



**INTERNATIONAL ATOMIC ENERGY AGENCY  
(IAEA)**

**REGIONAL COOPERATIVE FRAMEWORK (RCF)  
FOR IAEA TECHNICAL COOPERATION  
IN ASIA AND THE PACIFIC**

Adopted at the Asia and the Pacific National TC Liaison Officers Meeting  
on 15 October, 2010, in Vienna

## **TABLE OF CONTENTS**

<b>I</b>	<b>BACKGROUND</b>	<b>3</b>
<b>II</b>	<b>GUIDING PRINCIPLES</b>	<b>5</b>
<b>III</b>	<b>PURPOSE</b>	<b>6</b>
<b>IV</b>	<b>POTENTIAL AREAS FOR REGIONAL COOPERATION</b>	<b>7</b>
<b>V</b>	<b>MEANS AND MODALITIES</b>	<b>14</b>
<b>ANNEX I</b>	<b>TRENDS ANALYSIS</b>	<b>17</b>
<b>ANNEX 2</b>	<b>PROCEDURES FOR TC REGIONAL PROJECTS</b>	<b>21</b>
<b>ANNEX 3</b>	<b>LIST OF IAEA TC RECIPIENT MEMBER STATES / TERRITORIES IN ASIA AND THE PACIFIC</b>	<b>23</b>

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## **I BACKGROUND**

The International Atomic Energy Agency (IAEA) is the world's centre for cooperation in the nuclear field. It was set up as the world's "Atoms for Peace" organization in 1957 within the United Nations family. The IAEA works with its Member States and numerous partners worldwide to promote safe and secure applications of nuclear science and technology for peaceful purposes. As stated in its Statute, the IAEA *“seek(s) to accelerate and enlarge the contribution of atomic energy to peace, health and prosperity throughout the world. It shall ensure, so far as it is able, that assistance provided by it or at its request or under its supervision or control is not used in such a way as to further any military purpose”*.

The IAEA technical cooperation (TC) programme seeks to fulfil the IAEA's mandate and obligations as stipulated in its Statute by assisting developing Member States to introduce, develop and make use of nuclear techniques for addressing national and regional socio-economic development problems in a safe and secure manner. The TC programme is funded by voluntary contributions of the Member States and partner organizations.

The Asia and Pacific region is the home for more than half of the world's population. It comprises countries with a broad spectrum of diversity in the levels of economic development. With a rapid socio-economic transformation and unprecedented growth in the past decades, this dynamic region has emerged as a powerful engine of growth in the world economy. It continues to grow, at present accounting for almost 40% of the world's GDP. This rapid growth in the region has had a positive effect on lifting millions of people out of poverty. However, despite this rapid growth, there are still 600 million people in the region who remain in absolute poverty (living on less than 1 USD per day). The rapid growth of population has led to increasing demands and constraints, adding stress and concerns for environmental protection and energy security. In recent years, there has been therefore a growing need and interest among a number of Member States in the region developing nuclear power programmes.

The applications of nuclear science and technology in the region have been also positively affected by this transformation in terms of scope and strategy with priorities being directed to needs-driven activities that have higher probabilities of contributing towards the resolution of national development problems. Consequently, the TC programme, including regional programme, in the Asia and the Pacific region has responded to this trend by adjusting its scope and focus to reflect more effectively the real needs of Member States. As an outcome of close consultations with Member States and rigorous upstream planning, the resulting TC programme addresses Member States' needs that are in line with their national development priorities and takes into consideration their Country Programme Frameworks (CPFs), where relevant, the United Nations Development Assistance Frameworks (UNDAFs) and relevant strategies of Cooperative Agreements in the region, towards achievement of UN Millennium Development Goals.

In general, the main areas of the TC programme for Asia and the Pacific have been: (i) Human health, (ii) Nuclear Safety, (iii) Food and agriculture, (iv) Application of nuclear technology in industry, (v) Energy planning and nuclear power programme, (vi) Water resources management, (vii) Radioactive waste management, and (viii) Environment protection.

Moreover, with increasing emphasis in Asia and the Pacific region on strengthening human capacity in both nuclear power and non-power applications of science and technology in various sectors of the economy, support for higher education and training has been receiving special attention as a means of achieving sustainable human capacity in Member States, through both national and regional projects.

Another area of continuous attention has been the promotion of regional cooperation as such, and through the frameworks of RCA (Regional Cooperative Agreement for Research, Development and Training Related to Nuclear Science and Technology) and ARASIA (Cooperative Agreement for Arab States in Asia for Research, Development and Training related to Nuclear Science and Technology). The TC regional programme in Asia and the Pacific is accordingly designed to make use of existing capabilities among the Member States in the region by promoting synergies, networking and sharing of experience and facilities.

The uniqueness and complexity of the TC programme in the region, combined with the many challenges triggered by the rapid changes at the socio-economic level and the multi-disciplinary activities of partners and stakeholders in the Member States, call for the development and implementation of a Regional Cooperative Framework (RCF) which should act as a reference document for the positioning of the TC programme in Asia and the Pacific in response to the changing needs of its Member States.

In the light of the above background, the Meeting of National Liaison Officers (NLOs) in Asia and the Pacific held in Vienna 9-11 December 2009 deliberated and agreed on the need and importance of the development and implementation of a Regional Cooperative Framework (RCF), that took into consideration the specific context of the region in terms of recent trends and challenges, the renewed interest by many countries in nuclear energy and related nuclear safety and security aspects, the emerging needs of food security and water availability, as well as strategies, priorities and processes developed by relevant Regional Agreements.

The RCF drafted jointly by experts from the Member States and the Secretariat based on the above principles, was circulated to the Member States for comments and revised based on the comments received. It was discussed at the Meeting of the TC National Liaison Officers held in Vienna on 11-15 October 2010 and adopted after incorporating the revisions suggested by the participants of this Meeting.

## II GUIDING PRINCIPLES

Regional Cooperation in Asia and the Pacific will be consistent with the mandate, mission and guiding principles of the IAEA as described in the IAEA Statute, INFCIRC/267 and TC Strategy, which are reproduced below:

***1. IAEA mission: to assist its Member States, in the context of their social and economic goals, in planning for and using nuclear science and technology for various peaceful purposes, including the generation of electricity, and to facilitate the transfer of such technology and knowledge in a sustainable manner to developing Member States; and to develop safety standards and, based on these standards, promote the achievement and maintenance of high levels of safety in applications of nuclear energy, as well as the protection of human health and the environment against ionizing radiation.***

***2. TC Strategic Goal: to increasingly promote tangible socio-economic impact by contributing directly in a cost-effective manner to the achievement of the major sustainable development priorities of each country (TECHNICAL CO-OPERATION STRATEGY- THE 2002 REVIEW, GOV/INF/2002/8/Mod.1).***

***3.Guiding Principles for the provision of Technical Assistance to Member States INFCIRC/267 (March 1979):***

***(a) The primary objective of technical assistance is to accelerate and enlarge the contribution of atomic energy to peace, health and prosperity in Member States by facilitating their free access to the peaceful uses of atomic energy, the transfer of nuclear technology, the development of research, the application and utilization of atomic energy for peaceful purposes in Member States and the promotion of co-operation between them for that purpose;***

***(b) The provision of technical assistance constitutes a major, high-priority function of the Agency, and responsibility for its success devolves on all Departments of the Secretariat;***

***(c) The technical assistance activities of the Agency shall be carried out with due Observance of the sovereign rights of States, the provisions of the Agency's Statute and the terms of agreements concluded between the Agency and the State or group of States requesting technical assistance. The Agency shall not make technical assistance subject to any political, economic, military or other conditions incompatible with the provisions of the Agency's Statute;***

***(d) The Agency's resources for technical assistance shall be allocated primarily to meet the needs of developing countries;***

*(e) Technical assistance shall be designed to meet needs of research on, and development and practical application of, atomic energy for peaceful purposes, including the production of electric power, as determined by the requesting State or group of States, and to foster the exchange of scientific and technical information on peaceful uses of atomic energy and to facilitate access to nuclear technologies, equipment and materials for peaceful purposes;*

*(f) The nature, extent and scope of technical assistance to be provided to the requesting State or group of States shall be defined by the Government or Governments concerned, and the assistance actually provided shall be in conformity with the Government's request and shall be given only to or through Governments. This definition shall be as precise as possible. If requested, the Agency shall help the Government or Governments concerned in defining the nature, extent and scope of the technical assistance being sought;*

*(g) The State or group of States requesting technical assistance shall define, in advance, the subject, purpose and programme for which the technical assistance is requested and shall carry out all necessary preparatory work to ensure that the technical assistance achieves its objective;*

*(h) The Agency's Safety Standards and Measures<sup>1</sup> shall be applied, where relevant, to operations making use of technical assistance provided;*

*(i) Technical assistance shall be provided only for peaceful uses of atomic energy. For the purposes of the technical assistance programme, peaceful uses of atomic energy shall exclude nuclear weapons manufacture, the furtherance of any military purpose and uses which could contribute to the proliferation of nuclear weapons, such as research on, development of, testing of or manufacture of a nuclear explosive device. To this end and to the extent required by the Board of Governors, Agency safeguards shall be applied to all forms of technical assistance in all sensitive technological areas in accordance with the provisions established by the Board of Governors as set forth in the Annex or as subsequently amended by the Board;*

*(j) To the extent relevant, the Agency's recommendations regarding physical protection shall be applied to nuclear facilities, equipment and materials relating directly to the technical assistance programme.*

### **III PURPOSE**

The RCF will serve as a reference document for the Member States of the Asia and Pacific Region and the IAEA Secretariat for the planning, development and implementation and evaluation of the IAEA TC regional programme in Asia and the Pacific. The RCF will be

applicable to the extent it is not in conflict with the instruments enumerated in the Guiding Principles and any decision taken by the policy making organs of the IAEA.

The RCF aims to achieve a strengthened, integrated, more effective and efficient regional technical cooperation and associated partnerships in the peaceful and safe use of nuclear science and technology including nuclear energy in addressing common development priorities and needs of the Member States of Asia and the Pacific, leading to tangible socio-economic benefits and fulfilment of IAEA's mandate and function.

The RCF was developed based on the IAEA Medium Term Strategy and the TC Strategy, and identifies regional cooperation opportunities and potential areas for regional cooperation among countries in Asia and the Pacific to meet imperatives and challenges facing both Member States and the IAEA. It was also based on an in-depth assessment of the most pressing regional developmental problems, needs, and interests of Member States in the Asia and the Pacific and the IAEA, and taking due consideration of the specific regional strategies and profiles of the two cooperative Agreements in the region (RCA and ARASIA), as well as the goal of promoting region-wide cooperation.

The RCF will also contribute to facilitating the building of strategic partnerships with other relevant bilateral and multilateral bodies, agencies, and organizations and support socio-economic development of the region through the peaceful application of nuclear science and technology in a safe and secure manner.

For the RCF to serve as a reference document, it needs to be reviewed and adjusted in accordance with the evolving needs and priorities of the Member States prior to the preparation for a new TC cycle.

#### **IV POTENTIAL AREAS FOR REGIONAL COOPERATION**

The potential areas for regional cooperation are suggested in the following paragraphs, based on needs identified by the Member States in the region. Additional information coming from the analysis of the trends that characterise the Regional Programme of Asia and the Pacific (Annex 1), has been incorporated together with achievements in technical cooperation between the Agency and Member States over the past decade, with particular attention to:

- the importance and priority assigned by Member States to these fields in their Country Programme Frameworks (CPFs) and/or their National Development Plans,;
- the relevance of regional cooperation identified by the cooperative Agreements (RCA and ARASIA);
- The roles that new nuclear techniques could play in the foreseeable future.

Member States need to pursue the opportunities based on a realistic assessment of their internal strengths and weakness, taking into consideration specific external and internal limiting factors and constraints.

## **IV.1 Human resource development**

Human capital development is one of the high priority areas for all Member States in the region. The availability of skilled human resources in current and potential nuclear fields is an essential element for successful introduction and application of nuclear technology.

Some Member States are experiencing or are on the verge of having large staff turnover due to senior nuclear professionals nearing the end of their careers. Mechanisms to encourage and enable them to share their knowledge and experience with the younger generations, as well as attracting talented youth to make nuclear technology a career, in preference to alternate competing career options, should be devised as a strategy for maintaining continuity of capability as well as for preservation of nuclear knowledge.

Another possible strategy is the mapping of institutions in nuclear science, engineering, and technology with a view to facilitating and optimising their regional contributions. Such mapping would result in a regional database on nuclear education and training institutions that could be regularly up-dated. It would also enable the harmonization of nuclear education through the establishment of reference curricula. Mutual recognition of degrees might be also considered.

To ensure sustainability, Member States should be given assistance to develop and implement Human Resource Strategies, particularly the least developed countries, as well as assistance for strengthening national and regional nuclear training centres. Long-term training, along the line of the train-the-trainers concept, should be promoted. In addition, current modalities such as individual fellowships and scientific visits, which are still needed especially for the least developed countries and new Member States, new modalities such as ICT-based training and group fellowship training should be considered to meet specific needs.

## **IV.2 Energy planning and Nuclear power**

In recent years, nuclear power has become a priority area for development in several regional Member States. Energy analysis and planning is essential for understanding national energy capacity and needs as well as in policy formulation and planning. In this regard focus should be considered for both energy analysis and nuclear power programme development in the regional programme.

### **IV.2.1 Energy analysis and planning**

The stages of development of Member States in Asia and the Pacific in the field of energy planning vary widely. A careful approach regarding the design of the mechanisms and frameworks is called for under which relevant countries could benefit from IAEA assistance in this area. The capabilities of Member States to develop and continuously update and improve their energy planning to account for frequent changes in energy sources, availability, and price should be strengthened. The study on the interconnection of national grids to form regional or sub-regional power grids could provide an opportunity to promote sub-regional energy planning.



The introduction of nuclear power at sub-regional level could compensate for small national grids that were not able to support large nuclear power plants.

Sharing of information and experiences in energy analysis and planning between nuclear power countries and countries considering nuclear power in their energy planning should be encouraged. Member States wishing to investigate the nuclear power option should also be given assistance to meet those milestones relevant to nuclear power planning enumerated in IAEA guidance documents.

#### **IV.2.2 Nuclear power**

The Asia and Pacific region has a large number of countries which are operating nuclear power reactors or seriously contemplating nuclear power in the medium to long term. Cross-cutting issues for all countries, which have expressed interest in nuclear power include: (i) human capacity building, (ii) nuclear safety and security, (iii) developing and updating legislative framework, (iv) building a viable nuclear power infrastructure, and (v) public information and public acceptance, (vi) waste management, (vii) nuclear fuel management, (viii) emergency preparedness and response, (ix) NPP operation and maintenance, and (x) technology development.

Therefore future assistance could concentrate on the above areas, with particular emphasis on enabling countries to acquire reliable and technically sound information and knowledge on nuclear power planning, feasibility studies, siting, installation and commissioning and the overall development of national nuclear power programmes. Also of importance is assistance for human resource development related to nuclear power programme, in particular education in nuclear engineering, nuclear safety and security, as well as fuel cycle and radioactive waste management. The Member States should be encouraged to share their experiences related to the development of infrastructure for nuclear power and lessons learnt from Integrated Nuclear Infrastructure Review (INIR) missions.

There is also a need to consolidate various inputs from IAEA technical departments regarding nuclear power in order to serve the Member States' needs in an improved, sustainable and cost effective manner.

#### **IV.3 Nuclear safety and security**

Nuclear and radiation safety and security are an important element in any programme involving the applications of nuclear science and technology. For the purpose of this document and to ensure consistency with the IAEA relevant programmes, the main elements of safety infrastructure have been combined into the following radiation protection Thematic Safety Areas (TSAs): (i) TSA1: National Regulatory Infrastructure, (ii) TSA2: Radiological Protection in Occupational Exposure, (iii) TSA3: Radiological Protection in Medical Exposure, (iv) TSA4: Public and Environmental Radiological Protection, (v) TSA5: Emergency Preparedness and Response and (vi) TSA 6: Education and Training in Radiological Protection.

The areas of consideration include legislation and regulations, regulatory infrastructure, nuclear and radiation safety and nuclear security (supported by nuclear security fund).

### **IV.3.1 Legislation and Regulations**

Most Member States have adopted the Agency guidance and procedures to implement legislative and regulatory requirements. However, there is a need for harmonization or updating to comply with recent international/IAEA standards and guidelines. The focus therefore is to assist Member States in Asia and the Pacific to complete and improve their respective legislative infrastructure and harmonization with international standards, in particular with regard to nuclear installation safety.

### **VI.3.2 Regulatory Infrastructure**

In some Member States in the Asia and the Pacific Region, the regulatory infrastructure that includes the regulatory body, needs to be strengthened, especially with the introduction of nuclear power programmes. Regional cooperation mechanisms that complement national programmes and have an emphasis on human resource development, the sharing of experience and best practices, as well as the use of regional networking in nuclear safety, such as the Asian Nuclear Safety Network (ANSN), should be the focus in this area.

### **IV.3.3 Nuclear and radiation Safety**

Several Member States in Asia and the Pacific, particularly the newcomers, are still in need of IAEA assistance to develop nuclear and radiation safety infrastructure. The required assistance could encompass radiation and transport safety, safety of nuclear installations, control of radiation sources, and radiation protection of workers and patients.

- With regard to radiation and transport safety, cooperation/assistance could be provided to support to Member States for a wide variety of issues connected to transport of nuclear and radioactive material, establishment of regulations, harmonization of regulations, as well as political aspects, such as those related to denial of shipments.
- In the area of nuclear installation safety, cooperation/assistance could provide support to Member States to ensure the safety of nuclear installations and fuel cycle facilities. This could include siting, safety assessment and capacity building of newcomers, which could be offered to countries introducing nuclear power, nuclear fuel facilities and research reactors.
- In the area of control of radiation sources, cooperation/assistance could provide support to capacity building in order to ensure the safe control of radiation sources, including the management of long term storage and disposal.

### **IV.3.4 Nuclear Security**

As in other regions, Member States in the Asia and Pacific region need support to further improve their mechanisms for physical protection and control of nuclear materials and facilities.

Assistance could be provided to the Member States in the region, regarding nuclear security issues, development of training packages for Member States, drafting regulations/legislation to help Member States build the national regulatory capability in the field, and strengthening of coordination between the various sources of assistance. A new and emerging need for the region

is the area of training of nuclear and radiological security professionals, which can implement the security guidelines as spelled out in the IAEA “Security of Radioactive Sources – IAEA TECDOC 1355”.

#### **IV.4 Radioactive waste management**

The increasing interest in nuclear power, combined with the need to decommission ageing nuclear facilities in Asia and the Pacific, such as nuclear research reactors and irradiators, makes radioactive waste management one of the strategic areas for several Member States.

Moreover, the establishment of centralized national waste management facilities to manage radioactive wastes in the safest manner in Member States still requires IAEA assistance. Similarly the conditioning and disposal of disused radioactive sources, as well as the radioactive waste arising from clinical applications radiation and radioisotopes, the management of orphan sources and NORMs, and the building of human capacity represent priorities in many countries in Asia and the Pacific. Support could be provided to tackle issues related to the above-mentioned fields, including assistance in the preparation of written procedures, based on internationally accepted safety standards, which need to be elaborated and implemented by the relevant national competent authorities.

#### **IV.5 Human health**

Major health problems in the region of Asia and the Pacific are: (i) non-communicable diseases, mainly cancer, prenatal mortality, child mortality, diabetes and coronary artery diseases (ii) communicable diseases, including HIV/AIDS and tuberculosis (TB) and (iii) increasing prevalence of malnutrition.

With regard to cancer, Member States could be assisted to improve the quality of radiotherapy services and to acquire more advanced technologies such as Intensity Modulated Radio-therapy (IMRT).

Another potential area for cooperation is the use of appropriate nuclear medicine procedures and techniques for diagnosis and early detection of diseases such as cancer and cardio-vascular diseases.

Improving quality control and quality assurance in radiotherapy, nuclear medicine and diagnostic radiology through the establishment of medical physics programmes, including education and clinical training of medical physicists, could be also another area for cooperation.

Assistance for effective diagnosis and monitoring of the efficacy of drugs used to treat communicable diseases such as TB could also be of importance to the region and some Member States might need this support.

Agency assistance in areas of malnutrition and child mortality could contribute to the on-going efforts of Member States who are addressing these issues.

#### **IV.6 Food and Agriculture**

Food security, in particular animal production and health, crop improvement, soil fertility, irrigation, insect and pest control, and food safety could be potential areas for cooperation.

Future needs of the region in the area of animal production and health could include control of animal diseases to facilitate export of cattle and meat. The assistance could introduce integrated packages of technologies including Artificial Insemination (AI) and progesterone measurement using RIA for diagnosis of non-pregnancy; ultrasonography for diagnosis and treatment of infertility and reproductive disorders; metabolic and mineral profiles for assessment of nutritional adequacy; and feed supplementation strategies for overcoming inadequacies.

Food security could be enhanced through sustainable crop production. Validation of promising crop varieties that have resulted from prior IAEA assistance or national efforts could be promoted with the aim of helping to disseminate the validated varieties.

Future assistance in soil fertility and irrigation could focus on addressing the needs of the Member States where basic infrastructure has yet to be established, including human capacity building, establishment of research laboratories and of a national capability that could make optimal use of nuclear techniques to map the soil in the country and advise the farmers on best cultivation practices.

With regard to insect and pest control, future assistance could concentrate on encouraging decision-makers to consider the use of SIT to control or suppress certain insect pests in the region by providing them with the necessary technical, financial as well as managerial information and data for informed decision making.

## **IV.7 Industrial Applications**

The industrial applications of nuclear and radiation techniques comprise radiation processing, radioisotope techniques for troubleshooting and optimizing industrial processes, Non Destructive Testing and the utilization of research reactors related to industrial applications.

### **IV.7.1 Radiation Technology**

Some of the radiation processing technologies already applied in Asia and the Pacific include radiation cross-linking of natural and synthetic polymers, radiation sterilization of health care products, and radiation grafting. There are a number of radiation processing facilities in the region and there is a need to utilize them in a regional cooperation framework to benefit as many of the region's Member States as possible, and to enhance the sustainability of this infrastructure. Therefore, in addition to pursuing current efforts under the national and regional projects, a new direction is needed towards facilitating and maximizing the utilization of existing radiation processing facilities.

### **IV.7.2 Radioisotope techniques for troubleshooting and optimizing industrial processes**

Radiotracer and sealed source techniques are applied in industry in Asia and the Pacific to enhance quality, productivity, reliability and safety; to improve efficiency and to reduce production down-time and industrial pollution, thereby reducing costs to industry and the environment.

In Asia and the Pacific region, there remain needs to promote the further utilization of radiotracer and sealed source applications for troubleshooting pipelines and process vessels, detection of blockages, leaks, flow mal-distributions, channelling by-passing, re-circulations and stagnant or dead volumes, and process control applications. The use of these proven techniques could be reinforced in view of the increasing needs of the industry and the implementation of more severe safety measures. Training of personnel in charge of applying these techniques could be given a high priority, particularly for the interpretation of results.

#### **IV.7.3 Non Destructive Testing (NDT)**

TC assistance in NDT could play particular attention to new developments in fields such as digital radiography, automation of test and inspection equipment and the use of software for data interpretation.

A focused interest in advanced industrial radiography, tomography and radiotracer techniques could reduce pollution and improve production quality and safety. Such benefits also come from nuclear applications in coal, solid minerals, and oil and gas industries.

#### **IV.7.4 Planning, Utilization, Ageing Management and Decommissioning Of Nuclear Research Reactors**

Some industrial applications of research reactors include: neutron radiography; analysis of material using neutron activation analysis; neutron transmutation doping (NTD) and, production of isotopes used in medical or radiotracer studies. Consideration could be given to new directions in this area to help Member States, develop and implement strategic Action Plans for the operational research reactors in compliance with the IAEA relevant TECDOCs. Ageing management of research reactors and reactor safety and maintenance are pressing issues for consideration. Moreover the issue of research reactor decommissioning could be an emerging area of need for several Member States and could be given serious attention.

#### **IV.8 Water resources management**

Management of water resource is an emerging challenge facing Member States in the region. The regional cooperation in this area could be carried out in a manner that complements the national programmes. The continuation of current programmes needs to take into consideration past assistance and new challenges so that an appropriate focus can be given to this subject.

#### **IV.9 Environment protection and monitoring**

The nuclear applications for environmental protection include: the monitoring, assessment and protection of air quality; reduction of threats to water resources; increasing land productivity; reduction of the use of chemicals for agriculture and forestry resources; generation of energy; improvement of the prediction and understanding of natural phenomena; and, management of the

marine environment. Several Member States in the region are paying increasing attention to the environment under the Kyoto Protocol and other international arrangements. The concerns and commitments of the Member States could be taken into account when designing and implementing cooperative projects in this field.

#### **IV.10 Other Potential Fields**

No technology can exist on its own because, all technologies are interrelated and with the advancement of knowledge, progress or changes in one will affect the other. Emerging technology such as nanotechnology, biotechnology, embedded system technology, automation and intelligent systems, accelerator technology, and PET-related technologies have interfaces and/or involve the use of nuclear technology. This requires adaptation to this new situation, national capacity building in selected areas of interest to the Member States, and regional cooperation to benefit from the economies of scale. In particular, the use of embedded technology in modern nuclear equipment and greater use of automations call for new focus in these two areas.

### **V MEANS AND MODALITIES**

VI.1 The aim to enhance the socio-economic impact of peaceful applications of nuclear science and technology, including nuclear power for development, will be achieved through:

- Encouraging, facilitating and assisting development and practical application of nuclear science and technology for socio-economic development in the region and among Member States of the region;
- Encouraging information and knowledge exchange through twinning and networking activities, and training of scientists, engineers and technicians in the field of peaceful applications of nuclear science and technology;
- Identifying, developing and designing projects that have regional cooperation as a key synergetic factor for the delivery of the outputs and outcomes.
- Carrying out effective programming, implementation, monitoring and evaluation of regional technical cooperation initiatives, projects and activities;

VI.2 The promotion of ownership, enhanced participation of Member States in the TC regional Programme, and enhanced cooperation between the IAEA and the Member States in the region will be achieved through,

- Active involvement of all stakeholders, including representatives from ARASIA and RCA, at the stage of development, updating and evaluation.

- Regular consultation between the IAEA and the Member States in all phases of the TC programme as well as matters of common interest.
- Encouraging exchanges of annual reports and establish an appropriate mechanism to disseminate best practices, innovative methods and products, of the two regional agreements.
- Encouraging exchange experts/consultants to carry out R&D activities for an Agreement using the expertise available in the other. This will also be a way of enhancing cooperation and harmonizing materials and protocols; and
- Encouraging twinning of nuclear institutions in both sub-regions.

VI.3 The aim to promote and facilitate effective partnerships with all stakeholders in the region, will be achieved through,

- Supporting enhanced TCDC modality as well as South-North cooperation through fundraising strategies and initiatives in order to support and finance regional technical cooperation programmes.
- Enhancing use of regional expertise, infrastructures and resource institutions in regional projects through improved understanding of regional resources and capacities and integration of available resources in the design, development and implementation.
- Strengthening regional partnerships with development and financial institutions and UN organizations for the support of regional projects.
- Promoting networking among national, regional and international institutions relevant to nuclear science and technology and to regional cooperation.
- Implementing Business Plans for the available facilities so as to maximize utilization and thereby income generation, and to promote the creation of a regional market of nuclear services and goods.
- Assisting the MSs to strengthen their capability in intellectual property aspects for technology transfer and commercialization.

VI.4 Sustainable human resource development in the region, will be enhanced through,

- Assisting in developing and implementing sustainable human resources development strategies, succession plans and nuclear knowledge management strategies at a regional level.

- Harmonizing and promoting, education and training programmes at a regional level through cooperation among academic institutions in the field of nuclear science, technology and engineering; and
- Promoting the use of Information and Communication Technology (ICT) based training/learning tools and methodologies, including E-learning, as part of the regional cooperation projects.

VI.5 Nuclear and radiation safety and security infrastructure in the Member States in the region, will be strengthen through assistance to Member States to,

- establish viable nuclear and radiation safety as well as security infrastructures; and`
- apply nuclear and radiation safety principles and requirements as well as security guidelines in accordance with relevant IAEA requirements/guidelines, Basic Safety Standards and the relevant safety and security Codes of Conduct

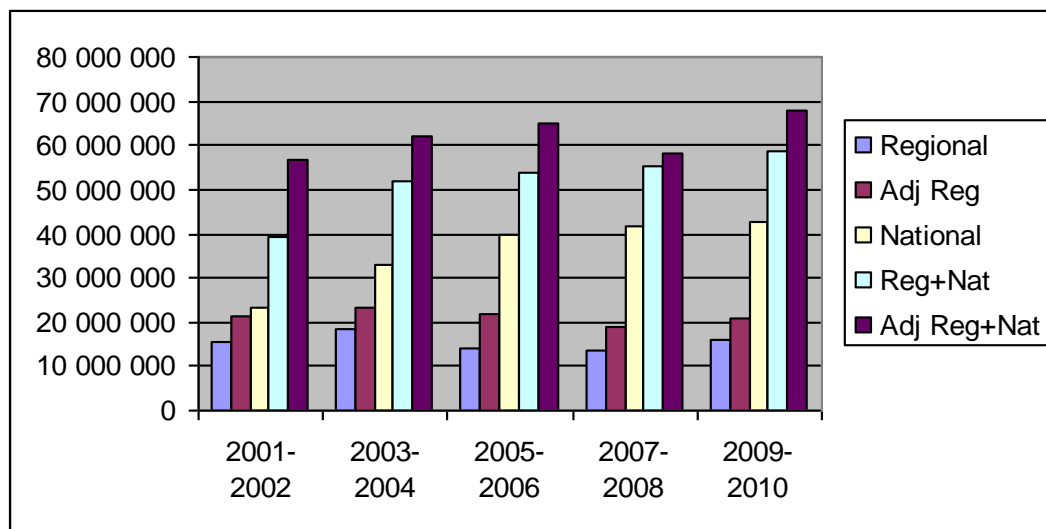


## Annex 1

### TRENDS ANALYSIS

#### 1. Disbursement trends

- Graph 1 shows the approved and adjusted IAEA TC budget (without footnote a/) for Asia and the Pacific in the period of 2001-2010. It was noted that the ratio of the budgets for national and regional projects were around 70% and 30%, respectively.



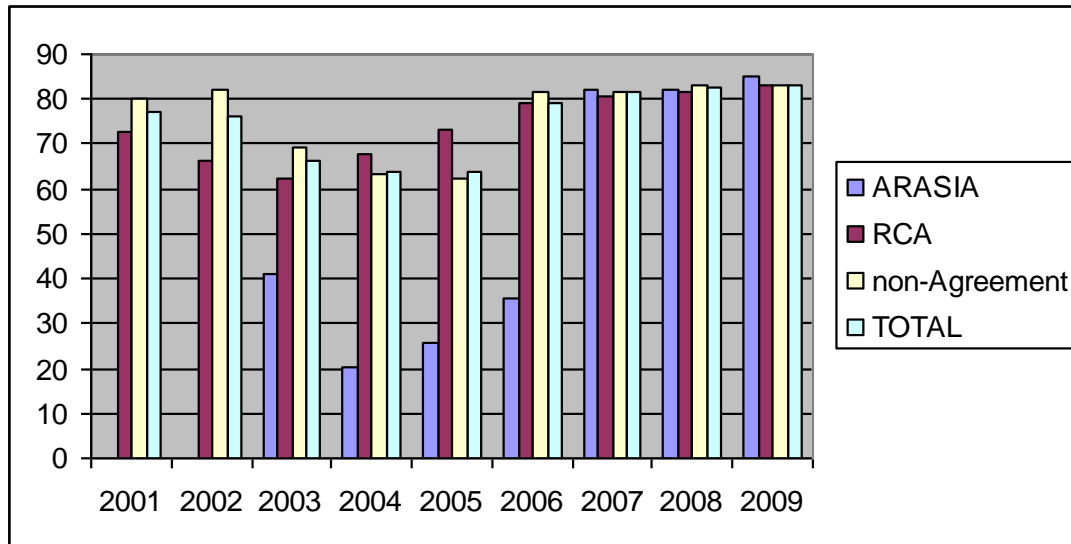
**Graph 1.** The biannual budgets for the years 2001-2010.

- The Disbursement from 2001 to 2009 for the TCF (for both national and regional projects) in the Asia and Pacific region showed that the major areas of focus were Nuclear Safety (20%), Health (18%), Food and Agriculture (15%), Isotopes and Radiation Applications (13%) and Nuclear Technology (11%).
- ARASIA projects** represent 13% of the TC Asia and Pacific regional programme budget, with the major areas of focus on Health (31%), Biology and Environment (19%), Food and Agriculture (17%) and Nuclear Physics (12%).
- RCA projects** represent 28% of the TC Asia and Pacific regional programme budget, with the major areas of focus on Human Health (31%), Isotope Hydrology and Applications of Isotopes (29%), Biology and Environment (17%) and Food and Agriculture (13%).
- Non-Agreement Regional** projects represent 59% of the TC Asia and Pacific regional programme budget, with the major areas of focus on Radiation and Nuclear Safety (38%), General Atomic Energy (for assisting Member States in national and regional planning

and programming, as well as human capacity building) (22%), Human Health (12%), Nuclear Power (10%) and Food and Agriculture (8%).

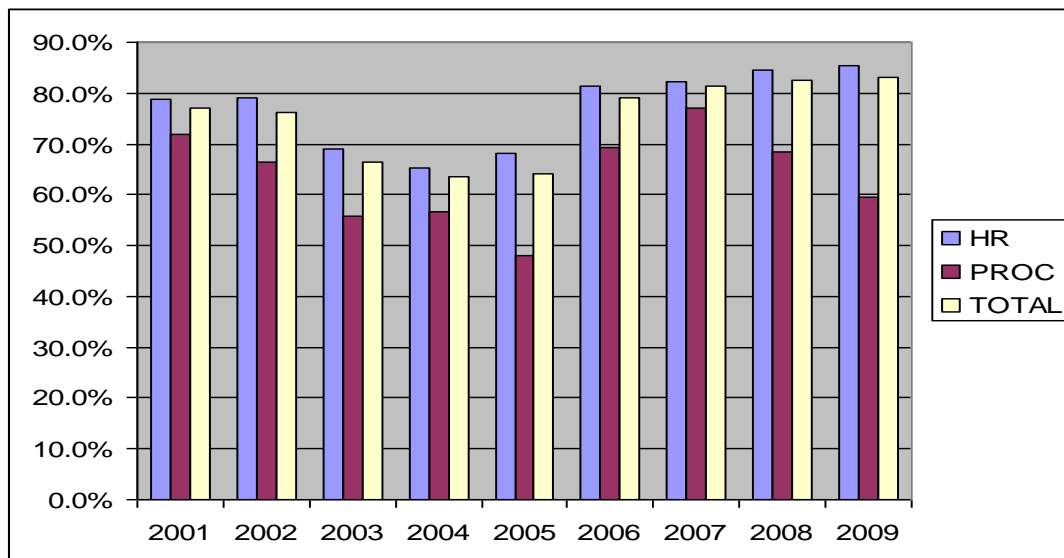
### 1.1 Disbursement patterns

- The overall implementation rate of the TCP supported regional programme during the period 2001-2009 averaged 74.8%. It had decreased during 2001-2005 from 77.1% to 64%, but increased to 81.5% in 2006 and maintained a high implementation rate until 2009, with the highest implementation rate reaching 83.2% in 2009.



**Graph 2.** Programme implementation rate (in %) for ARASIA, RCA and Non-agreement programmes as well as the total implementation rate for the whole region.

- The implementation rate of the Human Resources component of the regional projects during 2001-2009 was very similar to the overall implementation rate. This is to be expected because the Human Resources component represents the bulk of the regional programmes budget (78% in 2001 and 91.3% in 2009).
- A notable trend during 2001-2009 has been the gradual decrease in the Expert component of the whole TCAP programme from 20% to 15%. During the same period, the expenditure for Meetings and Workshops has shown an increase from 10% in 2001 to 19% in 2009. The change in the expenditure of the remaining components has been marginal, with the Training Courses component remaining almost constant at 17%, Fellowships and Scientific Visits component remaining at 18% and a slight reduction in the Equipment Component from 35% in 2001 to 31% in 2009.
- The implementation rate of the Procurement component averaged 63.7% over the 9 years and showed a decline from 71.8% in 2001 to 47.9% in 2005, then surging to 69.4% in 2006 and peaking in 2007 at 77.2%, but starting to decline again in 2008 reaching a level of 59.6% in 2009.



Graph 3. Programme implementation rate for the Human Resources and Procurement components of TCAP programmes as well as the total implementation rate for the whole region.

## 2. Trends

Based on the above-mentioned analysis, and other sources of information, the followings emerged as being the major tendencies that characterize the regional programme in Asia and the Pacific:

- Nuclear and Radiation Safety and Human Health are the main cooperation areas of the region as a whole. Human Health is the main area for both the ARASIA and the RCA Agreements, while Nuclear and Radiation Safety is the main area for the Non-agreement regional projects.
- Nuclear Power is an emerging area for the region and there is a significant renewed interest in the field of Uranium Exploration and Utilization, as well as related Radioactive Waste Management.
- The area of Food and Agriculture, which experienced some decline in 2001-2002, has increased during 2005-2006.
- From 2001 to 2009 the advisory assistance component (expert missions) has declined from 20% to 15%, which reflects (i) higher self-reliance in some relatively advanced Member States as a result of the help of the IAEA in the development of indigenous expertise during the last 10 years, and (ii) the inability to field expert missions due to security restrictions in some Member States.
- The component of Meetings/Workshops has shown the largest increase in the past 10 years as an emerging trend in the need for regional consultation and experience sharing.

- Although the procurement component is about 10-20% of the overall regional programmes budget, it is still significant and therefore the recent decline in its implementation rate from 77.2% in 2007 to 59.6% in 2009 calls for concrete corrective measures. Major reasons for decline include: denial of shipment for some Member States, due to security; and, increased Funds-in-Trust for purchasing large equipment being submitted late in the year by Member States.

## Annex 2

### Procedures for TC Regional Projects

The procedure for the regional projects for Asia and the Pacific Region follow the contents of the document titled “Policy and Procedures for TC Projects”, re-produced below. It should be noted that all TC projects would require the approval of the IAEA Board of Governors for implementation.

#### 1. Project Criteria:

- The standard TC programme/project quality criteria apply to regional project proposals, i.e. relevance, ownership, sustainability and results-based management;
- A regional project aims to address the common needs of a group of Member States in a region and to provide support to their ongoing national capacity strengthening efforts.
- A regional project provides a framework for sharing knowledge, experience and technology, for networking and cooperation among countries of a region or sub-region, and for facilitating interaction at the regional level between mandated national institutions.

#### 2. Project Categories:

Regional projects deliver TC support across national boundaries and address the common needs of several Member States in a specific region. Regional projects are an integral part of the TC programme and are subject to IAEA and TC management policies and procedures. Regional project proposals are considered simultaneously with national programming discussions.

Every regional project should fall under one of the following four categories: transnational, regional, capacity building or joint activities.

- Transnational projects deal with challenges involving more than one country, but not necessarily all countries in a particular region. Only countries facing the challenges addressed by the project that have demonstrated interest and commitment to successful project implementation and sustainable impact are considered for participation. As in national projects, the screening process is applied to verify that the countries initially selected possess the requisite infrastructure and capacity to take part in the project.
- Regional standard setting projects provide a framework for the equitable participation of Member States on a regional scale. Projects may include the design of guidelines, curricula, teaching materials and the documentation of best practices. Country participation should be such that it ensures a balanced representation of Member States. Extrabudgetary funds should be leveraged, when needed, to facilitate such projects.

- Projects on capacity building for developing countries provide support to candidates from developing countries so that they can participate in conferences, seminars and workshops that have been approved under the IAEA Major Programmes. This promotes networking, knowledge sharing, South-South and triangular cooperation. Capacity-building projects for developing countries also support the fellowship component of the TC programme in specific, previously identified areas, in particular in encouraging young female scientists to train in nuclear applications. Extrabudgetary funds should be leveraged, when needed, to facilitate such projects
- Joint TC activities with a regional or international entity, formalized through a cooperation agreement, are also regarded as regional. In the case of such projects, the participation of the countries should be coordinated together with the entity co organizing the activity.

### **3. Formulating and Managing Regional Projects:**

Standard TC project management procedures (described in the TC programme cycle management framework (PCMF) guidelines) are applied in the design, budgeting, implementation, monitoring and evaluation, closure, and performance review of regional projects.

#### Planning

Regional project proposals can be made by: regional groups or Agreements (i.e., RCA and ARASIA); a group of Member States from one region; technical Department(s); and the TC Department. Regional project proposals are screened in accordance with TC project planning guidelines.

#### Implementation and Management

A designated PMO is responsible for planning, management and reporting on one or several regional projects. Where relevant regional projects also comply with Agreement-specific operational guidelines, usually involving the designation of a lead country per project and the appointment of an implementation team of national experts/counterparts.

#### Evaluation Criteria

The standard monitoring and evaluation process embedded in the TC programme cycle is followed. In addition, regional projects with a total value of over \$1 million (of IAEA funding) are subject to mandatory independent evaluations.

### Annex 3

List of IAEA TC Recipient Member States/Territories in Asia and the Pacific		
1	Afghanistan	AFG
2	Bahrain	BAH
3	Bangladesh	BGD
4	Cambodia	KAM
5	China	CPR
6	Indonesia	INS
7	Iran	IRA
8	Iraq	IRQ
9	Israel	ISR
10	Jordan	JOR
11	Kuwait	KUW
12	Lebanon	LEB
13	Malaysia	MAL
14	Marshall Islands	MHL
15	Mongolia	MON
16	Myanmar	MYA
17	Nepal	NEP
18	Oman	OMA
19	Pakistan	PAK
20	Palau	PLW
21	T.T.U.T.J of T. Palestinian A	PAL

22	Philippines	PHI
23	Qatar	QAT
24	Saudi Arabia	SAU
25	Singapore	SIN
26	Sri Lanka	SRL
27	Syria	SYR
28	Thailand	THA
29	United Arab Emirates	UAE
30	Vietnam	VIE
31	Yemen	YEM

**List of ARASIA Member States**

1	Iraq	IRQ
2	Jordan	JOR
3	Lebanon	LEB
4	Oman	OMA
5	Saudi Arabia	SAU
6	Syria	SYR
7	United Arab Emirates	UAE
8	Yemen	YEM

**List of RCA Member States**

1	Australia	AUL
2	Bangladesh	BGD
3	China	CPR
4	India	IND
5	Indonesia	INS



6	Japan	JAP
7	Korea, Rep. of	ROK
8	Malaysia	MAL
9	Mongolia	MON
10	Myanmar	MYA
11	New Zealand	NZE
12	Pakistan	PAK
13	Philippines	PHI
14	Singapore	SIN
15	Sri Lanka	SRL
16	Thailand	THA
17	Vietnam	VIE