant expertise and processes for long periods of time, or the know-how may no longer be present.

Another item of high importance is capacity building for nuclear safety. Recently there has been increased interest in Member States in planning, designing or building new nuclear power plants (NPPs). Technology changes, advances, and improvements in methodologies and analytical tools reflect challenges; considerations on recent severe natural phenomena and sabotage protection need to be included. A prerequisite for strong global nuclear safety is the availability of a competent and skilled workforce possessing critical knowledge, experience and lessons learned about safety. Enforced capacity-building efforts must be launched by Member States to include, among other elements, training in nuclear safety in general, methods and tools to assess safety in design, siting, construction and operation, past experience and knowledge about the Agency safety standards. The establishment of regional centres responsible for managing cooperation programmes for networking could facilitate a more decentralized approach, which is likely to become the main source of technology transfer and capacity building. Networking is becoming recognized by Member States as a very effective instrument for enhancing the sharing of knowledge and experience essential to the prevention of accidents and to the implementation of nuclear safety and security measures. The Agency will support the development of focused networks as an effective means of improving cooperation, fostering an integrated safety approach and promoting continuous improvement through prioritization of peer reviews and by maintenance of a regulatory network development programme.

As hitherto, emphasis will continue to be placed on the increased efficiency of the development, maintenance and usability of the comprehensive set of safety standards for all types of installations.

Objectives:

— To enhance the global nuclear safety regime and to ensure appropriate levels of safety throughout the total lifetime of all types of nuclear installations in Member States by ensuring the availability of a consistent, needs-based and up to date set of safety standards, and assistance in their applications.
— To enable Member States seeking to embark on nuclear power production programmes to develop appropriate safety infrastructures through the availability of Agency guidance, assistance and networking.
— To enable Member States to build improved competence frameworks for the safety of nuclear installations and to enhance their capabilities for capacity building as the foundation for strong safety infrastructure.

Outcomes	Performance Indicators
— Availability to Member States of a consistent needs based, and up to date high quality set of safety standards, reflecting best levels of safety for all types of nuclear installations.	— Number of new and revised safety standards for all types of nuclear installations in accordance with the Safety Standards Action Plan.
— Adequate and sustainable, effective and transparent regulatory infrastructures in Member States in accordance with Agency safety standards.	— Number of IRRS missions and follow-ups requested and percentage of Agency recommendations and suggestions on regulatory improvements adequately addressed by Member States. — Number of documented regulatory body self-assessments adequately addressed prior to IRRS missions.
— Improved competence frameworks and reinforced regional cooperation supporting the safe use of nuclear installations in Member States with both emerging and mature nuclear programmes as a foundation for a strong safety infrastructure.	— Number of Member States adopting competence frameworks. — Number of training tools and training packages offered by the Agency and used by Member States.

Follow-up on programme-wide lessons learned from reviews, assessment, evaluations: The 2008–2009 cycle was characterized by a very large increase in requests for action in the field of safety of nuclear installations. There are a number of reasons for this trend, namely: renewed interest in nuclear power in countries with reactors; a large number of countries considering embarking on a nuclear power programme; important developments in the global nuclear safety regime and worldwide extension of services related to regulatory infrastructure; and safety concerns associated with the occurrence of severe natural phenomena such as the earthquake in Japan in July 2007. An increase in resources is needed in 2010–2011 in order to respond to the new challenges faced by the Agency. On the other hand, any realistic increase in the regular budget would not be sufficient to cover the real needs of Member States. It is therefore necessary to increase significantly extrabudgetary programmes, which already started in 2008, with contributions from several Member States as well as the European Commission.

3.2	**2010** *at 2010 prices*	**2011** *at 2010 prices*
Regular Budget	9 405 649	9 371 506
Extrabudgetary	4 591 884	4 909 324
Unfunded	244 987	143 029

Specific criteria for prioritization:

1. First priority is given to projects establishing standards and servicing conventions.
2. Second priority is given to projects related to the application of the standards.
3. Third priority is given to projects dealing with the strengthening of information exchange.

Subprogramme 3.2.1 Governmental and Regulatory Framework and Other Elements of Safety Infrastructure

Rationale: The Agency promotes and supports the establishment of a global safety regulatory regime. One objective of this regime is to strengthen the transparency, openness, independence, technical competence and effectiveness of regulatory bodies in Member States. Central to establishing this regime are the Agency's safety standards, their application and related review services.

The regulatory framework and its associated activities are essential to guarantee a high level of safety of all nuclear facilities and activities under national responsibility. The regulatory bodies are facing new challenges and regulatory and policy issues, and are striving to improve the regulatory infrastructure to adequately control, using a graded approach, all types of nuclear installations. The Agency's Integrated Regulatory Review Service (IRRS) considers all regulatory aspects in nuclear facilities and activities, and provides a review of regulatory and policy issues facing Member State regulatory bodies. Review missions are conducted as a joint activity with Programmes 3.1, 3.3, 3.4 and 3.5 to review the regulatory infrastructure for all applicable nuclear facilities and activities.

The importance of international regulatory peer review, and the opportunity it provides to share knowledge and experience of regulatory issues and good practices to improve regulatory effectiveness, was acknowledged and supported by Member States at the Review Meetings of the Contracting Parties to the Convention on Nuclear Safety (CNS) and at the Agency's international conference on effective nuclear regulatory systems, held in Moscow in 2006.

In addition to IRRS missions to evaluate regulatory infrastructures, activities are conducted to discuss the steps necessary to develop a sound and effective safety infrastructure for countries interested in pursuing nuclear power as part of their national or regional energy mix. Missions to discuss the importance of developing a sound safety infrastructure are coordinated with Major Programmes 1 and 6, as applicable.

Objectives:

— To have transparent, open, independent, technically competent and effective regulatory authorities in place in the Member States, including those planning to develop nuclear programmes.

— To enhance the capability of Member States to perform self-assessments of the regulatory body as well as the collection and dissemination of regulatory information, regulatory and policy issues, and trends and lessons learned from regulatory bodies by Member States.

Outcomes	Performance Indicators
— Adequate and sustainable regulatory infrastructures in Member States based on the implementation of recommendations and suggestions of IRRS.	— Number of countries having adequate regulatory infrastructure as documented/assessed by IRRS.
— Improved regulatory effectiveness and transparency in Member States in accordance with Agency safety standards through high quality self-assessments.	— Number of documented regulatory body self-assessments.

Programmatic changes and trends: As many as 50 countries have expressed interest in developing nuclear power as an energy source. The increase in interest and the steps necessary to develop nuclear programmes with adequate safety, security and emergency preparedness and response arrangements require significant resources to meet the requests for assistance. New Member States embarking on nuclear power will have to be supported with the negotiation of binding agreements that, like the CNS, contribute to setting effective global nuclear safety standards and help to confirm that these standards are being implemented. The importance of the regulatory framework and the high recognition of the IRRS service, as shown by the increasing demand for missions as well as the integrated character of the service, require a higher commitment of resources. It is expected that the number of assistance missions will increase as more countries develop nuclear programmes. The number of IRRS review missions is expected to remain continuously high over the next several years, and follow-up missions to Member States previously receiving IRRS missions are coming due. These activities, in conjunction with the expected level of assistance to existing nuclear programmes, will significantly challenge the resources available.

Resource changes and trends: The proposed regular budget resource requirements, at 2009 prices, reflect an increase of 25.9% (€483 366) in 2010 as compared with 2009 and an increase of 3.6% (€85 147) in 2011 as compared with 2010. The increases are caused by the increased support of new Member States embarking on

nuclear power to support safety, security and emergency preparedness and response, specifically the development of regulatory frameworks, IRRS missions and supporting the CNS. Efficiency gains will occur as a result of consolidating Member State requests by topic, and the reduced need to develop new presentation material, as many developing nuclear programmes will have similar information needs, although their development will require different levels of assistance. These efficiencies will be offset by the expected increase in requests for assistance.

3.2.1	**2010** *at 2010 prices*	**2011** *at 2010 prices*
Regular Budget	2 420 765	2 508 561
Extrabudgetary	406 063	406 063
Unfunded		—

Projects

Title, duration and ranking	Main outputs
3.2.1.1 Enhancing regulatory effectiveness and supporting Member States embarking on nuclear power *Duration:* Recurrent *Ranking:* 1	IRRS mission reports; expert review mission reports.
3.2.1.2 Supporting international regulatory network and the Convention on Nuclear Safety *Duration:* Recurrent *Ranking:* 1	Implementation and use of the regulatory network. Appropriate CNS information generated, collected and distributed.
3.2.1.3 Improving the Agency safety standards and supporting the International Nuclear Safety Group (INSAG) *Duration:* Recurrent *Ranking:* 1	Safety standards and reports.

Subprogramme 3.2.2 Safety Management and Capacity Building

Rationale: Strong leadership and an effective management system for safety have a profound influence on the safe and reliable performances of nuclear installations. The new Agency safety standards, in particular the Safety Fundamentals issued in 2006, emphasize the importance of establishing and sustaining an effective leadership and management for safety. The Agency will continue to support Member States in the area of management systems as being the solid foundation for developing a strong safety culture.

The necessary capacity building to maintain or to start a successful nuclear programme includes many facets, from creating skills in regulatory matters to establishing a sound policy and strategic programme for the development of human resources for the lifetime of the nuclear programme. The issues at stake concern both Member States contemplating nuclear power as an energy option and Member States already using nuclear power. The need remains the same in both cases, but how the competence, skills and attitudes are employed/sustained is an important area to examine.

Objectives:

— To enhance Member State capabilities in safety by promoting an integrated approach to safety focusing on management systems, effective leadership and safety culture.
— To enhance capacity building in Member States in developing and maintaining nuclear safety infrastructure.

Outcomes	Performance Indicators
— Enhanced management systems, including safety culture programmes, in Member States.	— Number of safety review and assistance missions requested and percentage of Agency recommendations and suggestions adequately addressed by Member States.
— Improved competence frameworks for the safety of nuclear installations in Member States.	— Number of Member States using Agency training resources and materials.

Programmatic changes and trends: More than 50 countries have demonstrated their interest to embark on a nuclear power programme. Twelve of them have already started some preliminary work in this direction. This, in turn, will increase the support required for these countries, with the aim of establishing the necessary safety infrastructure for a sustainable programme. The two essential elements for a successful programme, at an early stage, are the development of a safety culture and adequate human resources.

Resource changes and trends: The proposed regular budget resource requirements, at 2009 prices, reflect an increase of 0.9% (€9 462) in 2010 as compared with 2009 and a decrease of 1.8% (€19 185) in 2011 as compared with 2010.

3.2.2	**2010** *at 2010 prices*	**2011** *at 2010 prices*
Regular Budget	1 112 793	1 092 823
Extrabudgetary	595 274	595 274
Unfunded		—

Projects

Title, duration and ranking	Main outputs
3.2.2.1 Supporting Member States in effective leadership, safety management and safety culture *Duration:* Recurrent *Ranking:* 1	Mission reports and database.
3.2.2.2 Establishing a competence framework for capacity building *Duration:* Recurrent *Ranking:* 1	Reports and training materials.

Subprogramme 3.2.3 Safety Assessment of Sites and Installations

Rationale: The increased interest in Member States in planning, designing or building new nuclear power plants, especially among those countries that do not currently have such plants, is resulting in a significant increase in demand for the guidance and support offered through this subprogramme. In addition, technology changes, advances and improvements in methodologies and analytical tools, recent severe natural phenomena, concerns about protection against sabotage and the need to preserve the electrical generating capacity of existing NPPs have also significantly increased the interest in this subprogramme among Member States.

Therefore, there is a need for rigorous safety assessment capabilities in support of risk informed decision making for nuclear facility design, procurement, construction, testing, operation and maintenance, surveillance, inspection, shutdown, refuelling, pre-decommissioning and regulatory activities. Also, Member States need to either evaluate in detail a new nuclear installation site as part of the site selection process, or re-evaluate an existing operational site as one of the components of the periodic safety reviews, as well as conduct a full environmental impact assessment.

Issues related to the construction of nuclear power plants also need to be addressed: the construction of structures and civil works, manufacturing, assembly and installation of systems, components and equipment as well as the

design aspects, including systems, structures and components, and technical support for continued operation of existing nuclear plants. Establishment of related safety standards and safety review services are covered by this subprogramme.

Objectives:

— To provide support to Member States in the development, promotion and application of integrated (probabilistic and deterministic) approaches to safety assessment and evaluation, as well as with education and training for comprehensive safety assessment.

— To enhance Member State capabilities to adequately monitor their nuclear installations with respect to site safety related aspects and external and internal hazards, including protection against sabotage, and to enhance the Agency's International Seismic Safety Centre (ISSC), which will provide a focal point for the advancement of scientific and technical knowledge on seismic safety, sharing lessons learned with the nuclear safety community through related safety review services, and training activities (workshops, conferences, seminars, training courses).

— To strengthen Member State capabilities in the achievement and maintenance of a high level of safety in existing nuclear power plants and in the design of evolutionary and innovative power reactors covering all related engineering aspects.

Outcome	Performance Indicator
— Enhanced nuclear safety assessment capability in Member States for design and operation using advanced methodologies allowing a reduction in safety assessment uncertainties and better use of existing safety margins.	— Number of Member States using Agency safety standards and the associated application of related safety assessment.

Programmatic changes and trends: The potential rapid increase in the deployment of nuclear power systems requires harmonized and robust safety assessment capacities worldwide. Many of the Member States embarking on nuclear power programmes do not have adequate safety infrastructure. In particular, they lack well trained staff that can promote a proper safety culture at the beginning of the programme. In response to these challenges, the subprogramme has been re-adjusted with an emphasis on capacity and competence building as well as providing support to Member States in the area of modern and robust safety assessment capabilities and methods.

The emphasis in the subprogramme will also be to address the main issues in the areas of siting, design, ageing and long term operation of nuclear installations worldwide. Attention will be given to Member States starting a nuclear power programme, specifically the first stages of site selection and design. Emphasis will also be given to the revision and/or development of safety standards in the light of recent extreme natural events. More emphasis will be given to the enhancement of the ISSC for the purpose of sharing seismic technology and lessons learned.

Resource changes and trends: The proposed regular budget resource requirements, at 2009 prices, reflect an increase of 4.5% (€121 465) in 2010 as compared with 2009 and a decrease of 2.1% (€60 226) in 2011 as compared with 2010. The increases are caused by the emphasis added for capacity building in all Member States, especially in new countries embarking on nuclear power. This refers to training and capacity building, as well as the exchange of information and sharing of technology and lessons learned. Efficiency gains will be made through better utilization of IT systems for technology transfer and training for Member States.

3.2.3	**2010** *at 2010 prices*	**2011** *at 2010 prices*
Regular Budget	2 890 160	2 828 676
Extrabudgetary	2 841 902	3 055 402
Unfunded		—

Projects

Title, duration and ranking	Main outputs
3.2.3.1 Improving safety assessment and integrated decision making process *Duration:* Recurrent *Ranking:* 1	Generic reactor safety review reports and development of methodology and capacity building approach in support of Member States.
3.2.3.2 Enhancing safety assessment tools *Duration:* Recurrent *Ranking:* 1	Documents describing the methodology and the contents of the capacity building programme.
3.2.3.3 Supporting site evaluation and protection against internal and external hazards *Duration:* Recurrent *Ranking:* 1	New and updated safety standards and related technical supporting documents. Mission reports to Member States identifying issues, and assessment of their current resolution status, and recommendations for resolving the remaining issues. Lessons learned or good practices.
3.2.3.4 Evaluating safe design of structures, systems and components *Duration:* Recurrent *Ranking:* 1	New and updated safety standards, related technical supporting documents, and updated tools for preparation and review of safety analysis reports. Mission reports to Member States identifying issues, an assessment of their current resolution status, and recommendations for resolving the remaining issues. Lessons learned or good practices.

Subprogramme 3.2.4 Operational Safety and Experience Feedback

Rationale: The background and basis for this subprogramme take into consideration Member State recommendations made during Agency conferences, in General Conference resolutions of 2007 and 2008, and during the 4th Review Meeting of the CNS, which gave recognition to the Agency's safety review services missions, in particular Operational Safety Review Team (OSART) missions. The subprogramme will develop a modular OSART approach to cover transition from operation to decommissioning and construction and commissioning of new nuclear power plants.

While operational safety of nuclear power plants has improved throughout the world, safety significant events continue to occur. Determining the reasons for recurrence of significant events, the emerging trend of a number of Member States working towards establishing nuclear power programmes and a large number of nuclear power plants under various stages of decommissioning have indicated that operational safety will continue to play a significant role in the coming years.

In the CNS Review Meeting it was agreed that lessons learned from events and operational experience in general have contributed significantly to enhanced safety performance. Regulators and operators plan to further enhance their national systems and related international arrangements in the area and the systems required to support them. The Agency will continue to support Member State plans by further enhancing the Incident Reporting System (IRS) and evaluation of events.

Objective: To assist Member States in enhancing the operational safety of nuclear power plants.	
Outcomes	**Performance Indicators**
— Improved operational safety in Member States based on the implementation of recommendations and suggestions of operational safety review services.	— Number of OSART/Peer Review of Operational Safety Performance Experience (PROSPER) missions requested by Member States. — Percentage of Agency recommendations and suggestions on operational safety improvements adequately addressed in nuclear power plants in Member States.
— Improved capability by Member States to manage and improve a high level of safety in the operation and maintenance of nuclear power plants through high quality self-assessment and through the application of Agency safety standards.	— Number of nuclear power plant documented self-assessments. — Improvement made to operational safety prior to the missions and as a result of the actions taken to address Agency recommendations and suggestions.
— Strengthening national and international operational experience feedback.	— Number of reports containing information on events.

Programmatic changes and trends: Operational safety services will be focused on keeping the high quality of services, sharing and improving the knowledge of experts in the area of operational safety. In addition, the subprogramme will focus on new countries embarking on a nuclear programme. Specific modules of services will be developed with the goal of better serving the Member States. The subprogramme will improve the system for reporting and analysing operational events, including the use of databases and quality assurance procedures.

Resource changes and trends: The proposed regular budget resource requirements, at 2009 prices, reflect an increase of 12.8% (€215 229) in 2010 as compared with 2009 and a decrease of 2.0% (€38 648) in 2011 as compared with 2010. Efficiency is gained by conducting additional, short and more focused missions based on Member State requests, as well as by use of the updated database for exchange of information.

3.2.4	**2010** *at 2010 prices*	**2011** *at 2010 prices*
Regular Budget	1 951 255	1 911 603
Extrabudgetary	348 067	400 007
Unfunded	193 029	143 029

Projects

Title, duration and ranking	Main outputs
3.2.4.1 Enhancing the operational safety performance *Duration:* Recurrent *Ranking:* 1	OSART mission reports, the dissemination of which allows the strengthening of operational safety; revision, following review, of the suite of standards for operational safety; publication of the updated CD-ROM on OSART mission results; publications on OSART recommendations and highlights; provision of mission results as an input to country specific reports for the CNS; report on the evaluation of the effectiveness of OSART missions; preparations for the integration of the activities on transition to decommissioning into safety reviews; document on self-assessment practices; enhanced training of OSART experts on the review process; preparations for introducing OSART practices to countries with emerging nuclear power programmes; further development of the OSART practices to allow a more pro-active approach to operational safety.

Title, duration and ranking	Main outputs
3.2.4.2 Enhancing the sharing and use of international experience *Duration:* Recurrent *Ranking:* 1	Reports containing event details (IRS), including lessons learned; topical study reports based on significant events in particular areas. Mission reports on safety review (PROSPER) services provided to enhance operational experience feedback; documents developed to strengthen various aspects of the management and conduct of an effective operational experience programme; training programmes and information for Member States on the best practices and new techniques in an operating experience feedback programme.

Subprogramme 3.2.5 Safety of Research Reactors and Fuel Cycle Facilities

Rationale: The Agency continues to promote and support the application of the Code of Conduct on the Safety of Research Reactors, including development of safety standards and assistance to Member States for their use. The Agency will continue developing and implementing regional strategies for the application of the Code of Conduct, which will provide for mutual assistance to solve safety issues and to enhance the regulatory supervision and effectiveness of safety committees as well as safety management for research reactors.

Assistance will be provided to Member States to enhance their self-assessment capabilities and to improve the exchange of information on operating experience, and on different safety aspects, through the Incident Reporting System for Research Reactors (IRSRR) and the Research Reactor Information Network (RRIN). This will help reduce the isolation of small operating organizations with limited resources.

The Agency will continue to support Member States by means of safety review services and training activities on specific safety issues and in implementing projects for new research reactors to build technical and regulatory infrastructures in view of embarking on a nuclear power programme.

Work will continue to complete the corpus of safety standards for fuel cycle facilities and to promote their use, and to implement safety review services for such facilities. The Agency continues to operate, in cooperation with the OECD/NEA, the Fuel Cycle Incident Notification and Analysis System (FINAS) as a tool to collect and disseminate information on events, experience and lessons learned. Work will continue on developing and implementing training activities on the safety of fuel cycle facilities, to promote safety culture, to improve safety management, and to support Member States in performing safety assessments of new designs of fuel cycle facilities.

Objectives: To enhance the safety of research reactors and fuel cycle facilities in Member States through: effective application of the Code of Conduct on the Safety of Research Reactors, developing and applying safety standards and conducting safety review services and assessment missions; sharing information, lessons learned and feedback on the safety of research reactors and fuel cycle facilities; monitoring the safety of research reactors under Project and Supply Agreements.

Outcomes	Performance Indicators
— Enhanced safety of research reactors and fuel cycle facilities in Member States.	— Number of safety review services implemented. — Number of finalized safety standards compared to those planned.
— Enhanced exchange of information on operating experience and issues for research reactors and fuel cycle facilities.	— Number of Member States participating in IRSRR and FINAS meetings.
— Enhanced safety status of research reactors under Project and Supply Agreements.	— Number of Member States participating in the follow-up system and fulfilling their obligations.

Programmatic changes and trends: There will be greater focus on safety review services and the promotion of the Code of Conduct.

Resource changes and trends: The proposed regular budget resource requirements, at 2009 prices, reflect a decrease of 11.5% (€129 504) in 2010 as compared with 2009 and a decrease of 0.1% (€1 012) in 2011 as compared with 2010. The decrease is due to the fact that some regulatory aspects of the safety of research reactors and fuel cycle facilities will be addressed in Subprogramme 3.2.1, *Governmental and Regulatory Framework and Other Elements of Safety Infrastructure*, and funding of two CRPs will only be possible as of 2011.

3.2.5	**2010** *at 2010 prices*	**2011** *at 2010 prices*
Regular Budget	1 030 676	1 029 843
Extrabudgetary	400 578	452 578
Unfunded	51 958	—

Projects

Title, duration and ranking	Main outputs
3.2.5.1 Enhancing safety of research reactors and knowledge sharing *Duration:* Recurrent *Ranking:* 1	Web based system and associated documentation. Report on meetings of national coordinators of the IRSRR.
3.2.5.2 Monitoring and improving safety of research reactors under agreements *Duration:* Recurrent *Ranking:* 2	Mission reports and set of safety performance indicators on facilities.
3.2.5.3 Enhancing safety of fuel cycle facilities (FCF) *Duration:* Recurrent *Ranking:* 1	FINAS national coordinator meeting reports.

Programme 3.3 Radiation and Transport Safety

Rationale: This programme focuses on the protection of people — workers, patients and members of the public — from the detrimental effects attributed to radiation exposure arising from natural and human made sources. The programme covers the establishment of safety standards and provision for their application — both being statutory functions of the Agency and essential components of the global nuclear safety regime, which includes radiation and transport safety. Capacity building, including education and training, and networking are cross-cutting key elements of the global safety regime, and they are included throughout the programme. The importance of international undertakings as an element of the safety regime is also recognized.

The first subprogramme is devoted to the establishment of key elements of the global safety regime: development and maintenance of the Agency's safety standards and international undertakings which provide the cornerstone of the regime, plus building capacity and enhancing networking to ensure that the regime can function. Revision of the International Basic Safety Standards for Protection against Ionizing Radiation and for the Safety of Radiation Sources (BSS), which are jointly sponsored by FAO, ILO, OECD/NEA, PAHO, WHO and the Agency, is of major significance and this work is expected to be completed during the cycle.

The second subprogramme is focused on fostering Member State contributions to the global safety regime by providing for the application of the Agency safety standards and the Code of Conduct on the Safety and Security of Radioactive Sources. This is done through various means that include: peer review and advisory services; outreach and information exchange; development of guidance and training materials; and facilitating the implementation of strategies specifically designed to strengthen the protection of workers and patients, and transport safety. These activities provide essential feedback to help improve the first subprogramme, and provide assurances on the overall effectiveness of the programme, as well as facilitating planning and anticipating future issues.

The activities in the programme are mainly ongoing with some changes of emphasis, which is demonstrative of the process of continual improvement for safety, and is consistent with GC(52)/RES/9. New areas of work include activities to mitigate denials of shipment and to support States embarking on nuclear power/utilization of new technologies. The target audience of the programme includes national bodies, users, licensees, and other interested parties dealing with radiation and transport safety issues in Member States, and relevant international organizations. The ultimate beneficiaries are workers, patients, members of the public, and users and operators of facilities and activities that utilize radiation.

The Agency is also responsible under its Statute for requiring the observance of health and safety measures with respect to, inter alia, operations under its control or supervision and any Agency projects. To fulfil this responsibility, operation of a monitoring and radiation protection service will be continued.

Objective: To achieve global harmonization of the development and application of the Agency's radiation and transport safety standards, and to increase the safety and security of radiation sources and thereby raise the levels of protection of people, including Agency staff, against the harmful effects of radiation exposure.	
Outcomes	**Performance Indicators**
— Global safety regime strengthened through international acceptance of the Agency radiation and transport safety standards, and relevant international undertakings.	— Number of new or revised draft radiation and transport safety standards approved by the CSS. — Number of new States making a political commitment to the Code of Conduct on the Safety and Security of Radioactive Sources.
— Global safety regime strengthened through internationally harmonized application of the Agency's radiation and transport safety standards, and relevant international undertakings.	— Level of State application of radiation and transport safety standards and the Code of Conduct.

Follow-up on programme-wide lessons learned from reviews, assessment, evaluations: Considerable time and effort need to be devoted to creating awareness of and promoting the use of international safety standards and the relevant international undertakings, and maintaining approaches to demonstrate compliance with them. International harmonization, especially in the application of the safety standards, and of the Code of Conduct with its supplementary import/export guidance, remains an important goal.

3.3	**2010** *at 2010 prices*	**2011** *at 2010 prices*
Regular Budget	5 710 816	5 663 449
Extrabudgetary	940 000	940 000
Unfunded	—	—

Specific criteria for prioritization:

1. First priority is given to strengthening the global safety regime — first through establishing safety standards and international undertakings, and then by assisting States with their application.

Subprogramme 3.3.1 Safety Standards and Global Regime for Radiation and Transport Safety

Rationale: This subprogramme focuses on the development and maintenance of Agency safety standards and international undertakings, which provide the cornerstone of the global safety regime.

In fulfilling the statutory obligations of the Agency, the establishment of radiation and transport safety standards is done in consultation with and, where appropriate, in collaboration with the competent organs of the United Nations and with the specialized agencies concerned. An important aim of the subprogramme is to ensure that there is a comprehensive and coherent suite of universally accepted safety standards. Radiation and transport safety standards are subject to a rigorous process, from preparation to final approval to ensure that they are based on best, and most current, international practices and that they truly represent international consensus. The two safety committees for radiation safety (RASSC) and transport safety (TRANSSC) each provide a focal point for this purpose.

The Code of Conduct on the Safety and Security of Radioactive Sources is an international undertaking that is a key part of the global safety regime. More than 90 States have provided unilateral statements of support for the Code of Conduct, and the Secretariat provides a range of important functions to support Member States in their application of the Code of Conduct, and the supplementary guidance on import/export controls.

Cross-cutting activities such as enhancing capacity building, especially through education and training, and harmonization of networking are included in this subprogramme to facilitate the functionality of the global safety regime.

To facilitate feedback to Member States on their level of application of the safety standards and Code of Conduct, information from activities carried out in Subprogramme 3.3.2 is collected and analysed to further strengthen both this subprogramme and the global safety regime in general. This information also provides input to the planning of future activities.

Full and proper implementation of the safety standards requires that the necessary national regulatory infrastructure exists in a State, and that a regulatory body has been established by the government to effectively regulate facilities and activities involving sources of radiation.

Objective: To provide for improved radiation and transport safety, and the safety of sources, in Member States.	
Outcomes	**Performance Indicators**
— Improved radiation and transport safety in Member States through establishment and global acceptance of the Agency safety standards and relevant international undertakings.	— Number of States providing input to the development of the Agency safety standards. — Number of States attending meetings to share experiences in implementing the Code of Conduct.

Programmatic changes and trends: The programme for 2010–2011 recognizes the increasing importance of the globalization of the safety regime to maximize synergies and improve effectiveness. The Agency safety standards and undertakings are receiving increased attention around the world as more organizations look to them as international benchmarks. This subprogramme therefore focuses on ensuring that the building blocks of the regime related to radiation and transport safety are in place, and have global acceptance.

Resource changes and trends: The proposed regular budget resources, at 2009 prices, reflect a decrease of 2.9% (€82 589) in 2010 as compared with 2009, and a decrease of 0.6% (€17 654) in 2011 as compared with 2010, as stronger emphasis will be placed on the application of standards and on promoting their effective implementation in Member States as opposed to their development.

3.3.1	**2010** *at 2010 prices*	**2011** *at 2010 prices*
Regular Budget	2 870 341	2 851 843
Extrabudgetary	200 000	200 000
Unfunded	—	—

Projects

Title, duration and ranking	Main outputs
3.3.1.1 Improving radiation safety standards *Duration:* Recurrent *Ranking:* 1	Revised International Basic Safety Standards for Protection against Ionizing Radiation and for the Safety of Radiation Sources.
3.3.1.2 Improving transport safety standards *Duration:* Recurrent *Ranking:* 1	A comprehensive set of transport safety standards and supporting guides.

Title, duration and ranking	Main outputs
3.3.1.3 Enhancing the implementation of the Code of Conduct for radioactive sources and its supporting guidance *Duration:* Recurrent *Ranking:* 1	Meeting reports on experience and lessons learned from implementing the provisions of the Code and the Guidance; updated list of Points of Contacts for import/export; Self-Assessment Questionnaire; new draft of the Guidance.
3.3.1.4 Analysing radiation, transport and waste safety information and supporting capacity building *Duration:* Recurrent *Ranking:* 1	Tool kit to help States identify national needs and to then develop a strategy for strengthening E&T in radiation, transport and waste safety infrastructure; mission reports; training materials; country profiles for radiation, transport and waste safety infrastructure; revised and updated strategic plan on radiation, transport and waste safety; international network for education and training in radiation, transport and waste safety.
3.3.1.5 Networking to strengthen radiation and transport safety *Duration:* Recurrent *Ranking:* 1	Integrated networks for a range of radiation and transport areas, including: regulators; education and training providers; and the transport safety community.

Subprogramme 3.3.2 Application of Safety Standards for Radiation and Transport Safety

Rationale: Provision for the application of Agency safety standards is an obligation under the Agency's Statute and is part of the global safety regime. Information collected and analysed by the Secretariat shows that while many States apply Agency safety standards, there is room for improvement, particularly in the areas of: regulatory control; and protection of patients, occupationally exposed workers and members of the public. Member States need additional assistance from the Agency in these specific areas. The denial of transport of radioactive material appears to be an increasing problem, and measures are proposed to mitigate and resolve such issues, along with general measures to strengthen transport safety.

Strengthening the regulatory infrastructure for the control of radiation sources, fostering the exchange of information, maintaining collaboration with other international organizations and developing additional guidance and training material are examples of actions needed to maintain and enhance the level of protection against ionizing radiation in all Member States.

Some Member States have indicated that they are planning, or are considering embarking upon, a nuclear power programme and/or operating new technologies involving radiation sources. Clearly, the establishment of an adequate national level of compliance with Agency safety standards will be a milestone to be achieved as part of that process, and Agency assistance will be needed.

The continuing operation of a radiation protection and monitoring service will allow the Agency, as required by its Statute, to provide for the application of the safety standards for its own staff members and operations under its responsibility.

Objectives:

— To assist Member States in strengthening their capabilities in order to facilitate implementation of safe and sustainable approaches and increase competences in radiation and transport safety.

— To ensure a high level of radiation protection for the Agency's own operations and for all operations making use of materials, services, equipment, facilities and information made available by the Agency, including technical cooperation projects.

Outcome	Performance Indicators
— Improved radiation and transport safety in Member States through increased global application of Agency safety standards and relevant international undertakings.	— Number of Member States providing feedback on their application of Agency safety standards. — Number of Member States implementing the provisions from the Code of Conduct.

Programmatic changes and trends: The programme for 2010–2011 recognizes the increasing importance of the globalization of the safety regime to maximize synergies and improve effectiveness. Transparency, informed decision making and sustainability are key to the future. There will be more demands from States for independent peer reviews supported by self-assessments, especially in the area of regulatory infrastructure. In the medical area, the increased uses of radiation need to be properly justified and controlled and patients and medical professionals need to be properly informed. The expected expansion in nuclear power will give rise to increasing work in the area of radiation and transport safety, particularly in the areas of protecting workers. Problems associated with the denial of shipments need to be addressed, especially when there is an expected increase in the volume of shipments of radioactive material (related to both new nuclear programmes and the general increasing use of radiation, especially in medicine). This subprogramme therefore focuses on facilitating Member State application of the safety regime in the areas of radiation and transport safety.

Resource changes and trends: The proposed regular budget resource requirements, at 2009 prices, reflect an increase of 10.1% (€252 626) in 2010 as compared with 2009 and a decrease of1.0% (€27 926) in 2011 as compared with 2010, as stronger emphasis will be placed on the application of standards and on promoting their effective implementation in Member States, particularly in strengthening the regulatory infrastructure for the control of radiation sources, in the radiation protection of patients and in addressing the denial of shipment of radioactive materials.

3.3.2	**2010** *at 2010 prices*	**2011** *at 2010 prices*
Regular Budget	2 840 475	2 811 606
Extrabudgetary	740 000	740 000
Unfunded	—	—

Projects

Title, duration and ranking	Main outputs
3.3.2.1 Enhancing radiation protection of patients *Duration:* Recurrent *Ranking:* 1	Web based educational reporting systems for incidents in therapeutic and non-therapeutic medical exposures; updated web site containing information on dose reduction in medical exposure for the use of health professionals and patients; guidance documents on radiation protection of patients and patient dose reduction through optimization of radiological procedures.
3.3.2.2 Enhancing radiation protection of workers *Duration:* Recurrent *Ranking:* 1	Advice, evaluation reports and technical support for the implementation of the radiation protection programme; guidance documents and tools for fostering information exchange on occupational radiation protection issues.

Title, duration and ranking	Main outputs
3.3.2.3 Strengthening generic criteria for radiation protection of the public *Duration:* Recurrent *Ranking:* 1	Training materials for protection of the public, and to conduct or participate in training courses on public exposure; draft Safety Reports/TECDOCs to provide practical information on implementing guidance provided in Safety Guides on protection of the public (see Project 3.3.1.1).
3.3.2.4 Improving transport safety and addressing denial of shipment *Duration:* Recurrent *Ranking:* 1	Denial of shipment action plan delivery.
3.3.2.5 Strengthening regulatory infrastructure for the control of radiation sources *Duration:* Recurrent *Ranking:* 1	Peer review and advisory services guidelines and reports; self-assessment methodology, tools and reports; guidance, tools, training courses available for regulatory bodies.
3.3.2.6 Supporting radiation and transport safety in Member States embarking on nuclear power *Duration:* Recurrent *Ranking:* 2	Guidance materials; provision of data on lessons learned collected from experienced countries; technical support for the implementation of safety standards; training courses.
3.3.2.7 Providing radiation protection and monitoring services *Duration:* Recurrent *Ranking:* 1	Updated version of the individual monitoring programme for Agency staff members; back up of dose records as support to the Radiation Protection Officers; in-house training courses.

Programme 3.4 Management of Radioactive Waste

Rationale: Nuclear fuel cycle facilities and other activities and facilities handling, using and processing radioactive material inevitably generate radioactive waste and also often give rise to effluent discharge to the environment. As with all radioactive material, such waste is potentially hazardous to health and the environment and must be carefully managed, discharges controlled and facilities carefully decommissioned, which may also require restoration of affected environments. Radioactive waste must be immobilized and safely stored or placed in disposal facilities isolated from the human habitat. These facilities and activities require safety standards and appropriate technologies. In addition, several international agreements place obligations on the Agency, namely the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management (the Joint Convention), the Convention on the Prevention of Marine Pollution by Dumping of Waste and Other Matter (the London Convention), the UN Conference on Environment and Development (UNCED or Rio Declaration), and the Global Programme of Action for the Protection of the Marine Environment from Land-based Activities.

The amounts and types of waste generated in different countries vary considerably. Nevertheless it is of primary importance that the Agency's programme on radioactive waste management promotes a universally applicable global safety regime for use by the Member States in their own programmes and to resolve issues with their neighbours. The establishment and maintenance of such a regime for waste is the ultimate objective of the programme. Since the duration of waste management projects in Member States can last for tens to hundreds of years, continuity and sustainability in programme activities is of considerable importance. As a consequence, most of the projects proposed for 2010–2011 continue existing ones and are expected to continue in some form beyond.

The programme is built in two subprogrammes, one devoted to the establishment of the elements of the global safety regime and the other one devoted to the application of this regime in Member States and technology transfer.

The beneficiaries of the programme are national bodies charged with radioactive waste management responsibilities and competent authorities for regulating and controlling the safety of radioactive waste management, organizations operating radioactive waste management facilities or facilities generating radioactive waste, environmental protection agencies responsible for controlling the discharge of radioactive materials to the environment, and to some extent health authorities. Derived beneficiaries are members of the public.

Objective: To achieve global harmonization in policies, criteria and standards governing waste safety and public and environmental protection, together with provisions for their application, including state of the art technologies and methods for demonstrating their adequacy.	
Outcomes	**Performance Indicators**
— Global safety regime strengthened through international development and acceptance of the Agency waste safety standards, and relevant international undertakings.	— New or revised draft waste safety standards approved by the CSS. — Number of new contracting parties to the Joint Convention.
— Global safety regime strengthened through internationally harmonized application of the Agency waste safety standards, state of the art technologies and relevant international undertakings.	— Level of State application of waste safety standards.

Follow-up on programme-wide lessons learned from reviews, assessment, evaluations: Considerable time and effort need to be devoted to creating awareness of and promoting the use of international safety standards, and to developing approaches to demonstrating compliance with them, and in particular to ensuring that national waste management strategies are developed and implemented. Substantial differences remain internationally on criteria and the approaches adopted for safety demonstration and licensing. This is seen by parties involved to be an impediment to broader societal acceptance of radioactive waste disposal facilities. International harmonization remains an important goal and will remain a priority. New methods of Agency support for technology transfer and capacity building through networks between developed and developing countries have been successfully tested in the programme and will be utilized more widely throughout the programme.

3.4	**2010** *at 2010 prices*	**2011** *at 2010 prices*
Regular Budget	6 714 011	6 739 036
Extrabudgetary	1 358 492	1 358 492
Unfunded	230 364	230 364

Specific criteria for prioritization:

1. First priority is given to establishing standards and to safety projects also supporting security.
2. Second priority is given to actions for the application of standards and the service of the Joint Convention, and transfer of technology for radioactive waste management.
3. Third priority is given to strengthening information exchange.

Subprogramme 3.4.1 Global Regime for Waste, Spent Fuel and Decommissioning Management

Rationale: Together, the Joint Convention, the safety standards and the associated peer review processes form an international regime through which the safety of radioactive waste management is being continuously reviewed, assessed and upgraded. To ensure that the waste safety standards are coherent with each other and with the Agency's other standards, they are reviewed by Member States and reviewed and approved by international committees of national regulators established for the purpose and by the CSS.

In order to support application of this global safety regime and to demonstrate progress in waste management and decommissioning practices, information related to the safety and practice of radioactive waste management has to be collected, managed and disseminated through easily accessible mechanisms. The exchange of technical information and know-how needs to be promoted through the organization of international conferences and topical networks and the coordination of international initiatives.

Objectives:

— To improve the safety of radioactive waste management in Member States.
— To improve understanding of radioactive waste management issues and promote effective application of practical solutions among the Agency's constituencies by effectively gathering, disseminating and communicating relevant information.

Outcomes	Performance Indicators
— International consensus achieved on the Agency radioactive waste safety standards.	— New or revised draft waste safety standards approved by the CSS. — Number of new contracting parties to the Joint Convention.
— Member States strengthening their capabilities and improving their practices in radioactive waste management, decommissioning of installations and remediation of contaminated sites.	— Number of Member States and participants in the Agency's international networks and projects.

Programmatic changes and trends: Compared with the 2008–2009 biennium, Programme 3.4 has been completely restructured into two subprogrammes instead of four.

Resource changes and trends: The proposed regular budget resource requirements, at 2009 prices, reflect an increase of 19.0% (€422 028) in 2010 as compared with 2009 and an increase of 0.5% (€13 093) in 2011 as compared with 2010. The increase is principally attributable to strengthening international networks in all areas of radioactive waste management to promote access to and participation in the development and application of radioactive waste safety and waste management information.

3.4.1	**2010** *at 2010 prices*	**2011** *at 2010 prices*
Regular Budget	2 721 475	2 735 113
Extrabudgetary	200 000	200 000
Unfunded	—	—

Projects

Title, duration and ranking	Main outputs
3.4.1.1 Supporting international safety conventions and cooperation *Duration:* Recurrent *Ranking:* 2	Joint Convention meetings; annual reports to London Convention; responses to specific requests made by international legal instruments, regional and international undertakings on matters related to radioactive waste.
3.4.1.2 Improving waste safety standards, practices and strategies *Duration:* Recurrent *Ranking:* 1	Use of the Agency Safety Standards in Member State radioactive waste management programmes.
3.4.1.3 Integrated networking for capacity building *Duration:* 2010–2011 *Ranking:* 2	Project reports and software; hands–on training to Member State specialists.
3.4.1.4 Analysing and managing radioactive waste information *Duration:* 2010–2011 *Ranking:* 3	Updated DIRATA database; updated NEWMDB database.

Subprogramme 3.4.2 Application of Safety Standards and Best Practices for Radioactive Waste, Spent Fuel and Decommissioning Management

Rationale: The Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management (the Joint Convention) supported by the Agency's safety standards and associated technical publications, provides a system of reference for Member States to assess their approach to radioactive waste management, decommissioning and environmental remediation against internationally adopted standards and good practices. In this field, the Agency's role is to encourage Member States to strengthen their capabilities and to develop their infrastructure as needed to manage their nuclear and radiological liabilities in a safe, sustainable and cost effective manner. The activities planned under the subprogramme promote the adoption and support the application of safety standards and best practices by Member State organizations involved in radioactive waste management, decommissioning of installations, environmental remediation of radiologically contaminated sites, and management of disused sources. In addition to technical publications and databases, which have been the traditional way for the Agency to collect and disseminate information, the establishment of networks dealing with case studies and demonstration projects and the provision for safety appraisal and peer review services will offer opportunities for Member State RWM organizations to compare their approaches and techniques and to learn from each other's experience.

Objectives:

— To assist Member States in strengthening their capabilities and improving their practices in radioactive waste management, decommissioning of installations and remediation of contaminated sites.

— To facilitate experience sharing and knowledge transfer on suitable approaches and good practices for radioactive waste management, decommissioning of installations and environmental remediation of radiologically contaminated sites.

Outcome	Performance Indicators
— Member States strengthening their capabilities and improving their practices in radioactive waste management, decommissioning of installations, remediation of contaminated sites.	— Number of Member States in compliance with safety standards and best practices assessed through safety appraisals and peer review missions. — Implementation rate of recommendations proposed by the International Radioactive Waste Technical Committee (WATEC) at its annual meeting.

Programmatic changes and trends: Compared with the 2008–2009 biennium, Programme 3.4 has been completely restructured into two subprogrammes instead of four.

Resource changes and trends: The proposed regular budget resource requirements, at 2009 prices, reflect a decrease of 6.1% (€251 966) in 2010 as compared with 2009 and an increase of 0.3% (€10 831) in 2011 as compared with 2010. The decrease is primarily related to activities in the pre-disposal management and disposal of radioactive material, where greater emphasis is placed on strengthening international networks within the global safety regime in Subprogramme 3.4.1, as opposed to the application of safety standards and best practices in Subprogramme 3.4.2. This decrease is partially offset by increased efforts to support the safe and secure development of all uranium mining operations and to provide assistance to Member States embarking on nuclear power programmes.

3.4.2	**2010** *at 2010 prices*	**2011** *at 2010 prices*
Regular Budget	3 992 536	4 003 923
Extrabudgetary	1 158 492	1 158 492
Unfunded	230 364	230 364

Projects

Title, duration and ranking	Main outputs
3.4.2.1 Pre-disposal management of radioactive waste *Duration:* Recurrent *Ranking:* 2	Development of safety standards and related publications; organization of networking events; sharing of information and experience; and organization of review/assistance activities for individual Member States or regions.
3.4.2.2 Managing disposal of radioactive waste and spent fuel *Duration:* Recurrent *Ranking:* 2	Development of safety standards and technical reports; organization of networking events; sharing of information and experience; and organization of review/assistance activities for individual Member States or regions.
3.4.2.3 Managing and controlling disused sources *Duration:* Recurrent *Ranking:* 1	Development of safety standards and related support documents; organization of networking events; sharing of information, and organization of review/assistance activities for individual Member States or regions, i.e. reports of the reviewed and improved safety assessments and safety cases of the disused sealed sources management facilities, including existing storage facilities and new coming facilities in accordance with Agency safety standards; and reports of the safety review missions of disused sealed sources management facilities, including existing storage facilities and new coming facilities.
3.4.2.4 Controlling effluent discharges and assessing radiological and environmental impact *Duration:* Recurrent *Ranking:* 2	Publications on: food and drinking water monitoring, monitoring after emergencies, decay storage of radioactive effluents from medical and other institutional applications, and liquid and gaseous effluents from nuclear reactors.
3.4.2.5 Supporting safe and cost effective decommissioning *Duration:* 2012 *Ranking:* 2	Development of safety standards and related technical publications, organization of networking events; sharing of information; and organization of review/assistance activities for individual Member States or regions.
3.4.2.6 Remediating sites and regulating NORM residues *Duration:* Recurrent *Ranking:* 2	Development of safety standards and related publications; organization of networking events; sharing of information and experience; and organization of review/assistance activities for individual Member States or regions.
3.4.2.7 Supporting waste and spent fuel management in Member States embarking on nuclear power *Duration:* 2010–2011 *Ranking:* 2	Policy and associated strategies for managing radioactive waste generated by nuclear energy production.

Programme 3.5 Nuclear Security

Rationale: The risk that nuclear or other radioactive material could be used in malicious acts remains high and is recognized as a serious threat to international peace and security. Information collected by the Agency records instances of theft of nuclear or other radioactive material, and of malicious acts against facilities. A variety of non-State actors have been involved. The complexity and sophistication of the threat is growing as potential perpetrators have reportedly sought to improve their technical knowledge, for example, through Internet use. Appropriate and effective national nuclear security that addresses these issues will facilitate the peaceful use of nuclear energy and enhance global efforts to combat nuclear terrorism.

The international community has responded to the threat by strengthening existing and adopting new international legal instruments related to nuclear security: the amendment to the Convention on the Physical Protection of Nuclear Material (CPPNM); the International Convention for the Suppression of Acts of Nuclear Terrorism (Nuclear Terrorism Convention); UN Security Council resolution 1540 (further confirmed in UNSC

resolutions 1673 and 1810); UNSC resolution 1373; and the non-binding Code of Conduct on the Safety and Security of Radioactive Sources and its Guidance on the Import and Export of Radioactive Sources as well as Resolutions adopted by the General Assembly.

This programme addresses the risk from non-State actors and the malicious use of radioactive material. It is based on an evaluation of the potential threat from malicious acts involving nuclear and other radioactive material in use, storage or transport. Comprehensive security requires a combination of prevention, detection and response measures set within a robust national civil and criminal legal framework. The security of nuclear material suitable for use in nuclear weapons has always been, and will remain, of the very highest priority and a long term imperative. The understanding of potential threats involving the malicious use of other radioactive material, e.g. dispersal by a dirty bomb, has increased, as has the priority given to improving the security of such materials.

The programme has been restructured both in response to changes in the nuclear security situation since the instigation of the first nuclear security plan to meet the needs of States and in response to the recommendation from external evaluations. The programme is designed to establish and provide long term sustained improvements in nuclear security. Within the regular budget, priority is given to resources to permit: the establishment of an effective information platform; the development and publishing of nuclear security recommendations and guidance; the provision of services for assessment and evaluation of State systems against the guidance at their request; and the provision for human resources development.

In order to address these priorities, regular budget funding will be used to provide for the necessary staffing and to fund participation of senior experts from Member States in the Advisory Group on Nuclear Security (AdSec) and the Nuclear Security Series Committee which will provide advice on the development, review and revision of Nuclear Security Series documents.

Extrabudgetary funds, will be required to fund programmatic activities such as assessment services, human resource development and the provision of assistance, on request, to improve security at existing facilities, locations and transports involving nuclear and other radioactive material, and to introduce nuclear security in those systems that operate in the public arena, for example, at borders (effective border control) and at major public events, and to support research and development in the field.

Notwithstanding the increase in the regular budget portion of the programme, this programme will continue to rely on extrabudgetary funding provided by States to the NSF to implement parts of the Nuclear Security Plan (NSP). Programme implementation and achieving the objectives of the NSP will depend on the availability of resources.

In the implementation of this programme, every effort will be made to maintain the confidentiality of nuclear security related information.

Objectives: To contribute to global efforts to achieve worldwide, effective security wherever nuclear or other radioactive material is in use, storage and/or transport, and of associated facilities, by supporting States, upon request, in their efforts to establish and maintain effective nuclear security through assistance in capacity building, guidance, human resource development, sustainability and risk reduction.

To assist adherence to and implementation of nuclear security related international legal instruments; and to strengthen the international cooperation and coordination of assistance given through bilateral programmes and other international initiatives in a manner which also would contribute to enabling a broader use of nuclear energy and of applications with radioactive substances.

Outcomes	Performance Indicators
— Improved global security of nuclear material, other radioactive material, nuclear facilities, locations and transports.	— Number of States that have established or improved their systems to implement nuclear security for activities with nuclear and other radioactive material in a comprehensive and coherent way.

Outcomes	Performance Indicators
— Improved capability of Member States to prevent, detect and respond to malicious acts involving nuclear material, other radioactive material, nuclear facilities, locations or transports of nuclear or other radioactive material or otherwise in the public domain.	— Number of States implementing procedures and technical systems obtained through Agency sources to detect and respond to malicious acts involving nuclear and other radioactive material in use, storage and transport.

Follow-up on programme-wide lessons learned from reviews, assessment, evaluations: Activities contained in this programme have taken into account comments by the External Auditor and the OIOS External Evaluation of the *Nuclear Security* programme.

A new Nuclear Security Plan has been developed to cover the period 2010–2013 and will be presented to the Board of Governors in September 2009. This programme will be fully consistent with this new NSP.

3.5	**2010** *at 2010 prices*	**2011** *at 2010 prices*
Regular Budget	3 194 822	4 737 402
Nuclear Security Fund	19 875 940	18 234 037
Unfunded	—	—

Specific criteria for prioritization:

1. First priority is given to the implementation of decisions taken by the Policy-making Organs.
2. Second priority is given to the establishment of an effective nuclear security information platform.
3. Third priority is given to the completion of nuclear security recommendations and guidance.
4. Fourth priority is given to the provision of services for the assessment and evaluation of States, at their request, against the recommendations and guidance.
5. Fifth priority is given to human resources development in States.

Subprogramme 3.5.1 Needs Assessment, Information Collation and Analysis

Rationale: Effective implementation of the Agency's activities requires efficient mechanisms for planning, prioritization, coordination, monitoring and reporting. Planning and prioritization are based on requests from Member States and assessments of needs, using Agency services and information analysis. Relevant information is collected from a wide range of sources: the Illicit Trafficking Database (ITDB), other Agency databases, other international and regional organizations, and open sources. These sources provide an effective basis for, inter alia, analysing potential threats and assessing programme impact for subsequent feedback into and targeting of programme activities.

The ITDB, to which Member States contribute information on a voluntary basis, is an important information resource tool for identifying potential threats and vulnerabilities indicating weaknesses in control and security systems and for assessing the impact of measures to combat illicit nuclear trafficking. A full range of information resources, obtained both through expanded or new databases and their analysis, will extend the Agency's capacity for threat analysis and needs assessment.

Assessments of the security needs in individual Member States made in cooperation with the State are brought together in Integrated Nuclear Security Support Plans (INSSPs). The INSSPs identify the actions to be taken, their planned implementation schedule, and the responsibilities of the State, the Agency and others. By bringing into one comprehensive plan all ongoing nuclear security assistance in an individual State, INSSPs provide a vehicle for coordinating implementation activities with both the State and other donors. In this capacity, the INSSP may also help coordinate bilateral, multilateral and national activities in an integrated manner, and provide for the effective and efficient use of resources.

Interaction with Member States, donors and other international and regional organizations all ensure that: limited resources are efficiently and effectively applied; unnecessary duplication of effort is avoided; gaps are identified; and prioritization is soundly based. Confidentiality of information is maintained at all times.

The *Nuclear Security* programme involves activities delivered under other major programmes of the Agency and through the technical cooperation programme. Mechanisms have been established to ensure the required internal coordination and related availability of resources, respecting established priorities of other programmes.

Objective: To develop and maintain a comprehensive information platform by the end of the biennium, to effectively support implementation of the NSP, an updated threat analysis, and good understanding of global nuclear security needs, to assist in the prioritization of nuclear security improvements and to facilitate international cooperation and coordination in meeting those needs.

Outcome	Performance Indicator
— The establishment of comprehensive and complete databases and tools that result in a coordinated nuclear security programme by the end of the biennium which meets the requirements of States without duplicating other national, bilateral or multilateral programmes.	— Number of databases and new data sets established and used.

Programmatic changes and trends: In order to simplify the programme structure, the number of projects has been reduced from three to two and activities have been simplified. Priority under this subprogramme will be given to the development of a comprehensive and integrated nuclear security database to enhance the Agency's analysis capability and to secure an information portal to improve communication with States.

Resource changes and trends: The majority of programme activities will be funded from the regular budget. The increases sought in the regular budget (€830 633 or 247.2% in 2010 compared with 2009 and €320 197 or 27.4% in 2011 compared with 2010) will be used to provide for staff costs that are currently met from the NSF.

3.5.1	**2010** *at 2010 prices*	**2011** *at 2010 prices*
Regular Budget	1 202 184	1 533 742
Nuclear Security Fund	945 824	970 921
Unfunded	—	—

Projects

Title, duration and ranking	Main outputs
3.5.1.1 Assessing nuclear security needs, priorities and threats *Duration:* Recurrent *Ranking:* 1	Input to threat analysis; improved databases; INSSP for States.
3.5.1.2 Nuclear Security: Building international networks and partnerships *Duration:* Recurrent *Ranking:* 1	Coordination meetings; reports to the Board of Governors and others as required.

Subprogramme 3.5.2 Contributing to the Establishment of a Global Nuclear Security Framework

Rationale: Although responsibility for nuclear security rests entirely with the State, there is growing recognition of the need to establish an internationally agreed normative approach to nuclear security which builds on the binding and non-binding international legal instruments with obligations and voluntary commitments for nuclear security that have been developed over the past years. These instruments target actions and activities throughout the areas of prevention, detection of criminal or unauthorized activities involving radioactive material, and responding to such activities should they occur. It is essential that Agency guidance supports the implementation of nuclear security measures in States that take all State obligations and voluntary undertakings into account and facilitate the operation of national systems in a coherent manner.

Through this subprogramme, the Agency seeks to provide a guidance package published in the IAEA Nuclear Security Series. These publications are structured in three blocks: nuclear security essential elements,

recommendations, and guides. Their content ranges from the provision of the fundamental and essential elements of nuclear security to recommended concepts to be implemented down to the provision of specific technical guidance on how concepts may be implemented. The guidance package aims at facilitating implementation by States of binding and non-binding international legal instruments.

The IAEA Nuclear Security Series provides guidance to States on the prevention and detection of, and response to, theft, sabotage, unauthorized access, illegal transfer or other malicious acts involving nuclear and other radioactive material or their associated facilities. This guidance is at the forefront of security development and takes account of the potential expanded use of nuclear energy and a wider use of nuclear applications. It is underpinned by R&D programmes which incorporate the development of common approaches and technological advances. In some cases, R&D is needed to facilitate the implementation of nuclear security concepts (e.g. user friendly instruments). These R&D programmes will be carried out with the support of the Nuclear Security Equipment Laboratory (NSEL).

This subprogramme is particularly relevant for States seeking to meet the requirements of UN Security Council resolution 1540, and provides assistance for the development of nuclear security recommendationsshould States ask the Agency for assistance.

To reflect the importance placed on the establishment of the global nuclear security framework and to provide for long term sustainability, staff for activities under this subprogramme will be implemented through the regular budget, supplemented, as required, by the NSF. During the budget period, priority will be given to the production of high level documents: ‘essential elements’ and ‘recommendations’, with lower priority being given to ‘guidance’ to ensure a consistent and coherent approach to publications in the IAEA Nuclear Security Series.

Objectives:

— To provide a comprehensive set of nuclear security guidance publications, recommendations and guidance as part of the nuclear security framework by the end of the biennium to a standard agreed by the international community.
— To provide support for the development of R&D programmes to provide effective, technically up to date guidance and to develop user-friendly instrumentation and other means to implement the nuclear security framework in an effective, yet flexible, manner.

Outcome	Performance Indicator
— Improved ability of States to meet the requirements of binding and non-binding international legal instruments.	— Agreement by the international community on the completeness and acceptability of publications, technical specifications and methodologies produced under Agency auspices.

Programmatic changes and trends: This subprogramme consolidates the production of publications in the IAEA Nuclear Security Series that was previously carried out under Projects M.1.01, M.2.01 and M.3.01. In response to requests from Member States, priority will be given to the production of high level documents, i.e. ‘fundamentals’ or ‘recommendations’. In addition, and in accordance with General Conference resolution GC(52)/RES/10, priority will be given to the facilitation of the finalization of the development of the document that will become INFCIRC/225/Rev.5. Greater Member State involvement in the Nuclear Security Series will be provided through the establishment of a Nuclear Security Series Committee, open to senior experts from all Member States, which will provide advice on the development, review, revision and publication of Nuclear Security Series guidance documents.

Resource changes and trends: The proposed regular budget resource requirements, at 2009 prices, reflect an increase of 175.6% (€619 452) in 2010 as compared with 2009 and an increase of 34.6% (€336 278) in 2011 as compared with 2010. An increased portion of programme activities will be funded from the regular budget, supplemented by additional funding from the NSF. Efficiency gains will be achieved through the increased use of the electronic distribution of draft documents and by holding fewer meetings.

3.5.2	**2010** *at 2010 prices*	**2011** *at 2010 prices*
Regular Budget	1 002 967	1 346 010
Nuclear Security Fund	2 945 897	2 275 897
Unfunded	—	—

Projects

Title, duration and ranking	Main outputs
3.5.2.1 Developing recommendations and guidelines to implement the global nuclear security framework *Duration:* Recurrent *Ranking:* 1	New and revised recommendations and guidance included in the IAEA Nuclear Security Series.
3.5.2.2 Research and development to support the further development of the nuclear security framework *Duration:* Recurrent *Ranking:* 1	Technical specifications; revised methodologies; CRP reports.

Subprogramme 3.5.3 Providing Nuclear Security Services

Rationale: Although security is a national responsibility, given the increased transboundary nature of the threat States must work at both the national and the international levels to ensure that a comprehensive and global nuclear security regime is established. The Agency has a central role in assisting States to meet this aim. It will provide services to evaluate how an individual State has implemented international obligations or domestic policies. Such evaluations, or peer reviews, may also contribute to confidence among the general public that activities involving nuclear or other radioactive material are managed with due consideration to nuclear security. Due to the sensitive nature of some assessments, information is treated strictly in accordance with the Agency's confidentiality policy.

This subprogramme aims to provide advice and services to facilitate adherence to international legal instruments and to support their implementation in individual States and at the international level, facilitating increased cooperation and coordination among States.

A modular approach will tailor the Agency's nuclear security services to the wishes of the individual State. These efforts will ensure the sustainability of effective nuclear security.

Implementation of the nuclear security framework will require well trained and educated staff with appropriate skills. The subprogramme will deliver a comprehensive training programme for staff at different levels and having different duties. It will include efforts to support national programmes at the graduate level, a broad range of training courses and fellowships. Efforts will be made to streamline standardized training materials. The training programme will be based increasingly on national and regional establishments, and make greater use of consultants and national experts from Member States.

The results of peer reviews and other services will, where appropriate, be included in INSSPs.

Objective: To underpin sustainable national nuclear security by facilitating implementation of the global nuclear security framework through the provision, at the request of States, of peer reviews and assessment missions to evaluate how the recommendations and guides set out in that regime are implemented, and to assist States in capacity building and development of the necessary human resources.

Outcome	Performance Indicator
— Increased implementation of the global nuclear security framework by States.	— Number of States having implemented the Agency's services in their efforts to implement a nuclear security framework.

Programmatic changes and trends: This subprogramme will consolidate activities previously carried out in Projects 3.5.2.2 and 3.5.3.3. As noted above, the training programme will increasingly be delivered through national and regional establishments. In addition, greater use will be made of consultants and national experts from Member States to deliver training. National support centres will be provided as sustainability efforts in States (see also Project 3.5.4.3).

Resource changes and trends: The increases sought in the regular budget (€448 920 or 143.3% in 2010 compared with 2009 and €791 457 or 103.8% in 2011 compared with 2010) will be used to provide for staff costs that are currently met from the NSF. Programme implementation will continue to be highly dependent on extrabudgetary contributions to the NSF. Human resources development programmes will increasingly be delivered through modular programmes, and outsourced where appropriate.

3.5.3	**2010** *at 2010 prices*	**2011** *at 2010 prices*
Regular Budget	786 006	1 600 968
Nuclear Security Fund	5 164 110	3 754 110
Unfunded	—	—

Projects

Title, duration and ranking	Main outputs
3.5.3.1 Facilitating adherence to international instruments *Duration:* Recurrent *Ranking:* 2	National legislation and regulations to implement State commitments to the global nuclear security regime.
3.5.3.2 Peer reviews and evaluation *Duration:* Recurrent *Ranking:* 1	Mission reports, which will provide input to the development of INSSPs.
3.5.3.3 Human resource development and capacity building *Duration:* Recurrent *Ranking:* 1	Comprehensive human resources development programme.

Subprogramme 3.5.4 Risk Reduction and Security Improvement

Rationale: An essential element of improving global nuclear security is the support of threat reduction efforts in States, e.g. the establishment of effective security arrangements at existing nuclear facilities or other locations where nuclear and other radioactive material is produced, used, stored, disposed of or transported. Such security arrangements include physical protection, accurate accounting or registry of the material, transport security arrangements, arrangements for recovery and repatriation of radioactive material, and import/export control arrangements, when required. They must address threats by non-State actors, including insiders. For a large number of locations security arrangements are still insufficient, due to less attention having been given to security in the past. Building improved nuclear security in a global perspective must include dealing with the issues of bringing security at existing facilities, locations and transports up to an internationally recognized standard. States and international organizations must continue to address these concerns at both the national and the international levels in support of a comprehensive, global nuclear security framework. The Agency has a central role in promoting, coordinating and implementing activities that will improve the ability of States to prevent malicious activities involving nuclear and other radioactive material and their associated facilities, equipment and technology.

Efforts to strengthen physical protection systems will continue. The improvement of physical protection of nuclear and other radioactive material in production, use, storage, disposal and transport, and of vital areas of nuclear installations requires dedicated support through the Agency's programmes implemented in close cooperation and coordination with the efforts of other nuclear security initiatives. The physical protection regime depends on appropriate and effective accounting and registry of nuclear and other radioactive material, as a fundamental part of adequate security arrangements for such material and for the early detection of theft and for domestic policy regarding export and import control measures. Also, efforts to bring vulnerable material under control or to repatriate it to the supplying country will be enhanced.

In addition, the Agency seeks to underpin State responses to threats as they fulfil their obligations under the new nuclear security instruments. Specifically, States should have the best achievable capacity to detect and respond to the theft, the threat of theft, or fraudulent possession, unauthorized transfer, including illicit trafficking, as well as

dispersal and disposal of nuclear and other radioactive material and of sensitive nuclear equipment and technology for the production of these materials. Detection of such acts is an essential part of national nuclear security systems, as is an adequate graded response to any detection. Continued reports of nuclear trafficking incidents indicate a need to strengthen States capability to combat illicit trafficking in nuclear and other radioactive material. Improved coordination among organizations involved both within States and in the international community is required. The further development of the technology to make available user-friendly instruments for detection and a methodology for nuclear forensics will be undertaken in cooperation with NSEL.

Efforts to ensure that activities by international bodies aimed at preventing malicious acts involving nuclear and radioactive material and their associated facilities complement each other will continue. Increased efforts will be devoted to measures to ensure the sustainability of effective nuclear security.

This subprogramme will be implemented in close cooperation with Major Programme 4.

Objective: To improve global and national nuclear security through activities to reduce threats that nuclear and other radioactive material would be insufficiently protected against malicious acts, to improve nuclear security capacities at facilities and locations and for transports, and to improve the capacity to detect undeclared radioactive material in the public area and act effectively on such detection.	
Outcome	**Performance Indicator**
— Reduction of the risk that nuclear and other radioactive material could be involved in malicious acts.	— Number of facilities and other locations where security has been improved through implementation of Agency advice and assistance.

Programmatic changes and trends: States have become increasingly aware of the need to implement nuclear security at accepted international levels. A systematic implementation is required, which requires consistency and sustained efforts. The implementation of INSSPs demonstrates clearly the magnitude of the undertaking: reviewing existing security systems, and identifying and implementing improvements, including making the necessary investments in administrative systems, technical equipment and human resources development programmes. The experience gained so far demonstrates clearly that significant resources are required. Agency assistance in this field will be based on the needs identified in the INSSP for an individual country.

Resource changes and trends: The majority of activities will continue to be funded from the NSF, in particular physical protection upgrades, assistance for establishing effective border controls, the security enhancement of major public events and other work requiring major expenditure. A small amount of funding will be provided from the regular budget for the human resources necessary to manage the subprogramme. The increases sought in the regular budget (€98 526 or 98.3% in 2010 as compared with 2009 and €52 068 or 26.2% in 2011 as compared with 2010) will be used to provide for staff costs that are currently met from the NSF.

3.5.4	**2010** *at 2010 prices*	**2011** *at 2010 prices*
Regular Budget	203 665	256 682
Nuclear Security Fund	10 820 109	11 233 109
Unfunded	—	—

Projects

Title, duration and ranking	Main outputs
3.5.4.1 Improving security at facilities and locations *Duration:* Recurrent *Ranking:* 2	Physical protection and material accounting and registry upgrades to facilities, locations and transports.

Title, duration and ranking	Main outputs
3.5.4.2 Securing materials outside of regulatory control *Duration:* Recurrent *Ranking:* 2	Assessments; increased capacity for border control in States, enhanced nuclear security at major public events, repatriation of research reactor fuel that is not in use, recovery of radioactive sources.
3.5.4.3 Enhancing national, regional and international support capacities *Duration:* Recurrent *Ranking:* 2	National nuclear security support centres; network of nuclear forensics laboratories.

Major Programme 3 - Nuclear Safety and Security

Summary of Programme Structure and Resources
(excluding Major Capital Investments)
Table 17

	Project / Subprogramme / Programme	2010			2011 preliminary estimates		
		Regular Budget at 2010 prices	Extra-budgetary	CAURBs Unfunded	Regular Budget at 2010 prices	Extra-budgetary	CAURBs Unfunded
3.0.0.1	Enhancing the Global Nuclear Safety and Security Regime	755 029	178 568	-	749 288	178 568	-
3.0.0.2	Fostering Safety and Security Infrastructure and Improving Capacity Building	224 350	-	-	229 130	-	-
3.0.0.3	Strengthening Communication and Knowledge Management	236 661	3 862 939	-	239 124	3 862 939	-
		1 216 040	**4 041 507**	**-**	**1 217 542**	**4 041 507**	**-**
3.1.1.1	Supporting National Capacity Building for Emergency Response	448 327	129 205	-	493 530	129 205	-
3.1.1.2	Developing Standards and Guidelines for Emergency Preparedness and Response	474 440	-	-	452 493	-	-
3.1.1.3	Enhancing Event Reporting and Information Analysis	400 086	-	-	400 099	-	-
	Subprogramme 3.1.1 - National Preparedness and Response Capabilities	**1 322 853**	**129 205**	**-**	**1 346 122**	**129 205**	**-**
3.1.2.1	Responding to Incidents and Emergencies	1 002 414	-	-	1 127 370	-	-
3.1.2.2	Enhancing In-house Response Capacities	484 891	-	-	729 521	-	-
3.1.2.3	Strengthening International Response Arrangements	497 554	-	-	520 803	-	-
	Subprogramme 3.1.2 - International Response Capabilities and Arrangements	**1 984 859**	**-**	**-**	**2 377 694**	**-**	**-**
Programme 3.1 - Incident and Emergency Preparedness and Response		**3 307 712**	**129 205**	**-**	**3 723 816**	**129 205**	**-**
3.2.1.1	Enhancing Regulatory Effectiveness and Supporting Member States Embarking on Nuclear Power	1 444 596	270 709	-	1 399 641	270 709	-
3.2.1.2	Supporting International Regulatory Network and the Convention on Nuclear Safety	524 549	135 354	-	665 407	135 354	-
3.2.1.3	Improving the Agency Safety Standards and Supporting the International Nuclear Safety Group (INSAG)	451 620	-	-	443 513	-	-
	Subprogramme 3.2.1 - Governmental and Regulatory Framework and other Elements of Safety Infrastructure	**2 420 765**	**406 063**	**-**	**2 508 561**	**406 063**	**-**
3.2.2.1	Supporting Member States in Effective Leadership, Safety Management and Safety Culture	735 171	438 494	-	724 002	438 494	-
3.2.2.2	Establishing Competence Framework for Capacity Building	377 622	156 780	-	368 821	156 780	-
	Subprogramme 3.2.2 - Safety Management and Capacity Building	**1 112 793**	**595 274**	**-**	**1 092 823**	**595 274**	**-**
3.2.3.1	Improving Safety Assessment and Integrated Decision Making Process	1 038 318	426 807	-	1 013 358	426 807	-
3.2.3.2	Enhancing Safety Assessment Tools	553 304	1 172 581	-	576 755	1 172 581	-
3.2.3.3	Supporting Site Evaluation and Protection against Internal and External Hazards	787 246	766 810	-	739 470	643 310	-
3.2.3.4	Evaluating Safe Design of Structures, Systems and Components	511 292	475 704	-	499 093	812 704	-
	Subprogramme 3.2.3 - Safety Assessment of Sites and Installations	**2 890 160**	**2 841 902**	**-**	**2 828 676**	**3 055 402**	**-**
3.2.4.1	Enhancing the Operational Safety Performance	1 099 914	348 067	193 029	1 077 264	400 007	143 029

Major Programme 3 - Nuclear Safety and Security

Summary of Programme Structure and Resources
(excluding Major Capital Investments)
Table 17

	Project / Subprogramme / Programme	2010 Regular Budget at 2010 prices	2010 Extra-budgetary	2010 CAURBs Unfunded	2011 preliminary estimates Regular Budget at 2010 prices	2011 preliminary estimates Extra-budgetary	2011 preliminary estimates CAURBs Unfunded
3.2.4.2	Enhancing the Sharing and Use of International Experience	851 341	-	-	834 339	-	-
	Subprogramme 3.2.4 - Operational Safety and Experience Feedback	**1 951 255**	**348 067**	**193 029**	**1 911 603**	**400 007**	**143 029**
3.2.5.1	Enhancing Safety of Research Reactors and Knowledge Sharing	590 691	139 134	25 000	602 073	191 134	-
3.2.5.2	Monitoring and Improving Safety of Research Reactors under Agreements	183 922	46 090	-	181 218	46 090	-
3.2.5.3	Enhancing Safety of Fuel Cycle Facilities (FCF)	256 063	215 354	26 958	246 552	215 354	-
	Subprogramme 3.2.5 - Safety of Research Reactors and Fuel Cycle Facilities	**1 030 676**	**400 578**	**51 958**	**1 029 843**	**452 578**	**-**
Programme 3.2 - Safety of Nuclear Installations		**9 405 649**	**4 591 884**	**244 987**	**9 371 506**	**4 909 324**	**143 029**
3.3.1.1	Improving Radiation Safety Standards	1 064 147	-	-	1 047 955	-	-
3.3.1.2	Improving Transport Safety Standards	554 231	-	-	553 512	-	-
3.3.1.3	Enhancing the implementation the Code of Conduct for Radioactive Sources and its Supporting Guidance.	166 184	200 000	-	166 291	200 000	-
3.3.1.4	Analyzing Radiation, Transport and Waste Safety Information and Supporting Capacity Building	658 788	-	-	661 764	-	-
3.3.1.5	Networking to Strengthen Radiation and Transport Safety	426 991	-	-	422 321	-	-
	Subprogramme 3.3.1 - Safety Standards and Global Regime for Radiation and Transport Safety	**2 870 341**	**200 000**	**-**	**2 851 843**	**200 000**	**-**
3.3.2.1	Enhancing Radiation Protection of Patients	790 243	70 000	-	855 884	70 000	-
3.3.2.2	Enhancing Radiation Protection of Workers	261 339	-	-	260 801	-	-
3.3.2.3	Strengthening Generic Criteria for Radiation Protection of the Public	182 633	-	-	188 682	-	-
3.3.2.4	Improving Transport Safety and Addressing Denial of Shipments	502 177	150 000	-	542 359	150 000	-
3.3.2.5	Strengthening Regulatory Infrastructure for the Control of Radiation Sources	708 297	500 000	-	568 077	500 000	-
3.3.2.6	Supporting Radiation and Transport Safety in Member States Embarking on Nuclear Power	65 075	20 000	-	65 075	20 000	-
3.3.2.7	Providing Radiation Protection and Monitoring Services	330 711	-	-	330 728	-	-
	Subprogramme 3.3.2 - Application of Safety Standards for Radiation and Transport Safety	**2 840 475**	**740 000**	**-**	**2 811 606**	**740 000**	**-**
Programme 3.3 - Radiation and Transport Safety		**5 710 816**	**940 000**	**-**	**5 663 449**	**940 000**	**-**
3.4.1.1	Supporting International Safety Conventions and Cooperation	308 795	100 000	-	308 224	100 000	-
3.4.1.2	Improving Waste Safety Standards, Practices and Strategies	820 165	-	-	789 864	-	-
3.4.1.3	Integrated networking for capacity building	1 056 948	100 000	-	1 101 492	100 000	-
3.4.1.4	Analyzing and Managing Radioactive Waste Information	535 567	-	-	535 533	-	-
	Subprogramme 3.4.1 - Global Regime for Waste, Spent Fuel and Decommissioning Management	**2 721 475**	**200 000**	**-**	**2 735 113**	**200 000**	**-**
3.4.2.1	Managing Pre-disposal of Radioactive Waste	713 815	263 492	115 182	714 899	263 492	115 182
3.4.2.2	Managing Disposal of Radioactive Waste and Spent Fuel	766 670	105 000	-	805 850	105 000	-

Major Programme 3 - Nuclear Safety and Security

Summary of Programme Structure and Resources
(excluding Major Capital Investments)
Table 17

	Project / Subprogramme / Programme	2010 Regular Budget at 2010 prices	2010 Extra-budgetary	2010 CAURBs Unfunded	2011 preliminary estimates Regular Budget at 2010 prices	2011 preliminary estimates Extra-budgetary	2011 preliminary estimates CAURBs Unfunded
3.4.2.3	Managing and Controlling Disused Sources	687 379	-	-	667 799	-	-
3.4.2.4	Controlling Effluent Discharges and Assessing Radiological and Environmental Impact	426 491	250 000	-	410 435	250 000	-
3.4.2.5	Supporting Safe and Cost Effective Decommissioning	652 804	300 000	115 182	652 061	300 000	115 182
3.4.2.6	Remediating Sites and Regulating NORM residues	587 860	200 000	-	570 531	200 000	-
3.4.2.7	Supporting Waste and Spent Fuel Management in Member States Embarking on Nuclear Power	157 517	40 000	-	182 348	40 000	-
	Subprogramme 3.4.2 - Application of Safety Standards and Best Practices for radioactive Waste, Spent Fuel and Decommissioning Management	**3 992 536**	**1 158 492**	**230 364**	**4 003 923**	**1 158 492**	**230 364**
Programme 3.4 - Management of Radioactive Waste		**6 714 011**	**1 358 492**	**230 364**	**6 739 036**	**1 358 492**	**230 364**
3.5.1.1	Assessing Nuclear Security Needs, Priorities and Threats	540 739	342 199	-	769 753	352 199	-
3.5.1.2	Nuclear Security: Building International Networks and Partnerships	661 445	603 625	-	763 989	618 722	-
	Subprogramme 3.5.1 - Needs Assessment, Information Collation and Analysis	**1 202 184**	**945 824**	**-**	**1 533 742**	**970 921**	**-**
3.5.2.1	Developing Recommendations and Guidelines to Implement the Global Nuclear Security Framework	806 025	1 829 300	-	770 356	1 539 300	-
3.5.2.2	Research and Development to Support the further development of the Nuclear Security Framework	196 942	1 116 597	-	575 654	736 597	-
	Subprogramme 3.5.2 - Contributing to the Establishment of a Global Nuclear Security Framework	**1 002 967**	**2 945 897**	**-**	**1 346 010**	**2 275 897**	**-**
3.5.3.1	Facilitating Adherence to International Instruments	185 738	134 466	-	206 575	84 466	-
3.5.3.2	Peer Reviews and Evaluation	313 484	1 418 198	-	638 642	1 208 198	-
3.5.3.3	Human Resource Development and Capacity Building	286 784	3 611 446	-	755 751	2 461 446	-
	Subprogramme 3.5.3 - Providing Nuclear Security Services	**786 006**	**5 164 110**	**-**	**1 600 968**	**3 754 110**	**-**
3.5.4.1	Improving Security at Facilities and Locations	41 747	5 177 658	-	60 307	7 587 658	-
3.5.4.2	Securing Materials Outside of Regulatory Control	51 446	5 404 355	-	80 570	3 297 355	-
3.5.4.3	Enhancing National, Regional and International Support Capacities	110 472	238 096	-	115 805	348 096	-
	Subprogramme 3.5.4 - Risk Reduction and Security Improvement	**203 665**	**10 820 109**	**-**	**256 682**	**11 233 109**	**-**
Programme 3.5 - Nuclear Security		**3 194 822**	**19 875 940**	**-**	**4 737 402**	**18 234 037**	**-**
Major Programme 3 - Nuclear Safety and Security		**29 549 050**	**30 937 028**	**475 351**	**31 452 751**	**29 612 565**	**373 393**

Major Programme 3 - Nuclear Safety and Security

Core Activities Unfunded in the Regular Budget
Table 18

	Project Title and Description of Activities	2010 CAURBs Unfunded	2011 CAURBs Unfunded
3.2.4.1	Enhancing the Operational Safety Performance		
3.2.4.1/14	*Organize international Conference on operational safety performance and experience sharing of nuclear power plants and fuel cycle facilities*	50 000	-
3.2.4.1	*Further strengthening the Operational Safety Review Service Team (OSART) missions*	143 029	143 029
	Subprogramme 3.2.4 - Operational Safety and Experience Feedback	193 029	143 029
3.2.5.1	Enhancing Safety of Research Reactors and Knowledge Sharing		
3.2.5.1/10	*Conduct Coordinated Research Project on benchmark on neutronics and thermalhydraulic computational methods and tools for safety analysis of research reactors*	25 000	-
3.2.5.3	Enhancing Safety of Fuel Cycle Facilities (FCF)		
3.2.5.3/01	*Priority 3: Develop and review documents on safety of fuel cycle facilities*	26 958	-
	Subprogramme 3.2.5 - Safety of Research Reactors and Fuel Cycle Facilities	51 958	-
Programme 3.2 - Safety of Nuclear Installations		**244 987**	**143 029**
3.4.2.1	Managing Pre-disposal of Radioactive Waste		
3.4.2.1	*Advising on development and implementation of methodologies and technologies for radioactive waste management in new nuclear power countrie*	115 182	115 182
3.4.2.5	Supporting Safe and Cost Effective Decommissioning		
3.4.2.5	*Planning, managing and coordinating International Decommissioning Network (IDN) activities*	115 182	115 182
	Subprogramme 3.4.2 - Application of Safety Standards and Best Practices for radioactive Waste, Spent Fuel and Decommissioning Management	230 364	230 364
Programme 3.4 - Management of Radioactive Waste		**230 364**	**230 364**
Major Programme 3 - Nuclear Safety and Security		**475 351**	**373 393**

Major Programme 4
Nuclear Verification

Introduction

The nuclear verification programme supports the Agency's statutory mandate to establish and administer safeguards, to ensure that special fissionable and other material, services, equipment, facilities and information made available to the Agency or at its request or under its supervision or control are not used in such a way as to further any military purpose. For this reason, the Agency concludes safeguards agreements with States which confer upon the Agency the legal obligation and authority to apply safeguards to nuclear material, facilities and other items subject to safeguards. Under Major Programme 4, the Agency carries out the verification, evaluation, development and strategic planning activities necessary for implementing safeguards.

Verification and evaluation activities enable the Agency to establish a complete and comprehensive information basis upon which safeguards conclusions can be drawn. Development and strategic planning activities permit the Agency to enhance and improve this information basis, to anticipate and prepare for future technological needs, and to improve the overall effectiveness and efficiency of the safeguards system.

The increasing importance of capabilities to detect indicators of undeclared nuclear material and activities has been strongly reflected in all relevant activities in this programme. More specifically, throughout the biennium the Agency will improve and intensify the development and/or acquisition of more effective information collection, analysis and evaluation tools, and the capabilities to apply them.

In addition, the Agency is supporting the efforts of the international community to verify nuclear arms control and reduction agreements and arrangements.

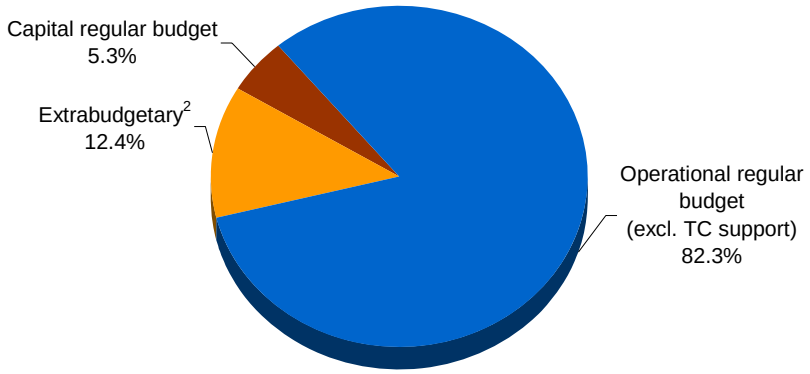
The objectives of the nuclear verification programme are derived from the *Medium Term Strategy 2006–2011* aiming, inter alia, at further enhancing the Agency's capability to draw independent, impartial and timely safeguards conclusions and its ability to adequately respond to current and future proliferation challenges.

The programmatic and financial forecast provided here is based on currently available information regarding States' nuclear infrastructures, nuclear material and activities. The resource impact of new, additional tasks, as well as of tasks which are expected to be completed during the upcoming biennium, has been assessed and taken into account. The resource impact of tasks of an uncertain nature has also been assessed, to the extent possible.

Objectives	Performance Indicators
— To draw independent, impartial and timely safeguards conclusions, in order to provide credible assurances to the international community that States are abiding by their safeguards obligations.	— Verification measures performed to draw credible and timely safeguards conclusions and provide implementation reports. — Number of States for which safeguards conclusions are drawn regarding the peaceful use of nuclear material and other items placed under safeguards. — Number of States for which safeguards conclusions are drawn regarding the absence of undeclared nuclear material and activities.
— To contribute, as appropriate, to verifying nuclear arms control and reduction agreements.	— Support provided for verification of weapons origin and other fissile materials as requested by Member States.

Outcomes	Performance Indicators
— Safeguards conclusions regarding the peaceful use of all nuclear material in the State.	— Number of States for which safeguards conclusions are drawn regarding the peaceful use of all nuclear material in the State.
— Safeguards conclusions regarding the peaceful use of declared nuclear material and, where applicable, of nuclear material, facilities and other items to which safeguards are applied.	— Number of States for which safeguards conclusions are drawn regarding the peaceful use of declared nuclear material and, where applicable, of nuclear material, facilities and other items to which safeguards are applied.
— The increase of the effectiveness of the safeguards system through the implementation of strengthening safeguards measures.	— Safeguards strengthening measures implemented for all States, including States with small quantities protocols (SQPs). — Number of States with safeguards agreements where an additional protocol (AP) entered into force. — Number of States for which integrated safeguards are implemented. — Number of SQP States where the modified SQP enters into force.
— The increase of the efficiency of the safeguards system through the implementation of integrated safeguards.	— Reduction in calendar days in the field (CDFs).
— Advice and assistance in establishing verification arrangements for weapons origin and other fissile material released from nuclear weapons programmes.	— Verification tools and techniques available as and when requested.

2010–2011 Resources for Nuclear Verification[1]



Programmes	2010 *at 2010 prices*	2011 (preliminary estimates) *at 2010 prices*	Total for biennium
Overall management, coordination and common activities	1 148 036	1 147 904	2 295 940
Safeguards	120 394 548	122 089 368	242 483 916
Operational regular budget	121 542 584	123 237 272	244 779 856
Capital regular budget	—	15 889 000	15 889 000
Total regular budget	**121 542 584**	**139 126 272**	**260 668 856**
Extrabudgetary [2]	21 719 809	15 071 296	36 791 105
TC programme	—	—	—-
Total resources	**143 262 393**	**154 197 568**	**297 459 961**

[1] Excludes unfunded activities of €796 500.
[2] Includes €6 000 000 for MCIF.

4.0.0.1 Overall management, coordination and common activities

Description	Main outputs
A central focal point is required to: provide overall direction; set and coordinate policy; and exercise general management of programme planning, implementation and monitoring.	Strategic planning documents; reporting documents; State specific safeguards information; action and follow-up plans for implementation of management mechanisms and tools.

4.0.0.1	**2010** *at 2010 prices*	**2011** *at 2010 prices*
Regular Budget	1 148 036	1 147 904
Extrabudgetary	—	—
Unfunded	—	—

Programme 4.1 Safeguards

Rationale: Under this subprogramme, safeguards are applied with increasing effectiveness and efficiency for States: (a) with both comprehensive safeguards agreements (CSAs) and APs in force; (b) with CSAs in force but without additional protocols in force; (c) with agreements in force concluded pursuant to INFCIRC/66/Rev.2, which require the application of safeguards to nuclear material, facilities and other items specified in the relevant agreement; and (d) with voluntary offer agreements (VOAs) in force (the five nuclear weapon States (NWSs)).

Objectives:

— To provide credible assurance to the international community that all nuclear material remains in peaceful activities in States with CSAs and APs in force.
— To provide credible assurance to the international community that declared nuclear material remains in peaceful activities in States with CSAs in force but without APs in force.
— To provide credible assurance to the international community that nuclear material, facilities and other items to which safeguards are applied under agreements concluded pursuant to INFCIRC/66/Rev.2 remain in peaceful activities.
— To provide credible assurance to the international community that nuclear material to which safeguards are applied in selected facilities pursuant to VOAs remains in peaceful activities or is withdrawn as provided for in the agreements.

Outcomes	Performance Indicators
— Safeguards conclusions: (a) regarding the peaceful use of all nuclear material in States with CSAs and APs in force; (b) regarding the peaceful use of declared nuclear material in States with CSAs in force, but without APs in force; (c) regarding the peaceful use of nuclear material, facilities and other items to which safeguards are applied under agreements concluded pursuant to INFCIRC/66/Rev.2; and (d) regarding the peaceful use or withdrawal of nuclear material to which safeguards are applied in selected facilities pursuant to VOAs.	— Rate of attainment of safeguards inspection goal (quantity component), as defined in the IAEA Safeguards Criteria. — Rate of attainment of safeguards inspection goal (timeliness component), as defined in the IAEA Safeguards Criteria. — In States where integrated safeguards are applied, the rate of attainment of safeguards inspection goals (quantity component), and the rate of attainment of safeguards inspection goals (timeliness component), as defined in the IAEA Safeguards Criteria, are replaced by the attainment of State specific technical objectives. — The number of Design Information Verifications (DIVs) performed according to the DIV Plans. .

Outcomes	Performance Indicators
— Evaluated nuclear programmes at the State level.	— The number of States for which relevant information on nuclear programmes has been provided and evaluated.
— Increased efficiency of verification activities in States where integrated safeguards are implemented.	— Decrease of calendar days in the field related to verification activities (CDFVs) in States where integrated safeguards are implemented, decrease compared to the non-implementation of integrated safeguards.

Follow-up on programme-wide lessons learned from reviews, assessment, evaluations: The Agency will address the retirement of large numbers of experienced inspectors and senior staff at a time when interest in nuclear energy is increasing, and therefore the need for nuclear professionals is growing, but the global pool of experienced personnel with the appropriate technical background is shrinking. The Agency will compete with industry and Member States for experienced professionals. The retirements and personnel policies will require the Agency to place a high priority on capturing and retaining knowledge of departing staff and passing on critical knowledge to incoming staff.

Gender equality and gender mainstreaming will be integrated in this major programme within the framework of the training activities conducted for State systems of accounting for and control of nuclear material (SSAC) personnel at the national, regional and international levels.

The Agency will continue to strive to finance its safeguards activities under the double challenge of an increasing workload and restrictive budgetary policies. Unpredictable, pressing verification responsibilities, as well as the need to maintain verification infrastructure and equipment, will continue to add to the Agency's financial strain.

While the focus on efficiency gains and internal streamlining will remain rigorous, funding for core activities needs to be secured through assessed contributions rather than through unpredictable and conditional voluntary contributions.

4.1	**2010** *at 2010 prices*	**2011** *at 2010 prices*
Regular Budget	120 394 548	122 089 368
Extrabudgetary	15 719 809	15 071 296
Unfunded	259 000	537 500

Specific criteria for prioritization:

1. First priority is given to projects which respond directly to the Agency's mandatory obligations. The Agency is legally bound to conduct these projects under any and all circumstances and cannot postpone or defer their implementation due to insufficient resources.
2. Second priority is given to projects which support or enhance the Agency's performance. These projects provide the technological, methodological, information management and research infrastructure required for effectively and efficiently conducting mandatory activities. Implementing these projects ensures that the obligations defined in the Agency's Statute and safeguards agreements, and arising from decisions of the Board of Governors, are met in the most effective and efficient manner.
3. Third priority is given to non-mandatory projects that are carried out at the request of Member States.

Subprogramme 4.1.1 Operations

Rationale: The Agency implements all verification and evaluation activities required for the application of safeguards in States in accordance with safeguards agreements and APs in force. Specifically, verification and evaluation activities are implemented pursuant to: (a) comprehensive agreements based on INFCIRC/153 (Corrected) related to States' commitments under the Treaty on the Non-Proliferation of Nuclear Weapons (NPT), or similar non-proliferation undertakings such as treaties establishing nuclear weapon free zones; (b) protocols additional to safeguards agreements, concluded on the basis of the Model Additional Protocol (INFCIRC/540 (Corrected)); (c) agreements based on INFCIRC/66/Rev.2, which are item specific agreements; and (d) VOAs concluded with the nuclear weapon States. All projects under this subprogramme are designed to

maintain and further enable the Agency to establish a comprehensive information base upon which independent, impartial and timely safeguards conclusions can be drawn and thereby provide credible assurances to the international community that States are honouring their safeguards obligations.

Objectives:

— To draw independent, impartial and timely conclusions regarding the peaceful use of declared nuclear material, equipment, facilities, non-nuclear material and activities safeguarded under the provision of safeguards agreements.
— To draw independent, impartial and timely conclusions regarding the absence of undeclared nuclear material and activities for States where APs have been implemented.
— To evaluate States' nuclear activities based upon all available information.

Outcomes	Performance Indicators
— The timely detection of the diversion of declared nuclear material from peaceful nuclear activities at the facility level, and the timely detection of undeclared nuclear material and activities at the State level.	— Number of States which provide timely, accurate and complete access to information and locations as required under their safeguards agreement.
— Evaluated information on nuclear material, nuclear activities and other safeguards relevant issues at the State level.	— Number of States for which safeguards relevant information was collected, processed, analysed and verified.
— Verification activities performed at the State, site, facility and other locations.	— Number of States for which the planned activities, as documented in the Annual Implementation Plans (AIPs), were conducted.

Programmatic changes and trends: Priority will continue to be given to the objectives reflected in the *Medium Term Strategy 2006–2011*, to further strengthen the Agency's ability to provide credible assurances that States are complying with their safeguards obligations. To this end, the effectiveness of the safeguards system will need to be increased and the Agency's ability to detect undeclared nuclear material and activities must be enhanced.

The move towards information driven safeguards and the implementation of a non-discriminatory approach to safeguards implementation, taking account of State specific factors including the implementation of integrated safeguards where appropriate, will promote the effectiveness and efficiency of all relevant activities at the State and facility levels. In that context, Project 4.1.1.6, *State evaluation*, has been incorporated into the respective verification projects to reflect the fact that this process is embedded in the verification activities in line with a State level approach. Similarly, Project 4.1.2.16, *Analysis of nuclear technology and trade*, was incorporated into Project 4.1.2.12, *Information support for State level safeguards*.

The Agency expects that it will be requested by India to implement safeguards at additional facilities in India (used for its civilian nuclear programme) in 2010 and 2011, as a result of India's separation plan agreed between India and the United States of America (USA) in 2006, under the agreement between the Agency and the Government of India for the application of safeguards to civilian nuclear facilities, as approved by the Board of Governors in August 2008 and entered into force on 11 May 2009. These verification activities will require significant additional resources.

As approved by the Board of Governors in July 2007, the Agency has been verifying and monitoring the shutdown and sealing of the Yongbyon nuclear facilities in the Democratic People's Republic of Korea (DPRK) and remains ready to undertake any verification work which may be required to be implemented with respect to its nuclear programme.

The Agency has been requested to implement safeguards at a new commercial enrichment plant and a mixed oxide fuel fabrication plant in the USA as of 2010. Similarly, safeguards may be implemented at an enrichment plant in France, which is currently under construction, for possible startup in 2009.

It is expected that by the beginning of 2010 integrated safeguards will be implemented in all the NNWSs of the European Union and in the Ukraine by 2011.

Resource changes and trends: The proposed regular budget resources, at 2009 prices, for Subprogramme 4.1.1 reflect an increase of €0.5 million or 0.6% in 2010 as compared with 2009 and of €2.5 million or 3.2% in 2011 as compared with 2010. Extrabudgetary funds of €11.2 million expected to be received in 2010 and €10.7 million in 2011 will be directed mainly to the project on *Provision of safeguards instrumentation*. Should

the Agency be asked to resume its verification activities in the DPRK, it will request voluntary contributions to cover the cost of monitoring and verification activities in the DPRK, estimated at €2.2 million, assuming that these activities remain at the same level as they were in 2008.

The expected additional verification activities in India will require significant resources that will be marginally covered by savings from the implementation of integrated safeguards in Canada.

Included within the regular budget of Major Programme 4 are the shared costs of services provided by areas of the Secretariat responsible for scientific and technical affairs, external relations and policy coordination, and legal services, amounting to €1.2 million in 2010 and in 2011.

Also, €7.9 million in 2010 and €8.1 million in 2011 are included as a contribution to shared costs for the Safeguards Analytical Laboratory.

4.1.1	**2010** *at 2010 prices*	**2011** *at 2010 prices*
Regular Budget	77 503 950	80 060 071
Extrabudgetary	11 172 400	10 687 548
Unfunded	259 000	309 500

Projects

Title, duration and priority	Main outputs
4.1.1.1 Verification of States with comprehensive safeguards agreements and an additional protocol in force *Duration:* Recurrent *Ranking:* 1	State evaluation reports, statements on the results and conclusions of inspections; inspection documentation; safeguards approaches and inspection procedures developed and approved; State level approaches, State level integrated safeguards approaches and annual implementation plans developed and approved; design information verification (DIV) plans prepared and approved; DIVs carried out in accordance with plans; statements on the activities, results and conclusions of complementary access (CA); technical, administrative and logistical arrangements; modified Subsidiary Arrangements where required; verification equipment installed and maintained.
4.1.1.2 Verification of States with comprehensive safeguards agreements *Duration:* Recurrent *Ranking:* 1	State evaluation reports, statements on the results and conclusions of inspections; inspection documentation; safeguards approaches and inspection procedures developed and approved; State level approaches (SLAs) developed and approved; DIV plans prepared and approved; DIVs carried out in accordance with plans; technical, administrative and logistical arrangements, including subsidiary arrangements, results of pre-AP field trials; verification equipment maintained in operational state.
4.1.1.3 Verification of States with an INFCIRC/66-type agreement *Duration:* Recurrent *Ranking:* 1	State evaluation reports, safeguards transfer agreement letters; inspection documentation; safeguards approaches and inspection procedures developed and approved; safeguards approaches for States developed and approved; DIV plans prepared and approved; DIVs carried out in accordance with plans; technical, administrative and logistical arrangements in place in connection with the implementation of INFCIRC/66-type agreements and AP measures (where applicable); verification equipment installed and maintained.

Title, duration and priority	Main outputs
4.1.1.4 Verification of States with voluntary offer agreements *Duration:* Recurrent *Ranking:* 2	State evaluation reports, statements on the results and conclusions of inspections; inspection documentation; relevant information analysed; safeguards approaches and inspection procedures developed and approved; safeguards approaches for States developed and approved; DIV plans prepared and approved; DIVs carried out in accordance with plans; statements on the activities, results and conclusions of CA; verification equipment installed and maintained.
4.1.1.5 Information processing *Duration:* Recurrent *Ranking:* 1	Up to date State declared and related relevant safeguards information processed, securely stored in related databases, assessed and distributed; daily support for verification activities, scheduled support to the State evaluation process, maintenance of the reference data, scheduled statements to the States (semi-annual statements of book inventories, import communication, transit matching statements); analytical reports and presentations prepared as required, training activities and support to SSACs.
4.1.1.6 Effectiveness evaluation *Duration:* Recurrent *Ranking:* 1	Evaluated and assessed inspections and other verification activities; *Safeguards Implementation Report* (SIR), *Safeguards Technical Report* (STR), *SIR Action Plan*.
4.1.1.7 Provision of safeguards instrumentation *Duration:* Recurrent *Ranking:* 1	Implementation plans, equipment prepared, calibrated, installed and tested (where appropriate) for systems including, inter alia, portable non-destructive assay (NDA) systems, resident NDA systems, sealing and containment verification systems, surveillance systems, unattended monitoring systems (UMS), remote monitoring systems. Reports prepared on equipment status, inventory, performance and utilization.
4.1.1.8 Sample logistics and analysis *Duration:* Recurrent *Ranking:* 1	Bulk analyses and particle analyses of environmental samples; analyses of samples of nuclear and other specified materials; environmental sampling kits; re-coded and screened environmental samples; inspection samples shipped; contracts maintained with the Network of Analytical Laboratories (NWAL); qualification of analytical laboratories for NWAL; quality controlled laboratories within NWAL; adequate SAL infrastructure.

Subprogramme 4.1.2 Development and Support

Rationale: The Agency ensures the availability of an effective, efficient and state of the art technological, methodological, information and communication infrastructure in support of its verification regime. This includes the development and implementation of: verification equipment and instrumentation; analytical techniques and methodologies; safeguards concepts and approaches; information and communication technology; and capabilities for collection, analysis and evaluation of safeguards relevant information provided by States, derived from Agency verification activities, or acquired from open and other sources. Implementation of the Agency's safeguards mandate also requires sound management and control of financial and human resources, including the availability of well trained and knowledgeable staff and an effective quality management system. The Agency also seeks to strengthen and improve coordination with SSACs and coordination between Agency programmes on safeguards, safety and security (e.g. INPRO).

Objectives:

— To have adequate and uniform legal authority in place to conduct credible safeguards verification.
— To enhance detection capabilities through the development of new or improved safeguards approaches and techniques, and acquisition of more effective verification equipment.
— To enhance information acquisition, analysis and evaluation capabilities.
— To improve external and internal communication and reporting.

Outcomes	Performance Indicators
— Adequate and uniform legal authority is in place to conduct credible safeguards verification.	— Number of States with CSAs in force. — Number of States with APs in force. — Number of States with amended SQPs in force.
— Detection capabilities are enhanced through the development of new or improved safeguards approaches and techniques, and acquisition of more effective verification equipment.	— Safeguards approaches (e.g. State level and facility specific) are developed and implemented by the specified target dates. — Enhanced safeguards measures are developed and implemented by the specified target dates. — Availability of equipment for safeguards verification activities is measured as the ratio of the number of requested pieces of equipment to the number of actually provided pieces of equipment. — Reliability of verification equipment measured by mean time between failures.
— Information acquisition, analysis and evaluation capabilities are enhanced.	— Availability of open source, technology and trade, and satellite imagery information and processing systems to meet Agency information analysis needs. — Provision of accurate and timely information to support Agency inspection and CA activities.
— Best management practices are in place to optimize delivery of the nuclear verification programme.	— Extent to which the quality management system has been implemented. — Extent to which Agency staff has received training related to their job responsibilities.
— External and internal communication and reporting are improved.	— Number of SSAC courses, regional technical meetings, ISSAS missions, and other Member State training and coordination activities. — Opportunities are fulfilled for coordination with other programmes (e.g. Nuclear Power Support Group, INPRO) which relate to safety, security and safeguards. — Safeguards reports and other documents (e.g. SIR) are completed by the target dates specified for General Conference, Board of Governors, and external meetings.

Programmatic changes and trends: To address the challenges facing its verification mission effectively, the Agency needs a robust verification tool box: adequate legal authority, state of the art technology, a high calibre workforce and sufficient financial resources.

With respect to legal authority there are 27 NNWSs party to the NPT that have not yet brought into force their required CSAs. Moreover, 11 years after the approval of the Model Additional Protocol, more than 100 States have not yet brought APs into force. In addition, over 60 States with SQPs have not yet agreed to amend their SQP in line with the Board's 2005 decision. Outreach efforts to relevant States in the form of seminars, workshops and consultations will be extended to facilitate the conclusion and implementation of CSAs, APs and amended SQPs.

New technologies are being developed to expand the role of unattended monitoring systems and attended installed systems which can enable inspectors to focus on other critical safeguards efforts.

Significant resources will be required to implement systems planned for the JMOX project. The safeguards analytical services provided by the Safeguards Analytical Laboratory (SAL) and NWAL for nuclear material and environmental samples analyses will be strengthened through the project on *Enhancing Capabilities of the Safeguards Analytical Services (ECAS)*.

Additional extrabudgetary resources will be required to expand the development and field testing of novel technologies for the detection of undeclared nuclear activities at declared and undeclared locations.

Information and communications technology (ICT) is being enhanced through re-engineering and deployment of the IAEA Safeguards Information System (ISIS). The enhanced ICT system will provide the framework on which the Agency's transition to information driven safeguards is based. This ICT environment will further the integration of information and implementation of relevant specific solutions for more effective and efficient sharing of information and its analysis, not only for technical safeguards evaluations but also for enhanced management decisions and planning.

To ensure that inspectors and other safeguards staff can effectively and efficiently perform the verification and evaluation activities required of them, the Safeguards Training Programme is being expanded and improved. Training in 'soft' skills and integrated information analysis will be incorporated into the training programme. In addition to basic, refresher and advanced training courses, a comprehensive training package providing a career path for safeguards inspectors and other professional staff will be developed and implemented.

Building on the integration of the data architecture developed under the project on *ISIS re-engineering* (Project 4.1.2.13) to be completed in 2011, a new project on *Integrated analysis* (4.1.2.17) (N.2.19) will be initiated to enhance the information collection, analysis and dissemination capabilities through the utilization of advanced analytical tools fully integrated with the Integrated Safeguards Environment (ISE) architecture.

Resource changes and trends: The proposed regular budget resources, at 2009 prices, for Subprogramme 4.1.2 reflect an increase of 1.6% (€0.7 million) in 2010 as compared with 2009 and a decrease of 2% (€0.8 million) in 2011 as compared with 2010.

Extrabudgetary funds expected to be received amount to €4.5 million in 2010 and €4.4 million in 2011, which represents a significant decrease compared with 2008 and 2009.

The development and implementation of a safeguards approach for a large mixed oxide fuel fabrication plant in Japan (JMOX) (Project 4.1.2.9), for which construction was scheduled to begin in October 2007, will continue to require significant resources. Although preliminary safeguards activities have begun based on the provision of design information on the facilities, the precise schedule for safeguards equipment procurement will depend on updated construction schedules and/or availability for the facilities to be placed under safeguards.

The Agency's work on the Chernobyl conditioning facility has been deferred to 2013. Major changes in the construction of the conditioning facility are required, which will affect the Agency's originally designed safeguards system. Modification and upgrading of the safeguards system is necessary, as is the acquisition of additional equipment.

The Agency is requesting the necessary resources for a newly created project to enhance the capabilities of the safeguards analytical services (ECAS) critical to maintain and further develop an effective and efficient analytical services verification system, in order to draw Agency's independent, impartial and timely safeguards conclusions.

4.1.2	**2010** *at 2010 prices*	**2011** *at 2010 prices*
Regular Budget	42 890 598	42 029 297
Extrabudgetary	4 547 409	4 383 748
Unfunded	—	228 000

Projects

Title, duration and priority	Main outputs
4.1.2.1 Development of safeguards instrumentation *Duration:* Recurrent *Ranking:* 2	New or improved portable and resident measurement systems, seals and containment, verification equipment, surveillance systems, unattended monitoring systems and remote monitoring systems; and corresponding inspection procedures and documentation.
4.1.2.2 Information and communication technology (ICT) architecture management *Duration:* Recurrent *Ranking:* 2	ICT solutions for: planning, implementation and documentation of verification activities; handling State supplied data; analysis and evaluation of safeguards information; and support systems. Integrated information environment facilitating the re-use of services across business areas; strategic development plan; and enhanced system software engineering procedures.
4.1.2.3 ICT systems support and operations *Duration:* Recurrent *Ranking:* 2	ICT infrastructure at Headquarters and in the field; communication and database secure storage/retrieval infrastructure capacity to meet safeguards needs; software and hardware tools deployed for security of safeguards data and information systems; and reliable safeguards information systems, physical and IT control systems. Users provided with necessary and sufficient tools to perform the relevant function.
4.1.2.4 Concepts and approaches *Duration:* Recurrent *Ranking:* 2	Updated Agency policies, technical guidance and safeguards approach models; advanced State level approach concept and guidelines; safeguards by design concepts and guidelines and new facility safeguards approach concepts; State evaluation report reviews, State level integrated safeguards approach reviews; safeguards policies, guidelines, approach and measures reviews; enrichment plant safeguards reviews; anomalies reviews; subsidiary arrangements reviews; facility attachment reviews; long term strategic plan, long term R&D plan and medium term strategy input; regional technical meetings; General Conference and Board of Governors papers and presentations; SAGSI coordination, papers and presentations; experts group meetings coordination, papers and presentations; IAEA safeguards symposium planning and coordination, and preparations for non-proliferation and disarmament arrangements.
4.1.2.5 Process design, analysis and improvement *Duration:* Recurrent *Ranking:* 2	New and/or improved processes, process descriptions, procedures and guidelines for safeguards implementation; measurements of process performance against performance standards, including cost analysis; internal audit programme, internal quality audit reports detailing non-conformities and opportunities for improvement; corrective action and preventive action programmes, available quality management system training courses, procedures for the control and tracking of corrective action reports and continuous process improvement processes, tools and techniques to manage and share knowledge.
4.1.2.6 Statistical analysis *Duration:* Recurrent *Ranking:* 1	Improved environmental sampling techniques; statistical methods for safeguards verification data; special evaluation reports on shipper/receiver difference, material unaccounted for (MUF) and D statistics (difference between value declared by operators and that measured by the inspectors), trend analyses of MUF and other material balance components and the effectiveness of results; reports on analyses of quantitative safeguards verification measurements; reports on effects of conducting inspections at random under integrated safeguards; reports on the evaluation results of environmental sampling; specific requests related to environmental sampling; and consolidated contributions to the State evaluation reports; contributions to safeguards approaches.

Title, duration and priority	Main outputs
4.1.2.7 Safeguards training *Duration:* Recurrent *Ranking:* 1	Basic, advanced and refresher training courses; training curriculum; core training curricula for specialists; traineeship programme; assessment of training courses and their impact; and training procedures to formalize routines for needs analysis, training design, development, implementation and assessment.
4.1.2.8 Programme and resource management and administration of Member State support programmes *Duration:* Recurrent *Ranking:* 2	*Programme Performance Report 2008–2009*; *Programme Evaluation Report for 2008–2009*; *Mid-term progress evaluation for 2010–2011*; *Medium-term Strategy Implementation Report for 2006–2011*; *The Agency's Programme and Budget for 2012–2013*; input to MTS 2012–2017; chapter on safeguards financial expenditures and resources in the *Safeguards Implementation Reports for 2009–2010*; updated Disaster Recovery Plan; security guidelines; *Biennial Report on the R&D Programme for 2008–2009*; application reports on Member State Support Programme tasks; and R&D programme for 2012–2013.
4.1.2.9 Development and implementation of a safeguards approach for a large mixed oxide fuel fabrication plant in Japan (JMOX) *Duration:* 2007–2013 *Ranking:* 1	Project plan and schedule; safeguards approach document, facility attachment; design information and verification file; design information verification plan; inspection procedures; integrated, unattended measurement systems in facility; user requirements and procurement orders; documentation for authorization of measurement systems for inspection use; acceptance test procedures and reports on test results.
4.1.2.10 Development and implementation of safeguards approaches for Chernobyl NPP *Duration:* 2004–2022 *Ranking:* 1	Safeguards approach for nuclear material in former Reactor Unit 4 ('Shelter') and safeguards approach for transfer of irradiated fuel from wet storage and Reactor Units 1 to 3 to dry storage; safeguards equipment requirements established; safeguards equipment procured, assembled, installed, calibrated and tested.
4.1.2.11 Negotiation and promotion of comprehensive safeguards agreements (CSAs), additional protocols (APs), small quantities protocols (SQPs) and subsidiary arrangements *Duration:* Recurrent *Ranking:* 1	Signing and entry into force of CSAs, APs, SQPs and subsidiary arrangements; conferences, workshops and seminars to promote CSAs, and APs.
4.1.2.12 Information support for State level safeguards *Duration:* Recurrent *Ranking:* 1	Safeguards open source information system; collected, adequately stored, assessed and distributed safeguards relevant information (daily distribution of information and scheduled support to the State Evaluation Report (SER) process, including participation in SER working groups); maintenance of open source database and related intranet pages; special collections, analytical reports, articles and presentations prepared as required; analysis of commercial satellite imagery; evaluated applicability of new, high resolution sources of remote sensing systems and satellites through MSSP R&D activities and other studies. Safeguards relevant information on nuclear related trade; analyses of procurement networks involved in covert trade in sensitive nuclear and nuclear related goods, software and technology; analyses and other expert services on sensitive nuclear technologies and related proliferation risks.

Title, duration and priority	Main outputs
4.1.2.13 IAEA Safeguards Information System (ISIS) re-engineering *Duration:* 2003–2011 *Ranking:* 2	The core safeguards technical information system (information and services currently available) will have migrated from the current environment to a modern, integrated and highly secure platform aimed at rendering all information available, on a need to know basis.
4.1.2.14 State Systems of Accounting for and Control of nuclear material (SSACs) *Duration:* Recurrent *Ranking:* 2	Up to date guidelines for the establishment, improvement and maintenance of effective SSACs at State and facility levels; training of SSAC personnel, and enhanced curricula and course materials; annual evaluation of SSAC effectiveness; IAEA SSAC advisory service (ISSAS) missions and mission reports; coordination of SSAC and ISSAS activities with other Agency safety, security and safeguards projects; and provision of equipment and/or experts to assist SSAC in meeting requirements at State and facility levels.
4.1.2.15 Novel safeguards verification and detection techniques *Duration:* Recurrent *Ranking:* 2	R&D development plan and task reports for novel methods, techniques and instruments; equipment prototypes and operation manuals; evaluation and field test reports.
4.1.2.16 Enhancing capabilities of the Safeguards Analytical Services (ECAS) *Duration:* 2010–2014 *Ranking:* 1	Project management documents (e.g. structure, plan and schedule, user specification), statement of work and technical requirements; progress in achieving planned milestones; acquisition of UHS-SIMS capability; construction of the Clean Laboratory Extension (CLE); engineering design, construction and commissioning of CLE; acquisition and installation of UHS-SIMS, infrastructure of CLE; acquisition and installation of standard SIMS; construction of Nuclear Materials Laboratory (NML); engineering design, construction and commissioning of NML; infrastructure of NML; and analytical infrastructure of NML.
4.1.2.17 Integrated analysis *Duration:* 2010–2014 *Ranking:* 2	Building on the result of the IRP project (4.1.2.13), business solutions covering essential functionalities to be able to perform effective and efficient analysis of and enhanced access to information in all core business activities.

Major Programme 4 - Nuclear Verification

Summary of Programme Structure and Resources
(excluding Major Capital Investments)
Table 19

	Project / Subprogramme / Programme	2010			2011 preliminary estimates		
		Regular Budget at 2010 prices	Extra-budgetary	CAURBs Unfunded	Regular Budget at 2010 prices	Extra-budgetary	CAURBs Unfunded
4.0.0.1	Overall Management, Coordination and Common Activities	1 148 036	-	-	1 147 904	-	-
		1 148 036	-	-	**1 147 904**	-	-
4.1.1.1	Verification of States with comprehensive safeguards agreements and an additional protocol in force	42 932 556	-	-	43 371 035	-	-
4.1.1.2	Verification of States with comprehensive safeguards agreements	2 541 555	2 200 000	-	2 642 986	2 200 000	-
4.1.1.3	Verification of States with an INFCIRC/66-type agreement	3 631 962	-	-	3 224 697	-	-
4.1.1.4	Verification of States with voluntary offer agreements	1 537 357	403 762	259 000	1 662 035	406 160	277 000
4.1.1.5	Information processing	2 038 280	-	-	2 053 848	-	-
4.1.1.6	Effectiveness evaluation	1 814 235	-	-	1 826 829	-	-
4.1.1.7	Provision of safeguards instrumentation	13 192 982	8 431 564	-	15 158 042	7 944 314	32 500
4.1.1.8	Sample logistics and analysis	9 815 023	137 074	-	10 120 599	137 074	-
	Subprogramme 4.1.1 - Operations	**77 503 950**	**11 172 400**	**259 000**	**80 060 071**	**10 687 548**	**309 500**
4.1.2.1	Development of safeguards instrumentation	3 579 944	558 073	-	3 435 678	451 073	-
4.1.2.2	Information and Communication Technology (ICT) Architecture Management	4 714 809	132 093	-	4 672 196	132 093	-
4.1.2.3	ICT systems support and operations	8 832 874	282 707	-	8 251 856	611 373	-
4.1.2.4	Concepts and approaches	2 950 279	125 934	-	2 945 316	125 934	-
4.1.2.5	Process design, analysis and improvement	1 737 254	119 980	-	1 714 842	119 980	-
4.1.2.6	Statistical analysis	2 357 460	156 074	-	2 357 419	156 074	-
4.1.2.7	Safeguards training	2 146 946	-	-	1 921 589	-	-
4.1.2.8	Programme and resource management and administration of Member State support programmes	1 758 404	103 327	-	1 758 249	103 327	-
4.1.2.9	Development and implementation of a safeguards approach for a large mixed oxide fuel fabrication plant in Japan (J-MOX).	2 053 102	68 372	-	2 317 439	68 372	-
4.1.2.10	Development and implementation of safeguards approaches for Chernobyl NPP	118 405	-	-	280 734	-	18 000
4.1.2.11	Negotiation and promotion of comprehensive safeguards agreements (CSAs), additional protocols (APs), small quantities protocols (SQPs), and Subsidiary Arrangements	1 819 862	-	-	1 855 581	-	-
4.1.2.12	Information support for State-level safeguards	5 900 113	1 078 041	-	5 628 872	1 033 041	-
4.1.2.13	IAEA Safeguards Information System (ISIS) re-engineering	2 666 378	829 678	-	1 909 741	529 351	-
4.1.2.14	State Systems of Accounting for and Control of nuclear material (SSACs)	647 054	270 954	-	661 410	270 954	-
4.1.2.15	Novel safeguards verification and detection techniques	810 223	550 248	-	810 162	510 248	210 000
4.1.2.16	Enhancing capabilities of the Safeguards Analytical Services (ECAS).	396 272	-	-	396 211	-	-
4.1.2.17	Integrated Analysis	401 219	271 928	-	1 112 002	271 928	-
	Subprogramme 4.1.2 - Development and Support	**42 890 598**	**4 547 409**	**-**	**42 029 297**	**4 383 748**	**228 000**
Programme 4.1 - Safeguards		**120 394 548**	**15 719 809**	**259 000**	**122 089 368**	**15 071 296**	**537 500**
Major Programme 4 - Nuclear Verification		**121 542 584**	**15 719 809**	**259 000**	**123 237 272**	**15 071 296**	**537 500**

Major Programme 4 - Nuclear Verification

Core Activities Unfunded in the Regular Budget at 2009 prices
Table 20

	Project Title and Description of Activities	2010 CAURBs Unfunded	2011 CAURBs Unfunded
4.1.1.4	Verification of States with voluntary offer agreements		
4.1.1.4/02	*Carry out safeguards activities in France at selected facilities in accordance with Safeguards Criteria / 'Safeguards approach for the State'.*	259 000	277 000
4.1.1.7	Provision of safeguards instrumentation		
4.1.1.7/03	*Prepare and test sealing and containment verification systems and provide field support*	-	32 500
	Subprogramme 4.1.1 - Operations	259 000	309 500
4.1.2.10	Development and implementation of safeguards approaches for Chernobyl NPP		
4.1.2.10/01	*Install and test safeguards equipment to verify transfer of irradiated fuel from wet storage and reactor units 1 to 3 to dry storage via the conditioning facility*	-	18 000
4.1.2.15	Novel safeguards verification and detection techniques		
4.1.2.15/02	*Coordinate the research, development, evaluation and field-testing of novel methods and instruments for the detection of undeclared nuclear material and activities at undeclared locations.*	-	210 000
	Subprogramme 4.1.2 - Development and Support	-	228 000
Programme 4.1 - Safeguards		**259 000**	**537 500**
Major Programme 4 - Nuclear Verification		**259 000**	**537 500**

Major Programme 5
Policy, Management and Administration Services

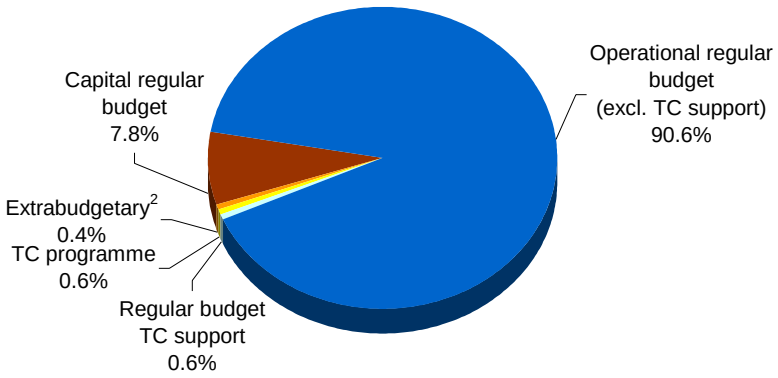
Introduction

Under the leadership, direction and authority of the Director General, the Agency's programme seeks to achieve the goals and objectives of its Member States. This requires effective coordination to ensure a one house approach, particularly with respect to: overall policies; interactions with Member States; the development and implementation of programmes; the evaluation and assessment of performance; and the management and interchange of information within the Secretariat, between the Secretariat and Member States, and for the benefit of the media and the general public. A wide range of administrative and legal services will continue to be provided to support activities in all Agency programmes.

Objectives	Performance Indicators
— To fully institute the one house and results based approach to ensure the relevance, effectiveness and efficacy of all Agency programmes and the use of resources.	— Positive reaction by Member States, especially in the Board of Governors and General Conference.
— To improve and enhance understanding of the work of the Agency and to ensure timely access by stakeholders to relevant scientific and technical information.	— Degree of satisfaction and understanding of Agency programmes.

Outcomes	Performance Indicators
— Formulation, implementation, assessment and evaluation of the Agency's programme in a fully coordinated manner.	— Absence of duplication in the Agency's programme.
— Timely and appropriate administrative and legal services provided to the scientific and technical programmes of the Agency.	— Degree of satisfaction regarding the efficiency of administrative and legal services.
— Efficient and effective information support services and communications strategies.	— Ease of access to Agency information by the Secretariat, Member States, the media and the general public.

2010–2011 Resources for Policy, Management and Administration Services[1]



Functions	2010 *at 2010 prices*	2011 (preliminary estimates) *at 2010 prices*	Total for biennium
Executive Leadership and Policy	12 473 788	12 577 361	25 051 149
Legal Services	2 379 251	2 396 939	4 776 190
Oversight Services	1 745 597	1 745 592	3 491 189
Public Information and Communications	3 271 789	3 295 828	6 567 617
Information and Communication Technology	9 276 048	9 346 199	18 622 247
Financial Management and Services	7 106 985	7 159 543	14 266 528
Human Resources Management	6 209 794	6 256 335	12 466 129
General Services	29 877 368	30 582 083	60 459 451
Conference, Languages and Publishing Services	5 254 029	5 294 636	10 548 665
Operational regular budget	77 594 649	78 654 516	156 249 165
Capital regular budget	102 200	13 222 422	13 324 622
Total regular budget	**77 696 849**	**91 876 938**	**169 573 787**
Extrabudgetary[2]	364 120	364 120	728 240
TC programme	504 666	523 058	1 027 724
Total resources	**78 565 635**	**92 764 116**	**171 329 751**

[1] Excludes unfunded activities of €8 254 828.
[2] Includes funds from the Nuclear Security Fund (see Tables 3(a) and 3(b) for details).

5.0.1 Executive Leadership and Policy

Rationale: In order to be responsive to the needs, interests and requirements of Member States, the Agency needs a central point of leadership and authority that provides for overall direction, the setting and coordination of policy, and the general management of programme planning, coordination, implementation and oversight.

Objective: To provide leadership and coordination of policy for all Agency activities at the executive level for meeting Member State needs, and achieving the one house culture and the results based management approach.	
Outcome	**Performance Indicator**
— Effective, efficient and transparent execution of Agency programmes and activities relevant to Member States.	— Satisfaction of Member States with the efficiency, effectiveness and transparency of the programme delivered.

Programmatic changes and trends: Interaction with governments, senior management of international organizations and civil society will continue to be strengthened and the scope of such interaction broadened. The one house concept and results based management approach to programme formulation continued to be improved in the light of experience and lessons learned from previous biennia. In view of the overarching nature of the project and the emphasis on enhancing the business processes, the Agency-wide Information System for Programme Support (AIPS) project, an unfunded activity in the previous biennium, has been transferred from Function 5.0.5, *Information and Communication Technology*, to Function 5.0.1, *Executive Leadership and Policy*.

Resource changes and trends: The proposed regular budget resource requirements, at 2009 prices, reflect a decrease of 1.2% (€148 543) in 2010 as compared with 2009 and an increase of 0.8% (€102 434) in 2011 as compared with 2010.

Follow-up on function-specific lessons learned from reviews, assessment, evaluations: Proper planning of document preparation, adherence to document deadlines and the establishment of departmental communication officers are critical for quality and the timely submission to Member States. It is essential for the Agency to have an active and user friendly web site for the implementation of a proactive communications strategy.

5.0.1	**2010** *at 2010 prices*	**2011** *at 2010 prices*
Regular Budget	12 473 788	12 577 361
Extrabudgetary	—	—
Unfunded	—	—

Subfunctions

Title	Main outputs
5.0.1.1 Executive leadership	Provision of direction and issuance of policy guidance and instructions to support the implementation of the Agency's mandate; statements delivered at important meetings and events, particularly meetings of the Policy-making Organs.
5.0.1.2 Policy-making Organs	Meetings of the Policy-making Organs; documents for meetings of the Policy-making Organs; briefing sessions for Member States on the Agency's programme.
5.0.1.3 Policy coordination and external relations	Regular correspondence, meetings and contacts with Member States and coordination with intergovernmental and non-governmental organizations on all areas of Agency activities; coordination of policies in cross-cutting areas of Agency activities and in all documentation for the Board of Governors and General Conference.

Title	Main outputs
5.0.1.4 Planning, coordination and management services	Management decisions and guidance; recommendations of the Programme Coordination Committee (PCC), of the High Level Committee on Management (HLCM) and of the Committee on Common Services (CCS); planning documents for consultations with Member States; guidelines and training materials for results based management; advice and guidance for the management and coordination of cross-cutting areas; draft Medium Term Strategy 2012–2017; recommendations to improve management techniques and practices, organizational design and management tools; SEC/DIRs on administrative procedures and updating of the Administrative Manual; INF/NOTs for the general information of staff.

5.0.2 Legal Services

Rationale: Legal advice is needed on the implementation of all aspects of the Agency's programme and is provided to the Director General, the Secretariat and the organs and bodies of the Agency, and on request to Member States. The advice provided covers general legal matters, safeguards and non-proliferation, as well as all matters of nuclear and treaty law.

Objective: To achieve higher quality in programme implementation following timely and appropriate legal advice.

Outcome	Performance Indicator
— Highest standard of legal advice provided to the Director General, the Secretariat and the organs and bodies of the Agency, and on request to Member States.	— Appropriateness and timeliness of the legal support provided to all clients.

Programmatic changes and trends: The increase is expected to continue for general legal support and substantial work in connection with strengthened safeguards and other verification activities, for protection against nuclear terrorism and technical cooperation. This is also true for the demand from Member States for assistance in the preparation of national legislation, in particular relating to the implementation of international agreements to which they are a party. In addition, the areas of personnel and management continue to require an increasing amount of legal advice.

Resource changes and trends: The proposed regular budget resource requirements, at 2009 prices, reflect a decrease of 1.1% (€24 858) in 2010 as compared with 2009 and an increase of 0.7% (€17 142) in 2011 as compared with 2010.

Follow-up on function-specific lessons learned from reviews, assessment, evaluations: Each subfunction now fully integrates the activities described in the Programme and Budget.

5.0.2	**2010** *at 2010 prices*	**2011** *at 2010 prices*
Regular Budget	2 379 251	2 396 939
Extrabudgetary	82 334	82 334
Unfunded	—	—

Subfunctions

Title	Main outputs
5.0.2.1 General legal affairs	Legal advice and support to the Secretariat in all aspects of its operation, including personnel, financial matters, contracts, and privileges and immunities, to ensure that the Agency's activities are conducted in accordance with the Statute and other regulatory instruments and in a transparent and accountable manner.

Title	Main outputs
5.0.2.2 Legal services for non-proliferation and Policy-making Organs	Legal advice and support to the Policy-making Organs of the Agency, in particular in connection with the Rules of Procedure of the General Conference, the Board of Governors, and subordinate committees, and other bodies established by the Policy-making Organs; legal support and advice in respect of the Agency's verification activities, as well as the drafting, negotiation, conclusion, interpretation and implementation of safeguards agreements; legal support and advice in connection with the drafting, negotiation and conclusion of Project and Supply Agreements.
5.0.2.3 Legal services for nuclear and treaty law	Legal advice and support to the Secretariat with respect to the Agency's activities under the pillars of safety and technology; responses to legal questions from Member States relating to the work of the Agency and to States' obligations under relevant international agreements for which the Director General is depository; national legislative frameworks governing the safe and peaceful uses of nuclear energy in Member States enhanced through the provision of advice on, or drafting of, legislation; individual training and regional training courses.

5.0.3 Oversight Services

Rationale: Oversight services provide independent and objective assurances to the Director General and senior management that: the operational and programmatic activities of the Agency are carried out in compliance with established regulations, rules and policies; risks are managed adequately; internal controls are adequate and efficient; and allocated resources are managed economically, effectively and efficiently to achieve the defined outcomes and objectives of the Agency. Other oversight services include administrative fact finding and investigations in the event that the Agency's regulations, rules and pertinent administrative instructions may have been violated, or where irregularities have come to light.

Objective: Improved internal controls, accountability, risk management practices, compliance with rules, regulations and policies, and assurance of economic, efficient and effective use of resources.

Outcome	Performance Indicator
— Recommendations emanating from audits, evaluations, reviews and follow-ups accepted and implemented by management.	— Percentage of recommendations implemented from audits, evaluations, reviews and follow-ups.

Programmatic changes and trends: The greater focus on oversight functions in most organizations, as well as agencies of the United Nations, coupled with the Agency's increasing dependency on information technology systems and secure information and communication technology environments in delivering its programmes, mean that the Agency's oversight activities will continue to be strengthened.

Resource changes and trends: The proposed 2010–2011 regular budget resource requirements, at 2009 prices, are at the same level as the 2009 budget.

Follow-up on function-specific lessons learned from reviews, assessment, evaluations: The rate of implementation of the Office of Internal Oversight Services (OIOS) recommendations is an important aspect of a manager's performance. In order to improve the commitment to increase the implementation rate, an assessment of this performance measure will be part of management accountability. The results of OIOS follow-up on the implementation rates are reported to the Director General through the PCC on an annual basis.

5.0.3	2010 *at 2010 prices*	2011 *at 2010 prices*
Regular Budget	1 745 597	1 745 592
Extrabudgetary	—	—
Unfunded	—	—

Subfunctions

Title	Main outputs
5.0.3.1 Internal audit	Approximately 30 audit reports.
5.0.3.2 Investigation	Investigation reports based upon concerns reported or detected.
5.0.3.3 Programme evaluation	Evaluation reports on the following thematic areas: safety of nuclear installations, human resources management, sustainable control of major insect pests, contribution and role of the FAO/IAEA Agriculture and Biotechnology Laboratory, development of safeguards instrumentation, energy modelling, data and capacity building and energy economy environment (3E) analysis, training/capacity building supported by the Department of Nuclear Sciences and Applications and Uranium Exploration and Production Support Activities.

5.0.4 Public Information and Communications

Rationale: The Agency enjoys a prominent international profile, and this extends to wide public support of the mandate and work of the Agency. The increased interest in nuclear power and the recent nuclear proliferation challenges have highlighted the dual role of the Agency. The public looks to the Agency as the source of authoritative information on nuclear matters. It also considers the Agency an impartial arbitrator of nuclear challenges. The future of nuclear energy demands a strong and independent Agency which enjoys the confidence of the general public. Proactive communication with the media, opinion leaders and policy makers is thus necessary to sustain public support for the Agency.

Objective: Strong public support for the Agency's work and for its mandate and independence.

Outcome	Performance Indicators
— Broader awareness of the Agency's efforts to accelerate and enlarge the contribution of nuclear energy to peace, health and prosperity throughout the world, while preventing nuclear proliferation.	— Number of media requests, reports and articles regarding the Agency's activities. — Number of visits to the iaea.org web site.

Programmatic changes and trends: The Agency is widely acknowledged as the major global source of authoritative assessments concerning nuclear related issues. As more countries pursue nuclear power, public reliance on the Agency as an impartial source of information can be expected to increase. The Agency's web site will require expanded use of multimedia tools and presentation approaches to reach audiences, and to improve user friendliness and accessibility to public information. As interest in nuclear development grows, new media outlets will be sought to promote the Agency's work and role, especially in developing countries. An aim will be to improve both capabilities to prepare and deliver information and news stories (video and audio) across various communication channels, and devices to reach target audiences at local, regional and global levels. An important audience segment will be women playing key roles in development and in the fields of nuclear science and technology.

Resource changes and trends*:* The proposed regular budget resource requirements, at 2009 prices, reflect a decrease of 1.1% (€34 291) in 2010 as compared with 2009 and an increase of 0.7% (€23 647) in 2011 as compared with 2010.

Follow-up on function-specific lessons learned from reviews, assessment, evaluations: The main lesson learned is that while the Agency enjoys strong public support, this situation is fragile. There are still a lot of

misgivings and unfounded rumours regarding the risks associated with nuclear energy. Consequently, it will be necessary to continue to inform the public and reinforce trust in the Agency. The most precious asset of the Agency is its reputation as a source of authoritative and independent assessments.

5.0.4	**2010** *at 2010 prices*	**2011** *at 2010 prices*
Regular Budget	3 271 789	3 295 828
Extrabudgetary	—	—
Unfunded	—	—

Subfunctions

Title	Main outputs
5.0.4.1 Internet and print communications	The corporate web site (iaea.org); topical booklets, fact sheets, magazine (*IAEA Bulletin*); and multimedia products, including digital images and video.
5.0.4.2 Press and public outreach	Media interviews; lectures to media and visiting groups; radio/television packages; press releases; daily review of the newspapers and journals (*Daily Press Review*).

5.0.5 Information and Communication Technology

Rationale: Information and communication technology (ICT) services provide the means by which many of the outputs of Agency programmes are efficiently and transparently produced and delivered to their intended recipients. The continuing development and evolution of the technologies, of the requirements of Agency programmes and of the needs of Member States make it important that the introduction of innovative ICT services follows a clear strategy. This has been derived from the Agency's Information Management/Information Technology (IM/IT) Medium Term Strategy 2007–2011, which is itself aligned with the Agency's overall *Medium Term Strategy 2006–2011*. The Agency's ICT services can be divided into standard services provided to all users, both at the workplace and as infrastructure, and innovative solutions developed to support programme planning and delivery.

Objective: To meet, in the most efficient and effective way, the ICT needs of Agency programmes and Member States.

Outcomes	Performance Indicators
— ICT services optimized to meet Agency programmatic requirements and those of the Member States.	— Number of Service Level Agreements (SLAs) with major customers. — Number of services that meet best practice targets of availability and resolution time.
— Major ICT investments coordinated throughout the Agency.	— Number of clearance and review mechanisms related to specific ICT major investment items.

Programmatic changes and trends: The Agency's ICT services will need to adapt not only to changes in the technology and in the requirements of Agency programmes, but also to industry trends and best practices towards centralization of the information used to plan and manage the resources of an organization in order to reduce costs and eliminate duplication. The Agency is constructing a secure and reliable technical area to serve as the Agency's computer centre. To avoid duplication of effort, it will support the IT infrastructure for the entire Agency while meeting the security standards necessary for confidential safeguards information.

Resource changes and trends: The proposed regular budget resource requirements, at 2009 prices, reflect a decrease of 1.1% (€97 172) in 2010 as compared with 2009 and an increase of 0.7% (€67 010) in 2011 as compared with 2010. With the demand for ICT services continuing to grow, efficiency gains are being used to keep up with demand, and the Agency is continuing to expand the portion of services delivered through outsourcing agreements. Additionally, projects are planned to increase automation and improve the processes that manage the delivery of IT services, by expanding the adoption of industry trends and best practices such as the Information Technology Infrastructure Library (ITIL). Recent success with offshore software development has resulted in more projects planned under this model.

Follow-up on function-specific lessons learned from reviews, assessment, evaluations: An IT security assessment was undertaken in 2008, with plans for additional assessments at least annually going forward. Project Management (PRINCE2) process training has been widely completed across the IT area, with the goal to create a common knowledge base for current and future projects, including potential members of the Enterprise Resource Planning (ERP) team. Creation of a new, more secure Agency hosting facility has addressed significant External Auditor recommendations. The need for a business continuity plan for ICT services and for the Agency as a whole has also been addressed via implementation of a Business Continuity Service Agreement with the United Nations International Computing Centre.

5.0.5	**2010** *at 2010 prices*	**2011** *at 2010 prices*
Regular Budget	9 276 048	9 346 199
Extrabudgetary	—	—
Unfunded	920 017	920 017

Subfunctions

Title	Main outputs
5.0.5.1 ICT end user services	Supply of ICT end user services at the required level (including incident and problem solving, user registration for the network and email, advice on purchasing equipment, and other services supplied directly to the end user); maintenance of desktop and laptop standards; training of Agency staff in the use of standard tools.
5.0.5.2 ICT infrastructure services	Provision of secure infrastructure and networks at a high level of availability and performance, meeting the requirements and needs of Agency programmes and Member States.
5.0.5.3 ICT solutions	Agency-wide information system integrating the organizational processes and systems that support programme management, planned and executed according to the stipulated milestones; implementation of information systems supporting Agency programmes, such as OASIS and Nucleus; implementation of other programme specific information systems; support to facilitate access to the Agency's management and administrative information through OASIS, and the Agency's nuclear knowledge and information resources through Nucleus; and assurance of a secure IT environment that averts malicious or inadvertent attacks.

5.0.6 Financial Management and Services

Rationale: Sound management of financial resources is essential for the full implementation of the Agency's programme and to ensure the continued confidence and support of Member States. This involves the effective and efficient provision, based on the Agency's Financial Regulations and Rules, of financial services in programme budgeting, payments, payroll, financial accounting and reporting, with the goal of supporting the Secretariat in carrying out its mandated functions.

Objectives: To ensure the continued confidence of the Board of Governors and Member States in the financial management of the Agency, and to deliver relevant services efficiently and effectively in support of all Agency programmes.

Outcome	Performance Indicator
— Sound and timely financial planning, budgeting, accurate and reliable financial reporting and efficient financial administration of the Agency.	— Timeliness and extent of use of budgetary and financial documents and reports.

Programmatic changes and trends: Implementation of the International Public Section Accounting Standards (IPSAS) and Agency-wide Information System for Programme Support (AIPS) continues to be the main focus. It is, however, likely that there will be a delay in the full compliance with IPSAS until 2011 owing to delays in the AIPS project. In order to provide Member States with a clear picture of the Agency's future investment requirements in a systematic way, a multi-year Major Capital Investments (MCI) plan is introduced in the 2010–

2011 Programme and Budget. A long term capital budget plan will allow the Agency to see possible peaks and valleys in funding requirements and, in response, prepare appropriate funding strategies and a mechanism to finance these requirements.

Resource changes and trends: The proposed regular budget resource requirements, at 2009 prices, reflect a decrease of 1.8% (€124 694) in 2010 as compared with 2009 and an increase of 0.7% (€51 509) in 2011 as compared with 2010. The Agency's continuous efforts to rationalize resource allocation, and simplify and automate business processes will bring about efficiency gains. Specifically, reorganization of functional units, simplification of procedures for the acceptance of voluntary contributions, and incorporation of budget formulation processes into the programme and budget information system are expected to result in further efficiency gains. Any resultant savings will be utilized towards the IPSAS implementation project.

Follow-up on function-specific lessons learned from reviews, assessment, evaluations: There is a need to continue to improve the management of extrabudgetary resources, integrate support systems and streamline business procedures.

5.0.6	**2010** *at 2010 prices*	**2011** *at 2010 prices*
Regular Budget	7 106 985	7 159 543
Extrabudgetary	62 863	62 863
Unfunded	—	—

Subfunctions

Title	Main outputs
5.0.6.1 Budgeting, accounting, monitoring and reporting	*The Agency's Programme and Budget 2010–2011*; *Agency's Accounts*; reports to governing bodies and donors.
5.0.6.2 Payment processing and treasury	No loss of funds entrusted to the Secretariat by the Member States, acceptable level of investment income earned. Payments for staff, vendors, contractors, trainees, etc.
5.0.6.3 Financial policy coordination and systems support	Compliance with IPSAS of Agency financial statements; improved internal control and transparency with respect to assets and liabilities; alignment of the Agency's accounting with best accounting practices; more comprehensive information about costs to better support results based management; amendment to Financial Regulations and Rules; updated accounting policies and guidelines in compliance with IPSAS; implementation of the new AIPS, ongoing systems support and technical solutions to user requests; staff trained.

5.0.7 Human Resources Management

Rationale: The success of the Agency rests on the quality of its human capital. In the context of an increasingly competitive market for talented staff, the Agency must manage changing workplace demographics and offer attractive salaries, benefits and working conditions. Human resources (HR) policies and practices must support the programmatic needs of the organization. Matching the Agency's HR capacity with its core goals remains critical to the quality, efficiency and success of its programmes.

Objective: To enable the Agency to effectively and efficiently deliver its programmes by acquiring, managing and developing highly competent human resources, paying due regard to equitable geographic representation and gender balance, and continuously improving conditions of service, including the provision of an attractive working environment and health services.	
Outcomes	**Performance Indicators**
— Continuous availability of highly competent human resources to deliver Agency programmes in the context of a tightening employment market.	— Percentage of well qualified candidates per vacancy; turnover rate.
— Improved work environment and conditions of service.	— Responsiveness to staff concerns following the conduct of a staff survey.

Programmatic changes and trends: The Agency is affected by the global pace of change and new ways of doing business, which impact considerably on the role of HR management. There is an increasingly sophisticated demand for HR services from planning, recruitment and staff development to the wide variety of conditions of employment. HR is critical to addressing upcoming challenges. The Agency will strengthen its leadership, HR planning and competency based management system. It will continue to adopt best practices in performance management, staff well-being and HR policies. In line with international trends, the focus will continue to shift from operational activities to partnering, tailored advisory services and policy development.

Resource changes and trends: The proposed regular budget resource requirements, at 2009 prices, reflect a decrease of 1.1% (€65 157) in 2010 as compared with 2009 and an increase of 0.7% (€44 392) in 2011 as compared with 2010. Continued emphasis will be placed on furthering efficiency gains through the use of improved HR tools and continued streamlining of processes.

Follow-up on function-specific lessons learned from reviews, assessment, evaluations: Many reviews have indicated the need to delegate decision making to the lowest competent level, and to reduce the number of clearances on low risk decisions. Streamlining major processes in preparation has increased efficiency and prepared for a smoother AIPS implementation. HR policy reforms have led to greater flexibility in achieving programmatic objectives. For example, the mobility policy has contributed to the movement of staff across the organization, improving understanding of cross-cutting issues and staff versatility.

5.0.7	**2010** *at 2010 prices*	**2011** *at 2010 prices*
Regular Budget	6 209 794	6 256 335
Extrabudgetary	—	—
Unfunded	283 784	283 784

Subfunctions

Title	Main outputs
5.0.7.1 HR advisory and operational services	HR strategy; HR plans, including HR management data and reports; competency based job and staff profiles, and selection tools for recruitment, blueprint of staff development performance management system; improved employment conditions; strengthened administration of justice; enhanced management capacity and staff management dialogue; work–life balance; new and revised policies; streamlined and re-engineered processes.
5.0.7.2 Medical services	Medical services for staff of the VIC based organizations (VBOs), including implementation of the United Nations Common System Medical Standards; advice to management on the handling of emergencies/special circumstances warranting preventive care and/or remedying action (epidemics, serious health matters, etc.); advice on medical standards for recruitment, placement, disability and entry into the United Nations Joint Staff Pension Fund (UNJSPF); and information/advice to staff on important health issues to enhance awareness and foster staff well-being.

5.0.8 General Services

Rationale: General administrative, procurement and logistical services are essential to enable programme managers and staff to perform their functions and implement programmatic activities. These services cover a broad range, including procuring goods and services, facilities management and engineering services for Headquarters and the laboratories, archives and records management, property management, travel and transportation, import and export facilitation, and insurance matters, together with the management of the VIC Commissary.

Objective: To enable the Agency to perform its function by providing an efficient and effective general administrative and support services infrastructure.

Outcome	Performance Indicators
— General services delivered to the Agency in a cost effective, transparent and efficient manner.	— Satisfaction of clients with the quality of general support services provided. — Cost efficiencies achieved in delivering general services.

Programmatic changes and trends: Continued emphasis will be placed on the automation and simplification of work processes in order to achieve efficiencies and guarantee a more streamlined and controlled environment. This will apply to all areas of general services. Risk management as well as emergency planning and business continuity will need to be reinforced and consolidated in order to become truly sustainable. The planned implementation of AIPS should positively impact on existing processes, especially in procurement and assets management, allowing efficiency gains and improving management information systems. The rapidly evolving travel industry will continue to be a challenge, and particular efforts will be made to maintain travel costs at an acceptable level for operations. Incoming and outgoing official correspondence will continue to be stored in the Agency's electronic records management system. However, physical storage space issues for archives of the Secretariat remain a challenge. The steady increase in requests for videoconferencing services is expected to continue. Some challenging facility management projects will be conducted, such as the finalization of the asbestos removal project, the operation of the M Building, the maintenance of security installations and the construction of new laboratories in Seibersdorf. These will call for an attendant increase in resources to maintain a satisfactory level of service.

Resource changes and trends: The proposed regular budget resource requirements, at 2009 prices, reflect an increase of 4.8% (€1 337 653) in 2010 as compared with 2009 and an increase of 2.4% (€693 482) in 2011 as compared with 2010. These increases will be used to partly cover additional security and safety measures administered by United Nations Safety and Security Services (UNSSS), including strengthened access control in Subfunction 5.0.8.2, *Safety and security management*; and to implementing the revised structure of Subfunction 5.0.8.5, *Procurement services*, which was established to provide more unified and strategically focused contracting services, and to facilitate improved control functions of the procurement process in response to OIOS recommendations.

Follow-up on function-specific lessons learned from reviews, assessment, evaluations: Recommendations by internal and external audits, as well as by management studies, will be implemented to: improve human resources action plans in the archives and records management areas; enhance customer services in areas such as housing, travel and transportation, insurance, and visa and customs formalities; facilitate better management and financial control of the Agency's share of costs relating to the common services; and improve customer service, and enhance accountability and control in procurement activity.

5.0.8	**2010** *at 2010 prices*	**2011** *at 2010 prices*
Regular Budget	29 877 368	30 582 083
Extrabudgetary	148 294	148 294
Unfunded	3 283 631	2 563 595

Subfunctions

Title	Main outputs
5.0.8.1 Travel and transportation services	Coordination of all travel related issues, including the development of strategic travel policies relating to the operational procedures for the Agency, and management of travel costs; overall planning and coordination in all matters relating to privileges and immunities, importation of goods, tax refunds, visa issuance; management of vehicles for the official cars, arrangement of the most efficient and economical means of transport for the shipment of equipment, samples, radioactive material, personal effects as well as staff household goods; and provision of housing services to meet the accommodation needs of Secretariat and other VBO staff. Insurance policies as well as management of claims. Management of the Commissary operations.
5.0.8.2 Safety and security management	Safety and security services for staff, mission staff, meeting participants and visitors.
5.0.8.3 Facilities management	Allocation and adaptation of space for offices, meeting rooms and storage facilities; alterations and refurbishment works; installation and maintenance of safety and security systems; technical support for servicing Board of Governors and other meetings, including videoconferencing; provision of ergonomic furniture management of Agency property other than safeguards; technical advice and project coordination for Agency offices and laboratories outside Vienna; development and maintenance of a facilities management software system to accommodate customer requests and property accountability. Coordinated facility management and construction issues with UNIDO Buildings Management Service (BMS) as well as United Nations Safety and Security Services (UNSSS).
5.0.8.4 Archives and records management	Updated policies and procedures; records registration, filing, distribution, transfer and disposal; mail processing, dispatch and distribution; services for information retrieval and messaging; preservation of records, including electronic records; digitalization of archives.
5.0.8.5 Procurement services	Procurement plans developed and implemented; goods and services for implementing the Agency's programmatic activities procured and delivered on a timely basis.

5.0.9 Conference, Languages and Publishing Services

Rationale: One of the main functions assigned to the Agency by its Statute is the dissemination of scientific and technical information. This core function may be carried out by organizing meetings and conferences, by preparing and issuing documents for the policy making bodies, and by preparing and distributing publications. The Agency needs a centralized operation that implements these activities for its users and clients, both internal and external, to achieve efficiency, avoid duplication, provide consistency and guarantee quality.

Objective: To enable the effective exchange and dissemination of information relevant to the Agency's work and mandate between the Secretariat and Member States by organizing meetings and conferences, issuing documents in the six official languages of the United Nations, and preparing and distributing publications.

Outcome	Performance Indicators
— Efficient and effective management and coordination of conference, translation and publishing services.	— Productivity for all three main activities: conference, translation and publishing services. — Customer satisfaction as measured through feedback received.

Programmatic changes and trends: The ever-increasing application of IT technologies in tasks related to conference, translation and publishing services is seen as a key factor in the future. Some functions, such as the coordination of the more than 16 000 services demanded annually in these areas, can be automated to a large degree. This trend will continue in 2010–2011. In addition, more reliance on outsourcing, with the aim of saving financial resources, is being considered. The new conference centre, equipped with the latest technology, will permit more efficient organization and management of meetings.

Resource changes and trends: The proposed regular budget resource requirements, at 2009 prices, reflect a decrease of 1.1% (€55 285) in 2010 as compared with 2009 and an increase of 0.7% (€38 124) in 2011 as compared with 2010. In view of anticipated productivity gains, and given a reasonable balance between in-house and outsourced work, it is expected that the resource requirements can be kept at these levels even with an increased demand for services.

Follow-up on function-specific lessons learned from reviews, assessment, evaluations: The recommendations of various reviews have been implemented and managed in a systematic manner, employing project management tools. More attention will be devoted to risk management and quality control. In addition, more systematic and comprehensive quality control procedures will be put in place to deal with any increase in the use of outsourcing.

5.0.9	**2010** *at 2010 prices*	**2011** *at 2010 prices*
Regular Budget	5 254 029	5 294 636
Extrabudgetary	70 629	70 629
Unfunded	—	—

Subfunctions

Title	Main outputs
5.0.9.1 Conference services	Organizational support to all Agency meetings; facilities and premises provided for all Agency meetings; production of monthly meetings schedule; improved Agency-wide Meeting System; copies of meeting related documents produced.
5.0.9.2 Language services	Approximately 25 000 pages of translated documents and summary records in the six official languages of the United Nations; terminology database made available via the Internet to selected external users from Member States and other international organizations, as well as to external translators.
5.0.9.3 Publication services	Approximately 250 publications and items of advocacy materials (i.e. printed books, booklets, leaflets, pamphlets, posters, displays, CD-ROMs and other electronic titles) edited, laid out/designed and published, printed and disseminated as required; publication of the Agency's *Annual Report* and the monthly academic journal *Nuclear Fusion*; over 60 million pages printed per year, using up to date and flexible 'print-on-demand' technology.

Major Programme 5 - Policy, Management and Administration Services

Summary of Programme Structure and Resources

(excluding Major Capital Investments)

Table 21

	Project / Subprogramme / Programme	2010			2011 preliminary estimates		
		Regular Budget at 2010 prices	Extra-budgetary	CAURBs Unfunded	Regular Budget at 2010 prices	Extra-budgetary	CAURBs Unfunded
5.0.1.1	Executive leadership	2 139 935	-	-	2 155 877	-	-
5.0.1.2	Policy-making Organs	6 664 911	-	-	6 712 881	-	-
5.0.1.3	Policy coordination and external relations	2 262 426	-	-	2 279 103	-	-
5.0.1.4	Planning, coordination and management services	1 406 516	-	-	1 429 500	-	-
	Subprogramme 5.0.1 - Executive Leadership and Policy	**12 473 788**	**-**	**-**	**12 577 361**	**-**	**-**
5.0.2.1	General legal affairs	906 864	-	-	906 862	-	-
5.0.2.2	Legal services for non-proliferation and Policy-making Organs	324 403	-	-	324 398	-	-
5.0.2.3	Legal services for nuclear and treaty law	1 147 984	82 334	-	1 165 679	82 334	-
	Subprogramme 5.0.2 - Legal Services	**2 379 251**	**82 334**	**-**	**2 396 939**	**82 334**	**-**
5.0.3.1	Internal audit	811 227	-	-	811 225	-	-
5.0.3.2	Investigation	235 276	-	-	235 275	-	-
5.0.3.3	Programme evaluation	699 094	-	-	699 092	-	-
	Subprogramme 5.0.3 - Oversight Services	**1 745 597**	**-**	**-**	**1 745 592**	**-**	**-**
5.0.4.1	Internet and print communications	1 669 399	-	-	1 638 715	-	-
5.0.4.2	Press and public outreach	1 602 390	-	-	1 657 113	-	-
	Subprogramme 5.0.4 - Public Information and Communications	**3 271 789**	**-**	**-**	**3 295 828**	**-**	**-**
5.0.5.1	ICT end-user services	1 902 986	-	50 000	1 967 865	-	50 000
5.0.5.2	ICT infrastructure services	4 027 750	-	410 009	4 032 830	-	410 009
5.0.5.3	ICT solutions	3 345 312	-	460 008	3 345 504	-	460 008
	Subprogramme 5.0.5 - Information and Communication Technology	**9 276 048**	**-**	**920 017**	**9 346 199**	**-**	**920 017**
5.0.6.1	Budgeting, accounting, monitoring and reporting	3 184 926	-	-	3 183 877	-	-
5.0.6.2	Payment processing and treasury	2 611 527	62 863	-	2 610 489	62 863	-
5.0.6.3	Financial policy coordination and systems support	1 310 532	-	-	1 365 177	-	-
	Subprogramme 5.0.6 - Financial Management and Services	**7 106 985**	**62 863**	**-**	**7 159 543**	**62 863**	**-**
5.0.7.1	HR advisory and operational services	6 209 794	-	283 784	6 256 335	-	283 784
5.0.7.2	Medical services	-	-	-	-	-	-
	Subprogramme 5.0.7 - Human Resources Management	**6 209 794**	**-**	**283 784**	**6 256 335**	**-**	**283 784**
5.0.8.1	Travel and transportation services	2 193 969	-	-	2 210 851	-	-
5.0.8.2	Safety and security management	6 708 467	-	2 846 631	7 413 738	-	2 126 595
5.0.8.3	Facilities management	15 198 990	-	300 000	15 177 559	-	300 000
5.0.8.4	Archives and records management	3 772 591	-	137 000	3 776 588	-	137 000
5.0.8.5	Procurement services	2 003 351	148 294	-	2 003 347	148 294	-
	Subprogramme 5.0.8 - General Services	**29 877 368**	**148 294**	**3 283 631**	**30 582 083**	**148 294**	**2 563 595**
5.0.9.1	Conference services	1 285 510	70 629	-	1 309 786	70 629	-
5.0.9.2	Language services	1 095 175	-	-	1 108 672	-	-
5.0.9.3	Publication services	2 873 344	-	-	2 876 178	-	-
	Subprogramme 5.0.9 - Conference, Languages and Publishing Services	**5 254 029**	**70 629**	**-**	**5 294 636**	**70 629**	**-**
	Major Programme 5 - Policy, Management and Administration Services	**77 594 649**	**364 120**	**4 487 432**	**78 654 516**	**364 120**	**3 767 396**

Major Programme 5 - Policy, Management and Administration Services

Core Activities Unfunded in the Regular Budget
Table 22

	Subfunction Title and Description of Activities	2010 CAURBs Unfunded	2011 CAURBs Unfunded
5.0.5.1	ICT end-user services		
	5.0.5.1/03 Provide IT training for end-users	50 000	50 000
5.0.5.2	ICT infrastructure services		
	5.0.5.2/02 Increase network capacity between Seibersdorf and Monaco and the VIC	110 009	110 009
	5.0.5.2/03 Retirement of legacy non-standard servers	300 000	300 000
5.0.5.3	ICT solutions		
	5.0.5.3/04 Establishment of IT Security Office (Phase I)	184 003	184 003
	5.0.5.3/05 Establishment of IT Security Office (Phase II)	276 005	276 005
	Function 5.0.5 - Information and Communication Technology	920 017	920 017
5.0.7.1	HR advisory and operational services		
	5.0.7.1/02 Implement an HR competency framework; competency enhancement of young professionals from developing countries	121 750	121 750
	5.0.7.1 Foster gender initiatives and mainstreaming; recruitment activities	162 034	162 034
	Function 5.0.7 - Human Resources Management	283 784	283 784
5.0.8.2	Safety and security management		
	5.0.8.2/01 Coordinate security and safety requirements with the provider of services UNSSS	2 846 631	2 126 595
5.0.8.3	Facilities management		
	5.0.8.3/10 Complete installations and manage M and C Buildings	300 000	300 000
5.0.8.4	Archives and records management		
	5.0.8.4 Digitalize archives to ensure their conservation; refurbish new archives room in the M building	137 000	137 000
	Function 5.0.8 - General Services	3 283 631	2 563 595
Major Programme 5 - Policy, Management and Administration Services		**4 487 432**	**3 767 396**

Major Programme 6
Management of Technical Cooperation for Development

Introduction

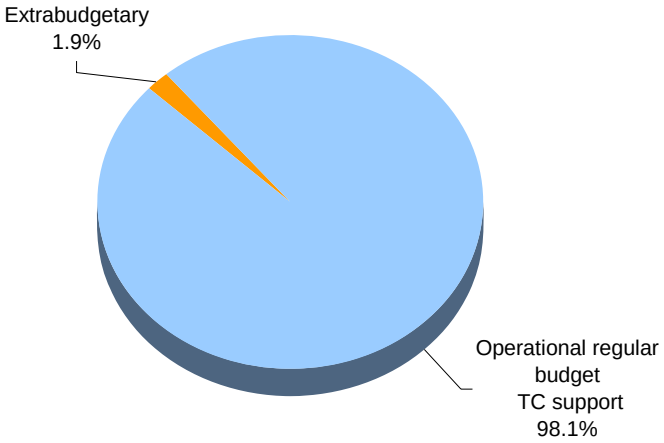
Major Programme 6 encompasses programme planning, development, implementation and assessment of national, regional and interregional projects funded from the Technical Cooperation Fund (TCF) and extrabudgetary contributions.

Through Major Programme 6, the Secretariat, guided by the Agency's *Medium Term Strategy 2006–2011*, works closely with Member States to formulate the technical cooperation (TC) programme based on the identified needs, interests and priorities of Member States and provides strategic direction for planning and priority setting processes to bring greater synergy between the Agency's technical cooperation and regular budget programmes. This work involves intensive interaction with a wide spectrum of stakeholders, both internal and external, as well as the building of strategic and financial partnerships with intergovernmental and non-governmental organizations.

Objective	Performance Indicators
— To establish the leading role of the Agency's technical cooperation programme in the application of nuclear technology for sustainable development and social and economic benefits in Member States.	— TC programme contributions to strategic targets. — Extent of support and recognition for the TC programme and its role in development.

Outcomes	Performance Indicators
— Effective coordination and guidance, and continuous improvement in the quality of the TC programme.	— Quality standards and processes for key phases of the TC programme developed and applied. — TC programme aligned to evolving needs of Member States and the Agency's strategic targets. — Distribution of resources reflects TC programme priorities and the changing nature of Member State needs. — Number of projects from the 2009–2011 TC programme completed on time and within budget.
— Enhanced engagement of Member States in the TC programme.	— Percentage of Member States with national TC programmes that have signed/updated Country Programme Frameworks (CPFs). — Percentage of TC programme funded from extrabudgetary contributions including government cost-sharing. — Rate of attainment against the TCF target. — Percentage of projects self-assessed. — Partnerships concluded with international organizations.

2010–2011 Resources for Management of Technical Cooperation for Development



Function	2010 *at 2010 prices*	2011 (preliminary estimates) *at 2010 prices*	Total for biennium
Management of the technical cooperation programme			
Operational regular budget TC support	18 455 888	18 710 617	37 166 505
Total regular budget	**18 455 888**	**18 710 617**	**37 166 505**
Extrabudgetary	355 663	355 663	711 326
Total resources	**18 811 551**	**19 066 280**	**37 877 831**

6.0.1 Management of the Technical Cooperation Programme

Programmatic changes and trends: During the biennium, strengthened upstream analysis will ensure that emerging development issues are continuously integrated into the management of the TC programme. The TC programme covers a wide variety of fields in the four regions, ranging across human health, malnutrition, access to water, nuclear power development, safety standards, environmental degradation and sustainable energy production. Efforts will be made to promote networking and partnerships among Member States, including Technical Cooperation among Developing Countries (TCDC), to strengthen the role of the Agency as a hub for nuclear knowledge and information. Increased emphasis will be given to decentralized country and regional networks of scientific institutions for technology transfer and capacity building following a horizontal cooperation approach. A continued focus will be on human capacity building, which involves, inter alia, the expanded use of Regional Resource Centres. Management initiatives will continue to concentrate on the enhanced engagement of Member States through innovative working arrangements and networking to improve country level policy dialogue, capacity for self-assessment and promotion of peer reviews. Areas that will be further strengthened include programme development, strategic communication, development of a framework for strategic partnerships, compilation of information on national capacities and implementation of results based management. Efforts for resource mobilization will in themselves be rather complex, as most resources devoted to development are mobilized at the country or regional level. Special and targeted efforts will be required to ensure that there is a critical mass of resources available to support the TC programme. Particular attention will be devoted to project monitoring and self-assessment, including the application of non-financial indicators within the framework of a quality management system. Training in project management tools, for staff as well as for Member States, is an area that needs to be developed.

Resource changes and trends: The proposed regular budget resource requirements, at 2009 prices, reflect an increase of 10.4% (€1 701 777) in 2010 as compared with 2009, and an increase of 1.4% (€246 555) as compared with 2010. Additional resources are required, mainly for staff costs, to help respond effectively to various General Conference resolutions, including those on strengthening the Agency's TC activities (GC(52)/RES/11). Maintaining the current level of programme delivery and quality, together with the required adequate human and financial resources, poses challenges for the management of a continuously expanding TC programme with increased quality requirements. Since 2005, 13 developing Member States have joined the Agency and are, or are expected to be, partners in the TC programme. In parallel, the size of the TC programme has steadily increased, also through the expansion of extrabudgetary contributions to the TC programme. The number of persons (experts, fellows, training course participants, etc.) administered during the 2005–2007 period has increased by 23%, although implementation of the programme often faces challenging external circumstances. Reporting requirements call for further enhancement of the quality system, particularly in the project monitoring and assessment phases, and the establishment of a database of lessons learned to be used for reporting and continuous improvement. Furthermore, an increase in demand of human resources arises from the need to provide training and support services to Member States in the use of respective TC systems and to explore the possibilities for establishing a limited field presence. The elements mentioned have led to a substantial increase in the volume of transactions, in the complexity of the programme and its management, and in the operating environment. In the management area, efficiency gains are being explored through streamlining resources dedicated to administrative functions. While part of the increase in workload could be met through further streamlining of workflows and greater use of IT, the growth cannot be absorbed through expected efficiency gains alone without affecting quality in one or more phases of the TC programme cycle.

Follow-up on function-specific lessons learned from reviews, assessment, evaluations: The Country Programme Framework (CPF) as a strategic planning tool for the TC programme will be strengthened by linking it with the United Nations Development Assistance Framework (UNDAF). Major Programme 6 will continue to respond to the evolving role of Member States by promoting dialogue in the design phase, involving Member States more strongly in the implementation of the TC programme and building strategic partnerships. In order for concepts and tools to be well understood, self-assessment and training in project planning will be promoted at the global, regional and country levels. Training in the application of project planning tools (such as the Logical Framework Approach) must be enhanced and IT tools must be made easily available for all Member States. The development of non-financial indicators for the measurement of the performance of the TC programme and the introduction of quality standards will be given the most attention. In this connection, databases will be developed or improved, performance indicators will be refined and the follow-up on the recommendations of the Office of Internal Oversight Services (OIOS), as well as other recommendations, will be improved. To make TC better known and more visible, targeted outreach activities are planned, in

connection with resource mobilization and partnership activities. In all aspects of the TC programme, but also of Major Programme 6, a gender conscious perspective shall be applied with the aim of increasing the percentage of women in professional positions and especially in the TC programme itself, as experts, trainees or fellows.

6.0.1	**2010** *at 2010 prices*	**2011** *at 2010 prices*
Regular Budget	18 455 888	18 710 617
Extrabudgetary	355 663	355 663
Unfunded	—	—

Subfunctions

Title	Main outputs
6.0.1.1 Management of the TC programme for Africa	Signed/updated CPFs, project designs and work plans, completed and self-assessed projects; progress and final reports; regional programme profiles. Programmes for 38 Member States, 20 of which are least developed countries (LDCs), along with the regional programmes for Africa with a focus on helping Member States in several areas, including building technical, managerial and institutional capacities in nuclear science and technology; promoting sustainable application of nuclear techniques in key areas of national and regional significance to support development goals such as increased food productivity, better nutrition and health services; rational management of groundwater resources and sustainable energy development.
6.0.1.2 Management of the TC programme for Asia and the Pacific	Signed/updated CPFs; project designs and work plans; completed and self-assessed projects; progress and final reports; regional programme profiles. Country Programme for 29 Member States, along with the regional programme for Asia and the Pacific, with a focus on strengthening technical capacity of national and regional institutions, and resource centres; and providing assistance in comprehensive nuclear power development and planning, strengthening nuclear power infrastructure and integrated management of nuclear power plants with an emphasis on safety and security, improving the quality of health services, increasing agricultural productivity and enhancing food safety, applying nuclear technology in industry, strengthening infrastructure for nuclear safety and radiation protection, and updating national nuclear legislations.
6.0.1.3 Management of the TC programme for Europe	Signed/updated CPFs, project designs and work plans, completed and self-assessed projects, progress and final reports, regional programme profiles. Programmes for 32 Member States, along with the regional programmes for Europe, with a focus on maintaining safety standards in older nuclear power plants and mitigating environmental degradation, as well as optimizing the use and sharing of resources and capabilities within the region and supporting several countries looking to starting nuclear power programmes to enhance their current resources and capabilities.
6.0.1.4 Management of the TC programme for Latin America	Signed/updated CPFs, project designs and work plans, completed and self-assessed projects, progress and final reports, regional programme profiles. Country Programmes for 22 Member States, one of which is a least developed country (LDC), along with the regional programmes for Latin America and subprogrammes for the Caribbean that focus on strengthening strategic partnerships, particularly with the regional agreement ARCAL.
6.0.1.5 Coordination, support and strategic direction	Policies and guidelines produced and strategic direction provided; TC information systems and IT infrastructure developed, maintained and enhanced, support to the mobilization of extrabudgetary resources, new partnerships identified, communications and outreach strategy implemented, reports to governing bodies produced, quality system established and monitored, financial and data management support provided, TC related training provided.

Major Programme 6 - Management of Technical Cooperation for Development

Summary of Programme Structure and Resources

(excluding Major Capital Investments)

Table 23

	Project / Subprogramme / Programme	2010			2011 preliminary estimates		
		Regular Budget at 2010 prices	Extra-budgetary	CAURBs Unfunded	Regular Budget at 2010 prices	Extra-budgetary	CAURBs Unfunded
6.0.1.1	Management of the TC programme for Africa	3 786 262	-	-	3 853 046	-	-
6.0.1.2	Management of the TC programme for Asia and the Pacific	3 380 802	-	-	3 490 014	-	-
6.0.1.3	Management of the TC programme for Europe	3 422 281	265 818	-	3 489 072	265 818	-
6.0.1.4	Management of the TC programme for Latin America	2 796 929	-	-	2 896 881	-	-
6.0.1.5	Coordination, Support and Strategic Direction	5 069 614	89 845	-	4 981 604	89 845	-
	Subprogramme 6.0.1 - Management of the technical cooperation programme	**18 455 888**	**355 663**	**-**	**18 710 617**	**355 663**	**-**
Major Programme 6 - Management of Technical Cooperation for Development		**18 455 888**	**355 663**	**-**	**18 710 617**	**355 663**	**-**