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Programme of Action for Cancer Therapy[A]

Report by the Director General

Summary

- Supported by essential programmatic and laboratory contributions, the Agency has delivered over $57 million of radiotherapy services through technical cooperation (TC) projects since 1981, and there are currently about 100 active TC projects involving radiotherapy, ranging in duration from two to five years.
- Recently, the Secretariat has been working on a new approach on the impending cancer crisis in developing countries. The crisis is due to the rapid increase in cancers and the relative scarcity of radiotherapy equipment and expertise. This new approach seeks to raise public awareness and to increase our capacity, working together with Member States and others to assist Member States to analyse, develop, and implement appropriate cancer treatment programmes, mainly by expanding our fundraising efforts with non-traditional donors.
- The new Agency approach is predicated on the fundamental role that radiation therapy plays in cancer treatment and on the Agency's accepted role in cancer therapy. However, radiation therapy is not available for most cancer patients in developing countries. In 2003, against the background of large and rapidly increasing rates of cancer in the developing world, the World Health Organization (WHO) and the International Union Against Cancer (UICC) issued a call for action "through concerted efforts by all sectors to prevent and treat cancer throughout the world." They challenged "international organizations, governments, institutions and individuals from all sectors, public and private, to work together to reverse the trends by addressing common risk factors, providing recommended treatment, and planning effectively at national and regional levels."
- To respond effectively to this challenge and call for action by the WHO and UICC, the Secretariat proposes a Programme of Action for Cancer Therapy (PACT). Since the March meeting of the Board of Governors, a round-table discussion was held to solicit voluntary contributions for PACT start-up. One pledge was made, although carrying PACT forward will

[A] For convenience, Footnotes 5 and 7 are attached at the end of this document.

require additional extrabudgetary resources. This report describes PACT and the proposed steps for its development and implementation.

Recommended Action

- It is recommended that the Board of Governors request that the Director General:
    - pursue the Programme of Action for Cancer Therapy and further develop and refine its elements in consultation with Member States, other UN bodies, and appropriate organizations in the public and private sectors;
    - implement, subject to availability of resources, the elements of the Programme of Action for Cancer Therapy; and
    - report to the Board of Governors as appropriate on progress made in the development and implementation of the Programme of Action for Cancer Therapy and the funding thereof.

Programme of Action for Cancer Therapy

Report by the Director General

A. Present Agency Role in Cancer Therapy

1. Nuclear technology for the treatment of cancer is mature and plays a fundamental role in medical practice for cancer patients. The Agency has developed strong technical expertise and acquired unrivalled experience in the delivery of radiotherapy technology to developing countries. The Agency provides assistance in all relevant aspects, such as planning, training, econometric analysis, implementation, radiation protection, safety and security. It has in place mechanisms to support the safe, effective and sustained implementation of radiotherapy services.

2. Supported by essential programmatic and laboratory contributions, the Agency has already delivered over $57 million of radiotherapy services through technical cooperation (TC) projects since 1981. Over 22% of the TC programme is devoted directly to human health, and half of that is devoted to providing or improving the delivery of radiotherapy services. The Agency has invested an average of $10.4 million annually over the last 5 years in radiotherapy TC projects. These projects are supplemented by activities carried out under the regular programmes of the Department of Nuclear Safety and Security and the Department of Nuclear Sciences and Applications.

3. There are currently about 100 active TC projects involving radiotherapy, ranging in duration from two to five years. Together with the WHO, the Agency maintains a Directory of Radiotherapy Centres (DIRAC), which includes data on equipment and sources used in teletherapy and brachytherapy; equipment for dosimetry, patient dose calculation and quality assurance; and the numbers of staff (radiation oncologists, medical physicists, technicians, etc.) at radiotherapy installations. Work is under way to develop an econometric model that compares the costs of various kinds of equipment, including the initial capital cost, the personnel requirements, and the running costs for the patient mix of palliative and radical radiotherapy. In addition, Agency activities directed towards improving radiation protection, safety and security infrastructures contribute to establishing the appropriate framework within which radiation therapy can be safely administered, notably the Model Project on Upgrading Radiation Protection Infrastructure in 88 Member States. The Agency's dosimetry laboratory supports ongoing quality control (QC) and quality assurance (QA) programmes. Besides radiotherapy, the Agency is involved to a lesser degree in other aspects of cancer control, e.g. cancer prevention (environmental health and nutrition) and cancer screening and diagnosis by radiological and nuclear imaging and radioimmunoassay.

4. Raising global public awareness of the 'silent crisis' of cancer in developing countries is critical for the mobilization of new resources for expanded cancer treatment. Agency activities to raise public awareness of the mounting cancer problem began in mid-2003 with the launch of a global media campaign featuring a statement from the Director General, TV interviews with Secretariat health

experts, and video footage from cancer wards in developing countries. The successful media campaign was followed by the publication of an illustrated brochure, *A Silent Crisis: Cancer Treatment in Developing Countries*.

5. In his statement to the March 2004 meeting of the Board of Governors, the Director General stated that for the past six months the Secretariat had been working on a new approach that would raise public awareness of the impending crisis in developing countries due to the rapid increase in cancers and the scarcity of radiotherapy equipment and expertise. This approach, named Programme of Action for Cancer Therapy (PACT), would seek to increase our capacity for assisting Member States in providing appropriate cancer treatment, mainly by expanding our fundraising efforts with non-traditional donors. He stated that the Secretariat would provide a proposal for discussion at the June 2004 meeting of the Board. The purpose of this document is to inform the Board of the rationale for PACT, seek its endorsement and begin a process of consultation with Member States and partners, such as the WHO, on PACT.

B. Cancer — A Silent Crisis

6. Cancer is a growing silent crisis, especially in the developing world. Almost 13% of all deaths worldwide are caused by cancer, more than HIV/AIDS, tuberculosis, and malaria put together. In 2000, there were more than 6 million cancer deaths worldwide and 10 million newly diagnosed cases of cancer. Today there are more new cancer cases every year in developing countries than in industrialized countries, and cancer rates are projected to increase significantly in developing countries. By 2020, two-thirds of the projected 10 million annual cancer deaths will be in developing countries.[1]

7. Healthier habits can prevent some cancers (e.g. lung cancer), but even healthy people get cancer, and many common cancers are not preventable. Radiotherapy saves lives by curing certain cancers, and extending or improving quality of life for other cancers. It is estimated that over 50% of patients who are diagnosed with cancer in the world would benefit from radiotherapy, either alone or together with surgery or chemotherapy. According to the WHO 2003 *World Cancer Report*, "radiotherapy is fundamental to the optimum management of cancer patients, and provision of radiotherapy services is central to national cancer control strategies. Although it requires long-term planning and appropriate assessment of health care resources, without recourse to sophisticated technologies, effective radiotherapy for many cancers can be comprehensively provided at moderate cost."

8. Available data indicates that radiotherapy is not, however, comprehensively provided. According to the DIRAC, as of January 2004 in the developing world there were about 2000 radiotherapy centres with fewer than 2500 machines for cancer therapy. This provides treatment capacity for about 1.25 million patients per year[2], but radiation therapy would be medically appropriate for around 3 million of the almost 5 million people in developing countries who will develop cancer this year. Thus, 1.75 million people will endure cancer this year without access to appropriate treatment and half of them (approximately 2500 people per day), who might have been cured, will die without recourse to appropriate therapy.

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[1] Figures are from *Global Action Against Cancer*, WHO and UICC 2003.

[2] This assumes 500 patients per machine per year.

9. Overall, there is a deficit in developing countries of 3500 radiotherapy machines. Eliminating this deficit would cost at least $1–2 billion. Of course, the deficit is not just one of machines — each radiotherapy facility needs trained staff (nurses, technicians, radiation oncologists, and medical physicists) as well as appropriate arrangements for radiation protection, safety and security, and a continuing and ongoing effort to ensure quality control. Strengthening the capability of ministries of health and other health sector institutions for analysing options, formulating policies and setting priorities is also crucial.

C. International Perspective

10. In recent years the international community has focused on the need to take concerted action to address the health needs of developing countries. At the World Summit on Sustainable Development, health was identified as one of the five core areas in which progress was sought. The Plan of Implementation of the World Summit on Sustainable Development recognized the inextricable link between poverty and health and called for concerted action and concrete measures to eradicate poverty, including action at all levels to "deliver basic health services for all".

11. The United Nations Millennium Declaration also recognized the importance of reducing the burden of disease. Heads of State resolved in the Millennium Declaration, by 2015, to have "halted, and begun to reverse, the spread of HIV/AIDS, the scourge of malaria and other major diseases that afflict humanity". Within the framework of this Millennium Development Goal, cancer is a major disease. More deaths are caused by cancer than HIV/AIDS, tuberculosis, and malaria put together.

12. The Commission on Macroeconomics and Health (CMH), commissioned by the WHO, published its report in December 2001.[3] It concluded that better health could be a major catalyst for economic development, and that a new 'health pact' between donors and recipients, and major new investment in health were needed to achieve this. The CMH report says that "the importance of the [Millennium Development Goals] in health is, in one sense, self evident. Improving health and longevity of the poor is an end in itself, a fundamental goal of economic development. But it is also a *means* to achieving the other development goals related to poverty reduction. The linkages of health to poverty reduction and to long-term economic growth are powerful, much stronger than is generally understood."

13. In 2002–2003, the WHO published the results of new studies describing the worldwide burden of cancer and projected increases, especially in developing countries.[4] The WHO and UICC created the Alliance for Global Cancer Control, a loose coalition of organizations whose missions include addressing cancer prevention and treatment. The Agency joined the Alliance in 2003 and supported the Alliance statement in support of the WHO Framework Convention on Tobacco Control. The programme of action described below is envisioned to operate within the framework of, and fully support the goals of, the Alliance.

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[3] *Macroeconomics and Health: Investing in Health for Economic Development*. An electronic version of this publication is available at http://www.cid.harvard.edu/cidcmh/CMHReport.pdf

[4] See, for example, Ferlay J, Bray F, Parkin DM, Pisani P, eds (2001) *Globocan 2000: Cancer Incidence, Mortality and Prevalence Worldwide* (IARC Cancer Base No. 5), Lyon, IARC Press; and Stewart B, Kleihues P, eds (2003) *World Cancer Report*, Lyon, IARC Press.

D. Programme of Action for Cancer Therapy (PACT)

D.1. Programme Basis

14. In order to respond to this challenge faced by so many countries, and to the call for action by the WHO and UICC, the Secretariat has developed PACT. A brief description of PACT is in the Annex.[5] The proposed Programme responds to the legal, regulatory, technical and human resource needs of developing countries, to put in place, improve, or expand radiotherapy treatment programmes in the context of national cancer control strategies and according to the priorities and needs of the countries and regions concerned.

15. Decisions about the utilization and implementation of radiation therapy in meeting the objectives of national programmes for cancer control require holistic and strategic programmatic approaches. They should be underpinned by comprehensive analyses (conducted together with the ministries of health and other stakeholders in the health sector) of country-specific and regional circumstances in order to judge the benefits and risks.

16. PACT recognizes that strategies for cancer control need to include an appropriate balance between prevention, early detection, treatment, and palliative care. Cancer research and surveillance are also important in developing effective control programmes that are responsive to local needs. Moreover, the safe and efficient use of nuclear technology involving radiation sources requires that the appropriate infrastructure be put in place to ensure that patients receive the optimum dose of radiation for their condition, levels of occupational exposure to radiation be as low as reasonably achievable, and risks to the public be minimized. PACT seeks to build a coalition of interested parties committed to addressing the challenge of cancer in developing countries in all of its aspects, with a particular emphasis on cancer therapy, and to mobilizing resources from charitable trusts, foundations, and others in the public and private sectors for the benefit of cancer patients.

17. The PACT proposal encompasses a ten-year vision. At this early stage, PACT needs to be considered as a work in progress whose elements are to be developed within a flexible structure and further refined in scope and content as PACT is adjusted to the level of resources available and to the priorities of PACT stakeholders (including governments, other international organizations, non-governmental organizations, the private sector, potential donors and concerned regional bodies and institutions).

18. In the near term, in addition to mobilizing resources and raising awareness, PACT will seek to create ‘centres of excellence for radiation therapy’ as exemplars of best practice, adapted to the needs of developing countries, and as a source of continuing support. The Agency’s TC programme will continue to play an essential role in ensuring safe, effective, and efficient use of radiation for cancer therapy.

19. PACT would break new ground for the Agency. However, it is consistent with the Agency’s statutory mandate, its Medium Term Strategy, and with Member States’ interests and priorities. (See, for example, resolution GC(45)/RES/12.C and documents GOV/1999/69, GOV/INF/824 and GOV/INF/2002/8/Mod.1).

20. In addition to raising resources for radiotherapy treatment centres, PACT will respond to the most frequent problems encountered by developing countries. In particular, in order to assist Member

[5] A fuller description is available on GovAtom under ‘Programme of Action for Cancer Therapy’.

States to analyse options and put in place cancer therapy programmes appropriate to their needs in the context of national cancer control strategies, PACT will seek to:

- increase capacity within ministries of health and other health sector institutions to analyse options, formulate policies and set priorities for investments in radiotherapy. "Many policy makers do not attach enough importance to the provision of good radiotherapy. Although it has a strong clinical background, its role has not been understood as well as other cancer treatment modalities such as surgery and chemotherapy."[6]

- provide training, management skills and other resources that will help institutions take best advantage of the initial investments in trained staff and equipment for the safe and effective continuation of operations.

- promote the development and implementation of effective, well balanced national strategies for cancer control, including appropriate generation of statistics and surveillance to ascertain local cancer conditions and requirements.

- enhance technical, legal and administrative capabilities to establish and implement regulatory systems, including those appropriate for radiation protection, safety and security.

21. PACT will seek to address these capacity-building needs and ensure the integration of radiation therapy into national policies and programmes for cancer control in a sustainable manner. The emphasis will be on raising the awareness of decision makers, building a strong technical base to underpin priority-setting for meeting national objectives, and ensuring the development, implementation, and compliance with appropriate technical, legal, and regulatory arrangements for the utilization of radiation sources.

22. The scope and extent of PACT will depend heavily on building partnerships within and among countries, and with other UN and non-UN bodies and institutions, including those operating at regional and sub-regional levels. It is especially important to coordinate further with the WHO and its regional offices and IARC. Coordination in countries with early cancer detection programmes is seen as especially beneficial and productive because cure rates for many cancers improve dramatically when they are diagnosed early.

23. PACT will engage policy advisors within national ministries, as well as policy, regulatory and research institutes in both industrialized and more advanced developing countries. Training of trainers, promoting South-South cooperation and conducting many of the key activities at global, regional or sub-regional levels will be key features of the implementation strategy, thereby increasing cost-effectiveness and efficiency.

D.2. Expected Situation at the End of the Programme

24. At the end of the programme, it is expected that PACT's engagement with Member States and with other organizations in the public and private sectors will have met the needs of Member States because it will have served to:

- strengthen national programmes for cancer control in developing countries.
- enable institutions in health sectors to design and support the implementation of policies and projects for the sound application of radiation therapy.

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[6] *A Global Strategy for Radiotherapy: A WHO Consultation*, Clinical Oncology (1999) vol. 11, pp. 368–370

- establish radiotherapy centres in each developing country appropriate for its needs, taking into account economic and demographic factors, and in the context of an appropriate national strategy for cancer control.
- establish centres of excellence for radiation therapy that will serve as centres of training in all regions served by PACT.
- review the status of radiation protection, safety, and security arrangements at national and local levels, and, as needed, put in place the technical, legal, and regulatory capacities appropriate to take best advantage of radiation therapy.
- promote strategic partnerships on cancer therapy between countries and their national research, education, and regulatory systems at the sub-regional and regional levels; between national and international organizations; and between the public and private sectors.

E. Status

25. In November 2003, the Secretariat created a Task Force on Cancer Therapy with the objective of creating or improving appropriate cancer therapy programmes in developing countries working together with the WHO, the Alliance for Global Cancer Control and others in the public and private sectors. Short-term assistance was obtained in late 2003 under the regular budget to provide advice with respect to anticipated donor requirements for project proposals. Terms of reference to evaluate the socio-economic impacts of cancer therapy initiatives have been agreed. Informal and positive contacts with the WHO, its divisions and IARC, and others have been made.

26. However, Regular Budget resources are not adequate to further pursue the Programme of Action for Cancer Therapy in a way that responds to real and urgent needs, and to do so will require additional technical, development, and administrative support. In light of this, the Secretariat invited a number of Member States to a round-table discussion with the purpose of describing PACT and soliciting voluntary contributions to start PACT.[7]

27. This round-table discussion was held on 29 March, at which time one Member State made a pledge of $300 000 with the expectation that others would also contribute and that its contribution would encourage them to do so. Carrying PACT forward will require additional extrabudgetary resources.

28. PACT is ambitious in its scope and objectives. However, the Secretariat does not see any need at the present time to change the way in which the Agency's efforts on cancer therapy are being managed and implemented.

[7] A description of resources and activities needed to launch PACT is available on GovAtom under 'Programme of Action for Cancer Therapy'.

Annex

Programme of Action for Cancer Therapy

Programme Proposal — Summary

A. Objectives

1. Recognizing the need for parallelism, the near-term objectives of PACT are:

- **Policy-level Capacity Building** — To raise awareness and broaden understanding among policy and decision-makers of the importance of national cancer control strategies, the fundamental role of radiation therapy for treatment of cancer patients, and its implications for developing national policies and strategies.
- **Centres of Excellence for Radiotherapy** — To design, plan, and implement regional and sub-regional institutions with the technical capacity to serve as collaborative training and reference centres for radiation therapy procedures, practices, methods, and applications as well as the technical, legal, and regulatory arrangements appropriate for radiation therapy.
- **National Cancer Therapy Planning —** To prepare national cancer control strategies based on country case studies that will review country specific and regional circumstances, including mechanisms for regional cooperation; and develop national cancer therapy strengthening action plans, which will form the basis for subsequent action.

2. The long-term objective of PACT is:

- **Sustainable National Capacity for Cancer Therapy** —These efforts aim to ensure that countries have put in place, in a sustainable manner, appropriate cancer therapy programmes. The necessary elements are operational radiotherapy and treatment facilities; all necessary scientific, technical, and management skills in radiotherapy applications and implementation; trained radiotherapy professionals; and effective quality assurance/quality control programmes.

B. Programme Elements

B.1. Public Awareness and Resource Mobilization

3. Public awareness focused on communications and resource mobilization will revolve around information, advocacy, media outreach, outreach to partners and donors, and networking.

B.2. Socio-economic and Technical Analysis and Support

4. PACT will include activities to:

- develop a framework for the evaluation of the socio-economic impact of radiation therapy for cancer in differing contexts;
- develop further econometric models for assessing the costs of radiotherapy and for making equipment choices;
- elaborate templates for regional and satellite centres of excellence for radiation therapy and apply them to specific countries and/or regions; and
- develop proposals for specific countries or regions based on these factors and on detailed analyses of country-specific cancer burdens.

B.3. Policy-level Capacity Building

5. Capacity building training for policy and decision makers will be organized through sub-regional workshops.

6. The target group of this component consists of senior policy analysts as well as other technical specialists in the relevant ministries, academic and private institutions, who are, or will be, responsible for advising their governments on policies on cancer management and implementation of radiotherapy.

7. The training workshops will be organized to the extent possible in collaboration with likely or potential (sub-)regional centres of excellence for radiotherapy.

8. As an essential support element for this training, Internet and CD-based interactive distance learning tools will be developed. (See B.6 National Cancer Therapy Capacity Building and Support.)

B.4. Centres of Excellence for Radiotherapy

9. The scientific and technical capacities, and laboratory and training infrastructures of institutions will be strengthened or upgraded, and will permit them to serve as benchmarks of excellence.

10. In addition strategic partnerships will be fostered between these selected institutions and partner institutions in the same or different regions, by arranging short-term exchange visits of staff to receive and deliver practical hands-on training.

B.5. National Cancer Therapy Planning

11. The programme will assist countries in the preparation of national cancer control strategies in two steps: country case studies, and assisting in the formulation of national cancer therapy strengthening action plans.

12. The national plans of action for cancer therapy will be prepared through a multi-stakeholder consultative process, including donors and financing institutions that might be interested in assisting governments.

13. PACT will also provide short practical training in specific clinical and managerial issues surrounding cancer therapy in the context of national cancer control strategies.

B.6. National Cancer Therapy Capacity Building and Support

14. PACT seeks to build capacity and provide continuing support, as needs arise, in order to:

- strengthen scientific, technical, and management skills in radiotherapy applications and implementation and cancer management;
- upgrade existing radiotherapy facilities to meet all relevant standards and guidelines;
- install new treatment facilities;
- train radiotherapy professionals, including continuing professional development;
- promote quality assurance/quality control in radiotherapy treatment; and
- ensure accuracy of radiation doses, and audit radiation doses, in vitro and in vivo.

15. The above activities will include cancer therapy fellowships; development of training and information resource material; and internet-based information platforms.

B.7. Programme Coordination and Management

16. PACT would be operated internally by an Agency task force. If needed, a Steering Committee, which would include, as appropriate, representatives from other organizations, and a panel of external advisors would be established.

Programme of Action for Cancer Therapy

Programme Proposal

Work in Progress

A. Objectives

1. The overall objective of the Programme of Action for Cancer Therapy (PACT) is to provide appropriate cancer therapy to patients in developing countries. It will operate as a partnership consisting of organizations from the public and private sectors, based on mutually agreed understandings, that will raise, manage, and administer funds. PACT plans to achieve sustainable results in the context of (1) national cancer control programmes; and (2) the appropriate technical, legal, and regulatory infrastructures for radiation protection, safety and security at both national and hospital levels.

2. A key Programme goal is to build a coalition of interested parties who are committed to addressing the challenge of cancer in developing countries in all of its aspects, with a particular emphasis on cancer therapy. The World Health Organization (WHO) and the International Union Against Cancer (UICC), founding members of the Alliance for Global Cancer Control (AGCC), are natural, if not indispensable, partners in this initiative. Consultations with WHO, Pan American Heath Organization (PAHO), the International Agency for Reseach on Cancer (IARC), and UICC have been initiated and will continue. Consultations will be initiated, as well, with other members of AGCC.

3. Within this context and in order to mobilize resources from charitable trusts, foundations, and others in the public and private sectors for the benefit of cancer patients, the immediate objectives of PACT are Public Awareness and Resource Mobilization and Technical Analysis and Support.

4. In the former, efforts are envisioned to raise awareness of the cancer crisis; focus attention on the fundamental role of radiotherapy as a mature, peaceful nuclear technology that can help alleviate the crisis; broaden substantive knowledge and appreciation of the links between radiotherapy for cancer treatment, sustainable economic development and the goal of ensuring delivery of health services to all; communicate the substance and objectives of project proposals in response to concrete technical needs, along with a cost-effectiveness analysis of specific remedial actions; advocate for increased action, using multiple platforms; cultivate and establish long-term partnerships with “champions” in government, NGOs, foundations, the private sector and the media in support of cancer therapy in developing countries; mobilize resources—financial, human, institutional and in-kind—through broad-based support; and encourage collaboration, both vertically and horizontally, with all sectors and strata of society.

5. In the latter, plans include development of a framework for the evaluation of the socio-economic impact of radiation therapy for cancer in differing contexts; further development of econometric models for assessing the costs of radiotherapy and making equipment choices; elaboration of templates for regional and satellite centres of excellence for radiation therapy; and development of proposals for specific countries/sub-regions/or regions based on detailed analyses of country specific cancer burdens. These elements will serve as critical inputs for the elaboration of initial proposals for specific countries/sub-regions/or regions, which need to be based on detailed analyses of country

specific cancer burdens and reflect appropriate socio-economic and demographic factors.[1] These factors include overall health care expenditures, stability, existing resources, medical expertise, geography and population distribution, epidemiology of cancer, public awareness and demand, political awareness and will.[2]

6. It is anticipated that elements of PACT will be pursued in parallel with each other. It is recognized that discrete elements are already being pursued by the WHO and by others, and it is important to coordinate these activities and PACT activities in order to maximize results and avoid duplication. In addition, the Agency will continue to support improvements in cancer therapy in its Member States through its existing programmes, including activities supported from both its regular budget and through its Technical Cooperation Programme.

7. Recognizing the need for parallelism, the near-term objectives of PACT are:

- **Policy-level Capacity Building** – To raise awareness and broaden understanding among policy and decision-makers of the importance of national cancer control strategies and the fundamental role of radiation therapy for treatment of cancer patients and its implications for developing national policies and strategies.
- **Centres of Excellence for Radiotherapy** – To design, plan, and implement regional and sub-regional institutions with the technical capacity to serve as collaborative training and reference centres for radiation therapy procedures, practices, methods, and applications as well as the technical, legal, and regulatory arrangements appropriate for radiation therapy.
- **National Cancer Therapy Planning –** To prepare National Cancer Control Strategies based on Country Case Studies that will review country specific and regional circumstances, including mechanisms for regional cooperation; and develop National Cancer Therapy_Strengthening Action Plans, which will form the basis for subsequent action.

8. The long-term objective of PACT is:

- **Sustainable National Capacity for Cancer Therapy** – The intent of these efforts is to ensure that countries have put in place, in a sustainable manner, appropriate cancer therapy programmes. This translates into having all of the necessary elements in place: operational radiotherapy and treatment facilities; all necessary scientific, technical, and management skills in radiotherapy applications and implementation; trained radiotherapy professionals; and effective quality assurance/quality control programmes.

B. Programme Elements

B.1. Public Awareness and Resource Mobilization

9. Public awareness focused on communications and resource mobilization will revolve around the following five components:

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[1] To use multiple databases (e.g. Globocan, DIRAC, WHO/EIP, IARC) to develop a current, robust and reliable evidence base to guide future project decision-making.

[2] From *A Global Strategy for Radiotherapy: A WHO Consultation,* Clinical Oncology (1999) 11:368-370

a. Information: Print and website products, such as a multilingual brochure, booklet, project proposal portfolio, information/media kit, website upgrade and/or newsletter, feature articles, case studies;

b. Advocacy: Active collaboration with other health-oriented groups and involvement in high-profile activities;

c. Media outreach: Public service announcements, cultivation of a prime science-and-health media contact list, media and advocacy seminars and journalists' field trips;

d. Resource mobilization: A carefully crafted campaign, possibly including a pledging conference, to attract partner-donor-investors committed to alleviating the cancer burden in developing countries.

e. Networking: Active participation in, and contribution to, its Communications and Advocacy Working Group of the Alliance for Global Cancer Control and other entities.

B.2. Socio-economic and Technical Analysis and Support

10. In order to apply resources effectively, a good understanding is needed of the costs and benefits of initiating, strengthening, or expanding radiotherapy treatment in differing circumstances. Local and/or regional circumstances should be taken into account. To this end, Programme will include activities to:

a. develop a framework for the evaluation of the socio-economic impact of radiation therapy for cancer in differing contexts;

b. develop further econometric models for assessing the costs of radiotherapy and for making equipment choices;

c. elaborate templates for regional and satellite centres of excellence for radiation therapy and apply them to specific countries and/or regions; and

d. develop proposals for specific countries or regions based on these factors and on detailed analyses of country specific cancer burdens.

B.3. Policy-level Capacity Building

11. Capacity building training for policy and decision makers will be organized through sub-regional workshops. Support materials will include Agency technical documents and standards, IARC cancer statistics (national and regional), WHO guides for managers, and evidence-based guidelines for cancer control .[3] The purpose of the training will be to: (a) broaden understanding of the technical and institutional aspects, as well as the relevant international agreements and regulatory frameworks for radiotherapy, and (b) prepare participants to initiate, promote and better communicate national policies, legislation and regulations for research, development, implementation, and improvement of radiotherapy.

12. The target group of this component consists of senior policy analysts, as well as other technical specialists, in the relevant ministries, academic and private institutions, who are, or will be,

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[3] Including, for example, Agency-TECDOC-1040, *Design and implementation of a radiotherapy programme: Clinical, medical physics, radiation protection and safety aspects*; Agency-TECDOC-1224, *The Role of Radiotherapy in the Management of Cancer Patients infected by Human Immunodeficiency Virus (HIV)*; Safety Series No. 115/CD, *International Basic Safety Standards for Protection Against Ionizing Radiation and for the Safety of Radiation Sources*; Safety Standard Series RS-G-1.5; *Radiological Protection for Medical Exposure to Ionizing Radiation Safety Guide.* WHO: *National Cancer Control Programs: Policies and Managerial Guidelines.*

responsible for advising their governments on policies on cancer management and implementation of radiotherapy. In order to build a competent advisory critical mass in each country, governments will be invited to nominate for these workshops 7-8 representatives covering relevant aspects of the issue. Participants would include relevant policy specialists in all aspects of cancer control, reproductive health, essential health technologies, non-communicable diseases, etc.

13. The training workshops will be as much as possible organized in collaboration with the likely or potential (sub-)regional centres of excellence for radiotherapy. By doing so, these workshops will contribute to the fostering of strategic partnerships and be instrumental in developing the host as a centre of excellence for radiotherapy. (See B.4. Centres of Excellence for Radiotherapy).

14. As an essential support element for this training, Internet and CD-based interactive distance learning tools will be developed. (See B.5 National Cancer Therapy Capacity Building and Support.)

B.4. Centres of Excellence for Radiotherapy

15. The Programme will identify up to 25 institutions to function as regional or sub-regional collaborative radiotherapy centres. The scientific and technical capacities, laboratory and training infrastructures of these institutions will be strengthened or upgraded and permit them to serve as benchmarks of excellence. This will provide a cost effective and efficient structure to generate, adapt and transfer radiotherapy applications to serve multiple institutions in the host country and/or clusters of neighbouring countries and strengthen their partnerships. Such centres, with adequate infrastructure and technical capability will also serve as training centres and thus further strengthen intra-regional collaboration.

16. In addition strategic partnerships will be fostered between these selected institutions and partner institutions in the same or different regions, by arranging short-term exchange visits of staff to receive and deliver practical hands-on training. These exchange visits will be both North-South and South-South in nature. In addition, training programmes will be established to meet continuing needs for new staff and for professional development.

B.5. National Cancer Therapy Planning

17. The programme will – upon request - assist up to 25 countries in the preparation of National Cancer Control Strategies. This will be done in two steps: (a) Country Case Studies, assessing the burden of cancer and the status of programmes, policies, regulatory frameworks and standards relating to radiotherapy applications for each selected country; and (b) assisting in the formulation of National Cancer Therapy Strengthening Action Plans.

a. Country Case Studies

The country case studies will review and analyse: (i) the current status of national cancer control strategies, including cancer statistics and surveillance; (ii) status of radiotherapy services and other elements of cancer control strategies; (iii) existing infrastructures, human resources and capacities; (iv) relevant legislation and regulations; (v) relevant socio-economic and economic factors; and (vi) mechanisms for regional cooperation.

These country case studies will also identify gaps in national policies, laws, regulations and standards in radiotherapy. Each country case study will require international consultants, national consultants and require resources for reporting.

b. National Cancer Therapy Strengthening Action Plans

Based on the country case studies, national goals and policies, and through a process of multi-stakeholder consultations, National Plans of Action for Cancer Therapy will be formulated. These will cover:

(i) review and, where appropriate, upgrading legal and/or institutional arrangements for radiation protection, safety and security,

(ii) the institutional set up and information systems needed for cancer statistics and surveillance, including monitoring of performance at the hospital level;

(iii) building and strengthening human resources, through group training events, fellowships, scientific visits, expert missions, telelearning, etc;

(iv) upgrading of physical infrastructures (hospital tertiary services such as surgical pathology, surgical oncology, oncological imaging, teletherapy, brachytherapy, immobilization, imaging for target-volume determination, treatment planning computer systems, record and verification systems, other information technology, telelinks, palliative care services, etc.);

(v) design and implementation of quality control and quality assurance procedures; and

(vi) ensuring radiation protection for occupational, medical, and public exposure.

The National Plans of Action for Cancer Therapy will be prepared through a multi-stakeholder consultative process, including donors and financing institutions that might be interested in assisting governments.

c. National Cancer Therapy Communication Workshops

The Programme would provide short practical training in specific clinical and managerial issues surrounding cancer therapy in the context of national cancer control strategies. The target participants would be, as appropriate, relevant staff in regulatory agencies, public and private sector institutions, and civil society representatives responsible for, or involved in, public dialogue for the design and implementation of national cancer control strategies; systems and regulations relating to cancer prevention, early diagnosis, treatment and palliative care, and issues such as radiation protection. This would be done through national workshops.

B.6. National Cancer Therapy Capacity Building and Support

18. The Programme seeks to build capacity and provide continuing support, as needs arise, in order to:

a. strengthen scientific, technical, and management skills in radiotherapy applications and implementation and cancer management;

b. upgrade existing radiotherapy facilities to meet all relevant standards and guidelines

c. install new treatment facilities;

d. train radiotherapy professionals, including continuing professional development;

e. promote quality assurance/quality control in radiotherapy treatment; and

f. ensure accuracy of radiation doses, and audit radiation doses, in-vitro and in-vivo.

19. Effective cancer therapy requires continuing attention to the need to apply best practices. Improvements and advances in cancer therapy should be incorporated into practice. Training needs for new staff have to be met, and staff need continuing professional development.

20. The means to implement the above activities will include:

a. Cancer therapy fellowships

In order to strengthen national cancer therapy implementation, and in line with identified needs in the country case studies and national capacity Action Plans, the Programme will provide fellowships for scientists from each of the 25 countries. These scientists will be trained in fields of particular relevance in their specific countries such as cancer statistics, clinical oncology, surgical pathology, surgical oncology, oncological imaging, teletherapy, brachytherapy, immobilization, quality assurance, computerized treatment planning, palliative care, etc. The active commitment of donors will be sought to widen the scope, range and number of fellowships that can be provided to deserving candidates. Particular efforts will be made to ensure that opportunities available for training at the (sub-) regional collaborative training and that these collaborative centres are fully utilized.

b. Development of training and information resource material

Internet and CD-based interactive distance learning tools will be developed to: (i) expand outreach of the policy-level training programme to countries, institutions and policy advisers unable to participate directly in the workshops; (ii) provide post-training back-up support that can be used by policy advisers that do participate in the training workshops; and (iii) inform a wider interested audience of different players, coalitions and constituencies.

In addition, a comprehensive set of training and decision making support tools will be developed dealing *inter alia* with issues such as making choices between different kinds of equipment, between extending the hours of operation versus acquiring additional equipment, the importance of an adequate maintenance and consumables budget, etc. These would be aimed at government officials from regulatory agencies, health care institutions, representatives of international organizations such as the WHO, NGOs, and other stakeholders. The tool kits will be suitably adapted to reflect regional and sub-regional requirements and translated into the relevant official languages. Toolkits would be developed on:

(i) cancer therapy;

(ii) quality assurance/quality control (clinical and physical);

(iii) radiation protection, safety and security; and

(iv) infrastructure requirements for human resources development, including education, training and continuing professional development of health care workers in oncology

c. Internet-based information platform

The Programme would finance the further development of an internet-based information platform within Agency that would provide member countries with up-to-date information on the status of cancer therapy applications, relevant infrastructure requirements, guides to essential practice, evidence-based guidelines, etc. Country ownership of the information in the database will be ensured through a selective accession system to enable national focal points to update relevant national data. This information platform will help facilitate a more coherent approach to assisting countries in acquiring up-to-date information on the wide range of radiotherapy applications.

B.7. Programme Coordination and Management

21. To ensure a fully integrated and coordinated approach, the Programme would be co-ordinated and its progress monitored internally by an Agency Task Force that includes, inter alia, representatives

of the Agency's Departments of Nuclear Safety and Security, Nuclear Sciences and Applications, and Technical Cooperation. If needed, a Steering Committee, which includes, as appropriate, representatives from other organizations, and a panel of external advisors would be established. Feedback provided by participants, stakeholders and donors through regional workshops, questionnaires and reports will form the basis of an evaluation process and of any follow-on phase to the Programme.

Programme of Action for Cancer Therapy

Funding Proposal for Start-up Funds

The immediate objectives of the Programme of Action for Cancer Therapy (PACT) consist of two sets of activities to be pursued in parallel. The first is **Technical Analysis and Support.** The second is **Public Awareness and Resource Mobilization.**

1. Technical Analysis and Support . This set of activities is needed to:

- develop a framework for the evaluation of the socio-economic impact of radiation therapy for cancer in differing contexts;
- improve econometric models for assessing the costs of radiotherapy;
- elaborate templates for regional and satellite centres of excellence for radiation therapy adapted to developing country needs; and
- develop a proposal for the creation of a "centre of excellence for radiotherapy."

These elements will serve as critical inputs for the elaboration of initial proposals for specific countries/sub-regions/or regions. These need to be based on detailed analyses of country specific cancer burdens and reflect appropriate socio-economic and demographic factors.[1] These factors include overall health care expenditures, stability, existing resources, medical expertise, geography and population distribution, epidemiology of cancer, public awareness and demand, political awareness and will.[2] The Agency's DIRAC data base needs to be improved and brought up to date as it serves as a key input for determining existing capabilities and countries' cancer therapy needs. Similar assessments of status and needs are also required regarding appropriate arrangements for radiation protection, safety, and security at both the national and local levels. A first priority is to develop a proposal for the creation of a "centre of excellence for radiotherapy" that could serve as an exemplar of best practice, as adapted to the needs of developing countries, and that would serve as a source of continuing support for subsequent activities.

In order to develop a framework for evaluating the benefits and costs of introducing, expanding, or improving radiotherapy centres in developing countries, a terms of reference has been agreed.

Enhancing collaboration/coordination with WHO and the Alliance for Global Cancer Control is necessary, and it is considered important to initiate, at an early time, the creation of a framework for obtaining advice from independent experts on a continuing basis.

The technical analysis and support activities above will be pursued concurrently. It is estimated that two professional staff to be funded from extrabudgetary resources are needed for this effort.

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[1] To use multiple databases (e.g. Globocan, DIRAC, WHO/EIP, IARC) to develop a current, robust and reliable evidence base to guide future project decision-making.

[2] From A Global Strategy for Radiotherapy: A WHO Consultation, Clinical Oncology (1999) 11:368-370

2. Public awareness and resource mobilization. The goal of these activities is to:

- raise awareness of the cancer crisis;
- focus attention on the fundamental role of radiotherapy as a mature, peaceful nuclear technology that can help to alleviate the crisis;
- broaden substantive knowledge and appreciation of the links between radiotherapy for cancer treatment, sustainable economic development, and the goal of ensuring delivery of health services to all;
- communicate the substance and objectives of project proposals in response to concrete technical needs, along with a cost-effectiveness analysis of specific remedial actions;
- advocate for increased action, using multiple platforms;
- cultivate long-term partnerships with "champions" in government, NGOs, foundations, the private sector and the media in support of cancer therapy in developing countries; and to mobilize resources—financial, human, institutional and in-kind—through broad-based support, and
- encourage collaboration, both vertically and horizontally, with all sectors and strata of society.

A key step is the preparation of "case statements," which will be used as the basis for contacts with others. Activities could include launching a World Cancer Day, convening a work shop at the October meeting in Vienna of the Alliance for Global Cancer Control (AGCC), and publication of a brochure.

It is estimated that two professional staff to be funded from extrabudgetary resources are needed for this effort.