IAEA

Programme of Action for Cancer Therapy

PACT

Challenging Cancer

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Cancer kills more people globally than tuberculosis, AIDS and malaria combined. The number of victims is accelerating quickly. Unless we take urgent action, by 2030 over thirteen million people will die from cancer every year. Most of these deaths will occur in low and middle income (LMI) or developing countries, where diagnosis and treatment often come too late.

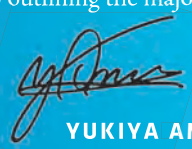
This is especially tragic because cancer need not be a death sentence; there are proven ways to prevent, treat and even cure many forms of cancer. The IAEA has been working for more than 40 years to bring radiotherapy and nuclear medicine programmes to over 100 LMI countries. The need for radiotherapy is very high in developing countries. Sadly, less than 40 per cent of patients in the developing world who need this life-saving treatment have access to it today.

I made the fight against cancer in developing countries a key priority when I became IAEA Director General in 2009. Through the Programme of Action for Cancer Therapy (PACT), the IAEA has combined its expertise in radiation medicine with the vast experience of the World Health Organization (WHO) and other international partners to help countries deliver comprehensive cancer control to the people most in need.

Much of our work involves building countries' radiation medicine capacity. This is not just about technology. Well trained and motivated staff are also vital. That is why the PACT programme focuses on creating training networks and new public-private partnerships to make radiotherapy investments more accessible and affordable. We are collaborating with the World Health Organization WHO in strengthening national health care systems and primary care in order to improve early cancer detection and ensure timely diagnosis and treatment to improve cancer survival.

The PACT experience since its establishment in 2004, in the past six years has demonstrated that the cancer epidemic can only be addressed through a concerted global campaign comparable to the successful mobilization against HIV/AIDS. Cancer needs to be fully acknowledged as a critical element of the global health and development agendas. World leaders need to be aware of the scale of the cancer crisis facing developing countries. We need systematic action at the highest level to end the deadly disparity in survival rates between rich and poor nations.

Through PACT, the IAEA has called on its Member States and actors across the international community to join forces to challenge the cancer crisis in the developing world. PACT has shown how beneficial effective partnerships can be in closing the gap in cancer control between rich and poor countries. Through greater cooperation and stronger political will, we can work together to save millions of lives and reduce much needless suffering caused by the scourge of cancer in the developing world. This report highlights the IAEA's achievements and important lessons learned, while also outlining the major future challenges.



YUKIYA AMANO

DIRECTOR GENERAL

A Cancer Crisis in Developing Countries

In September 2011, world leaders and international health experts convened in an extraordinary meeting of the U.N. General Assembly to confront what one Harvard School of Public Health report called "the world's main killer." It was only the second time in history that the global body met on a major health issue – the first time in 2001 focused on AIDS. But the 2011 Summit focused on– "non-communicable diseases" (NCDs) – which economists forecast will cost the world more than US $30 trillion in next 20 years and will be responsible for "pushing millions of people below the poverty line."

The four principal diseases among the so-called "NCDs" are much more familiar to average people by their non-medical terminology, i.e., heart disease, cancer, chronic lung disease and diabetes. These ailments cause more deaths worldwide than all other causes put together. Public health experts underlined the profound health impact of NCDs around the globe: almost two-thirds of all deaths worldwide are attributable to NCDs; they kill roughly 36 million people each year; and 80 per cent of these deaths occur in LMI countries. In terms of one single NCD – cancer – experts estimated that the cost of new cancer cases was US $290 billion globally in 2010 alone, affecting some 13.3 million people. Cancer was reported to be the second greatest cause of death worldwide, behind heart disease -- killing some 7.6 million people. By the year 2030, these total costs were expected to rise above US $458 billion annually.

The authors of the Harvard study issued a stern warning:

"The health community and the business community are both concerned about the burden of NCDs and its likely growth in the coming decades. By contract, this issue is just barely on the radar screen of economic policy-makers, who most often do not see that NCDs pose a threat to development, economic growth and poverty alleviation."

The warning from Harvard was echoed in the Declaration issued by the UN General Assembly, which proclaimed the spread of NCDs as a socio-economic and development challenge of "epidemic proportions." Dr Margaret Chan, Director General of the World Health Organization, called the NCDs "a slow-motion disaster." She added: "These are the diseases that break the bank."

Previously considered more pervasive in affluent countries, cancer now places its heaviest burden on poor and disadvantaged populations. More than two-thirds of cancer incidence and deaths now occur in LMI countries, according to WHO. In some poor countries, less than 15 per cent of women suffering from breast and cervical cancer survive longer than five years following their diagnosis.

According to estimates from the International Agency for Research on Cancer (IARC), there were 7.6 million total cancer deaths in 2008 – or about 21 000 deaths per day – and some 4.8 million of these were in developing countries. Often considered as a 'rich world' disease, cancer is quickly becoming a public health catastrophe for countries throughout the developing world. If urgent action is not taken, 84 million people will die from cancer in the next ten years, most of these in LMI countries.

During the last 30 years, life expectancy in LMI countries has increased from 50 to 65 years. This is due in large part to improved infant and childhood survival as well as significant decreases in infectious and communicable diseases. Increasing life expectancy in developing regions equates with sharply higher incidences of cancer, which rise dramatically with age and the unhealthy lifestyles of affluent societies.

But the cancer crisis in developing countries is already severe and accelerating:

- **Every minute, fourteen people die of cancer.**
- **Nearly 12.7 million new cancer cases and 7.6 million cancer deaths occurred worldwide in 2008. Of these, more than half of the new cases, and nearly two thirds of deaths, were in developing countries.**
- **As one example, in Colombia today, cancer accounts for more deaths than all communicable diseases combined. It is estimated that in the last year 36 500 Colombians have lost their lives to cancer, while more than 62 600 new patients have been diagnosed with the disease.**
- **In developing countries, fully 70 per cent of cancer cases are diagnosed too late to be cured.**

Ironically, more than a third of all cancers worldwide can be prevented, and a third of all cancers are curable if detected and treated early. But in many developing countries with over-burdened health systems, cancer is a low priority in terms of allocated resources. There are few early detection or prevention programmes.

Clearly, tens of billions of dollars will be needed in the next decade if the developing world is to address this crisis. But the donor community and most bilateral development agencies do not yet consider cancer control a high priority. Without a radical change in thinking, LMI countries will see more and more people dying prematurely and needlessly from cancer, with devastating and far-reaching social, economic and political consequences.

»The burden of cancer in low-resource environments is growing and threatens to exact a heavy toll in morbidity, mortality and economic cost in these countries in the next 20 years. The expected public health dimensions of the cancer pandemic in low-resource countries demand a widespread effective international response. The information at hand could prevent up to one third of new cancers and increase survival for another one third of cancers detected at an early stage. To achieve this, knowledge must be translated into action.«

World Cancer Report 2008, IARC, p.56.

Worldwide Cancer Burden
World Cancer Report 2008

	2008		2030[1]		2030[2]	
REGION	CASES	DEATHS	CASES	DEATHS	CASES	DEATHS
World	12.4	7.6	20.0	12.9	26.4	17.0
Africa (AFRO)	0.7	0.5	1.2	0.9	1.6	1.3
Europe (ERO)	3.4	1.8	4.1	2.6	5.5	3.4
East Mediterranean (EMRO)	0.5	0.3	0.9	0.6	1.2	0.9
Pan-America (PAHO)	2.6	1.3	4.8	2.3	6.4	3.1
South-East Asia (SEARO)	1.6	1.1	2.8	1.9	3.7	2.6
Western Pacific (WPRO)	3.7	2.6	6.1	4.4	8.1	5.9

Estimated and Projected Numbers (millions) of Cancer Cases and Death, all cancers, both sexes, by development status or WHO region." WCR, p. 42

[1] NO CHANGE IN CURRENT STATUS
[2] WITH 1% ANNUAL INCREASE RATES

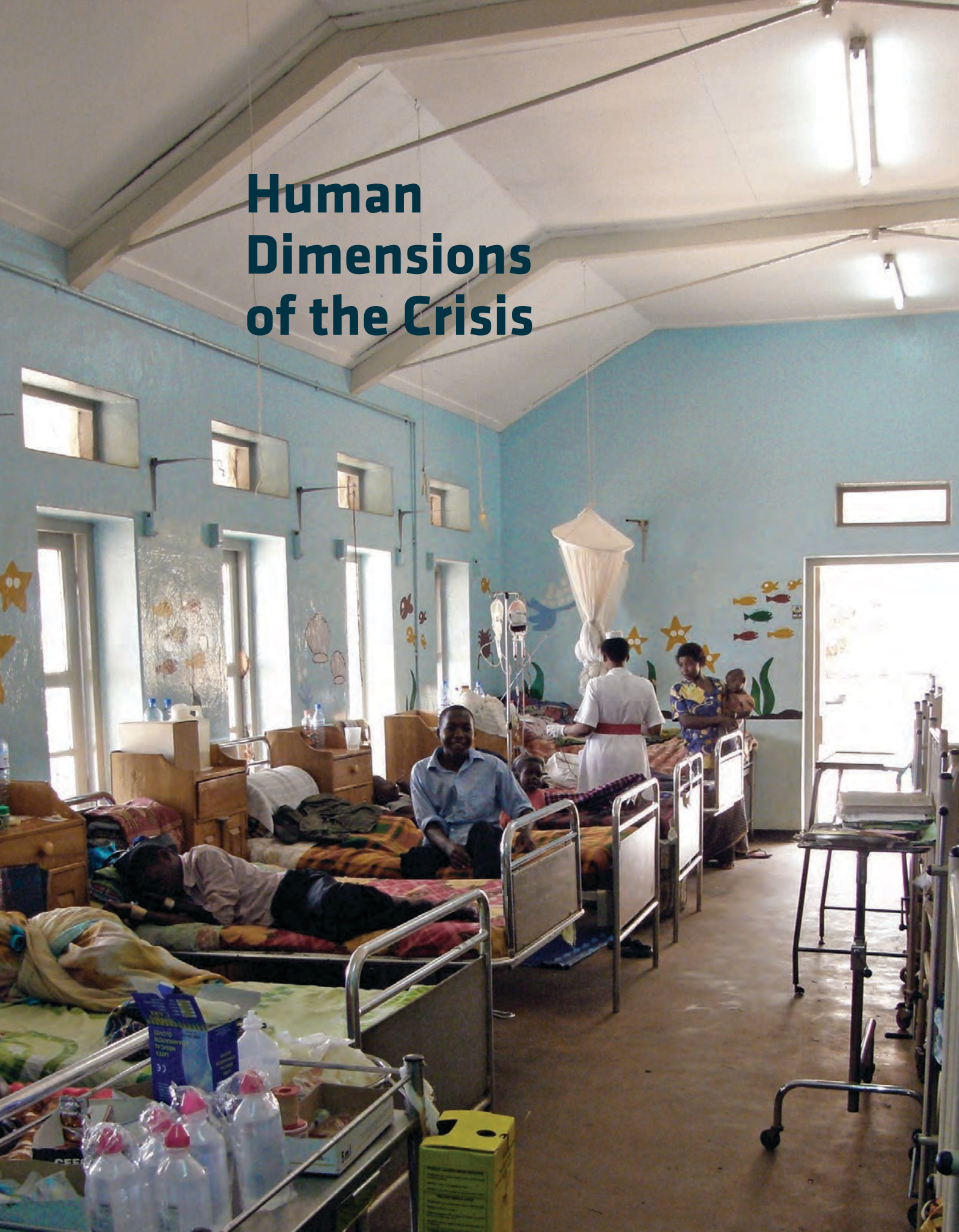
The Burden of Cancer
INDIA

Doctor Sarbani Ghosh Laskar is one of 14 radiation oncologists working at the Tata Memorial Hospital in Mumbai, India. The hospital registers about 25 000 new cases of cancer each year, of which 75% are in advanced stages.

"We have a huge load of patients. We treat hundreds of cases every day with our radiotherapy facilities. It would seem that we'd go mad with the numbers but it's not frustrating because we do cure patients. Of the patients we see each year, the vast majority are in advanced stages of disease. Some 30 per cent are suitable for treatment, the remaining for palliation. We treat about 60% of our patients for free."

"India is a very big country and you'll find a lot of disparity in the resources you have across the country. When cancer strikes women, it hits the family hard. The woman is not only the care giver in the family; she also is the breadwinner a lot of the time.

Human Dimensions of the Crisis



Patient Profile:
UGANDA

The following accounts of cancer in Uganda were obtained from interviews with two cancer patients who were being treated at the Mulago Hospital in Kampala, Uganda's only cancer treatment facility.

Mrs. Bonabana Winfred
CERVICAL CANCER PATIENT

Mrs. Bonabana Winfred is a 43-year-old mother with four children. The youngest is a 2-year old boy and the oldest a girl aged 24. Mrs. Winfred, who lives in Western Uganda, first visited Kagonyo Hospital due to bleeding and abdominal pain, and was referred to a regional hospital in Mbarara where she was diagnosed with stage III cervical cancer.

Upon receiving her results, Mrs. Winfred first went to the hospice in Mbarara for symptom control. But to treat her cervical cancer, Mrs. Winfred needed to travel four hours by bus to Mulago Hospital, a costly journey. Fortunately for Mrs. Winfred, a Canadian NGO in Uganda called "Road Care" financed her transport to the hospital, an expense that she would have otherwise been unable to pay.

It took Mrs. Winfred four months to complete her radiotherapy treatment and she stayed in a hostel for the duration. During this time, her husband and sister were able to look after the children, and they were even able to visit her in the hospital. Having just completed treatment, Mrs. Winfred has been preparing to return home. Road Care will again finance her journey. When she returns to her family home, she will also go back into the hospice.

To improve the cancer situation in Uganda, Mrs. Winfred believes it would be beneficial to have more facilities for the provision of care, more professionals to provide treatment and easier access to medicine, especially for those in the countryside. It is also important, she says, to have more beds, mattresses and mosquito nets for patients.

After her treatment at Mulago, and seeing the hard work of the medical staff there, Mrs. Winfred believes that pay for professionals should be higher. She has also become an advocate for the early detection of cancer, generating awareness in her local community and advising women to go for cervical screening. Once the cancer has become painful, Mrs. Winfred learned, it has already reached advanced stages.

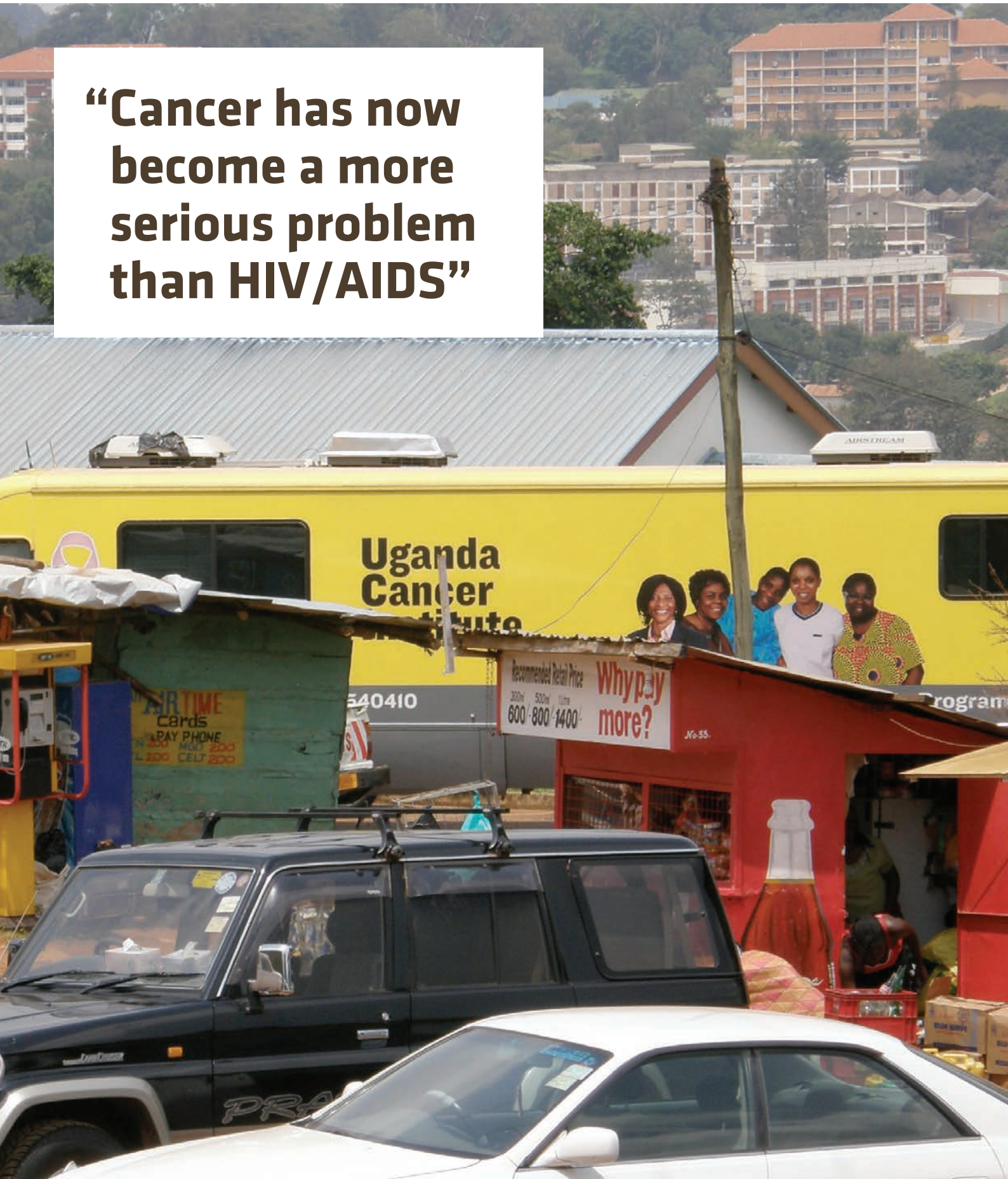
Mr. Obonyo Thomson
PROSTATE CANCER PATIENT

"I was attacked by cancer on 8 March 2010 in the middle of the night," explains Mr Obonyo Thomson, a 64-year-old retired teacher living in Oyam, Uganda. Mr. Thomson, a father of eight, was diagnosed with prostate cancer in 2010 and soon after began a course of radiation treatment in Mulago Hospital. It takes Mr. Thomson eleven hours by bus to get to Mulago for treatment, and the journey is expensive.

As Mulago is the only cancer hospital in the country, every patient in Uganda must go there for treatment. The hospital is typically overcrowded and just finding a place to sit is difficult. There is only one radiotherapy machine that treats patients, operating in four shifts that stretch until midnight. A patient's waiting time depends on the numbers waiting to be treated. When Mr. Thomson goes to Mulago for radiotherapy he sometimes stays for up to five months.

Hospital patients receive one meal a day and can purchase additional food from the canteen. Despite the difficulties of overcrowding and limited resources, Mr. Thomson feels that those working in the hospital are truly providing the best care possible.

In February 2011, Mr. Thomson's symptoms surfaced a second time, with an acute attack that prevented him from sitting, and made him weak. After seeing many doctors, he finally saw a surgeon who informed him that he required an operation. But, despite the surgery, his pain would not subside. In late April, Mr. Thomson returned to Mulago to receive nine rounds of radiotherapy as he described it. He was told to come back to the hospital if his pain recurred. But thanks to the morphine he received through Hospice Africa Uganda, his pain has been relieved and he is able to sit comfortably. Through the many hardships endured over the course of his bout with cancer, and the difficulties that have come with cancer treatment, Mr. Thomson, said that, in his opinion, cancer has now become a more serious problem for Uganda than HIV/AIDS.



"Cancer has now become a more serious problem than HIV/AIDS"

International Responses to the Crisis

The Roles of WHO, the IAEA, and PACT

The World Health Organization and Cancer Control

WHO is the key international agency within the United Nations System responsible for health. Established over 60 years ago, its objective is the attainment by all peoples of the highest possible level of health, based on the "Health for All" concept.

WHO provides the leadership and evidence base for international action on NCDs, including cancer. This includes surveillance, prevention and control. The principal directions are mandated by WHO resolutions and outlined in a Medium-Term Strategic Plan (2008–2013) and lessons learned from WHO's work with Member States. WHO functions with regard to cancer prevention and control are to:

- **Provide leadership and guidance to Member States in setting policies, norms, and standards;**
- **Target stakeholders with the best available evidence for prevention and treatment to provide authoritative impetus to plan and implement national responses.**
- **Provide support to Member States to effectively implement cancer prevention and control programmes;**
- **Promote development of a research agenda and information-sharing to guide appropriate strategies and innovative interventions;**
- **Support Member States in scaling-up implementation of integrated disease surveillance; and**
- **Foster collaboration and partnerships for an integrated approach to increase efficiency and effectiveness in all interventions.**

Given cancer's mounting human and economic costs, WHO has intensified its efforts to effectively respond to the cancer pandemic. The World Health Assembly has passed five key resolutions in an effort to put knowledge into action. The most significant of these was the *Cancer Prevention and Control Strategy Resolution* adopted by the 58th Assembly in 2005. The resolution included several key objectives, in particular the development of the WHO cancer control strategy at the global, regional and national levels, which aims at improving knowledge to implement effective and efficient programmes for cancer control, leading to a reduction of the cancer burden and improving quality of life for cancer patients and their families.

The IAEA and Radiation Medicine

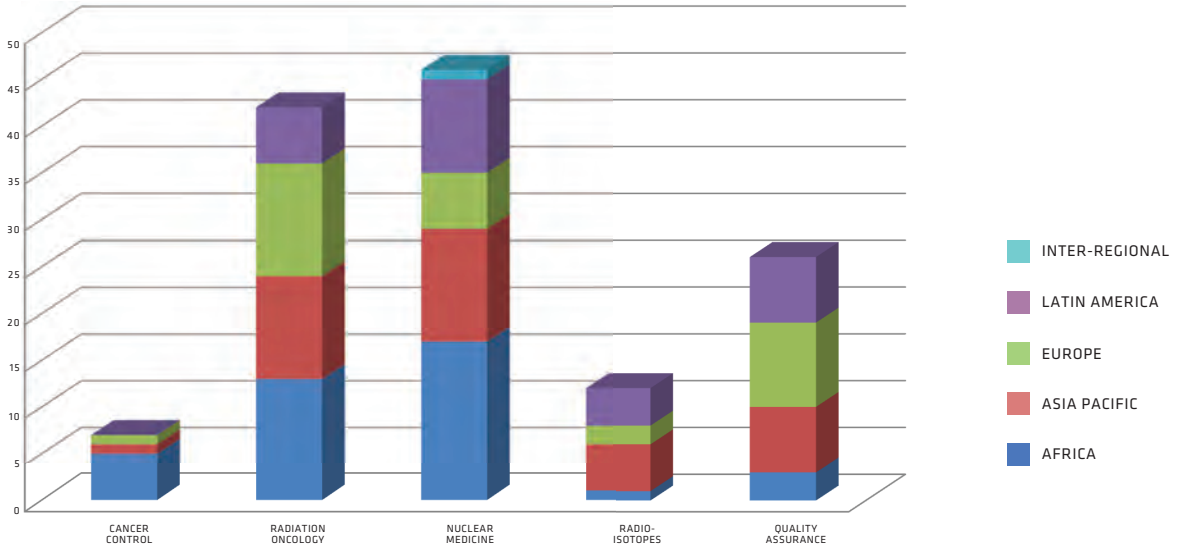
Under Article II of its statute, the IAEA's mandate is to seek *"to accelerate and enlarge the contribution of atomic energy to peace, health and prosperity throughout the world."* Anchored by its strong technical expertise, the IAEA has acquired unrivalled experience in the transfer of radiotherapy, diagnostic imaging and nuclear medicine techniques to developing countries over the past 40 years. Providing assistance in all relevant aspects, including planning, training, econometric analysis, implementation, radiation protection, safety and security, the IAEA supports the safe and effective delivery and sustained use of radiotherapy and nuclear medicine services.

Through such essential programmatic and laboratory contributions, the IAEA's technical cooperation programme has delivered over US $260 million worth of radiotherapy and nuclear medicine technology since 1980 to over 100 Member States. In recent years, the funding of activities in this area has reached nearly US $15 million annually from the Technical Cooperation (TC) programme alone. Total annual funding for NCD related technical cooperation projects reached nearly US $32 million in 2012–1013 (See Table X). Supplemented by cancer-related development activities carried out under the regular programmes of the Department of Nuclear Sciences and Applications and the Department of Nuclear Safety and Security , this technical assistance has enabled many countries to establish safe and effective diagnostic and radiotherapy capabilities to provide higher quality treatment to at least a portion of their cancer patients.

»The IAEA technical cooperation programme has been helping to bring radiotherapy and training to our Member States for over fifty years. Joint projects with PACT and our Member States ensure a 'joined-up' approach to the fight against cancer, bringing together all the elements necessary for effective national cancer control plans. This covers assessment of the cancer burden at the national level, strategies, tools and training to address it, and outreach to raise public health awareness.«

IAEA Deputy Director General, Head of the Department of Technical Cooperation, Kwaku Aning

Approved new NDC related TC Projects
(By Field and Region, IAEA, 2012-2013)



With a cancer epidemic looming in developing countries, existing infrastructure is far from adequate to respond to the growing demand. At the same time, the IAEA recognizes that the public health benefit from its cancer-related activities can only be optimized if it is planned and coordinated within the context of national cancer control strategies. Investments in cancer control need to be made by national governmental and non-governmental bodies and other international organizations to enhance capacity across the continuum of cancer control, including cancer information, prevention, early detection, diagnosis, treatment and palliative care, as well as in the areas of cancer control planning and evaluation.

However, there remain more than 35 countries worldwide with no capacity to provide radiotherapy. Still more countries have limited services in which the life-saving impact of radiotherapy is also not realized due to a significant shortage of radiotherapy facilities.

Other challenges, such as infrastructure gaps in education and training of professionals must be addressed, and community-based civil society action to combat cancer must also be strengthened. In affluent countries, comprehensive national cancer control programmes (NCCPs) — including prevention and early detection, coupled with a judicious combination of treatment such as surgery, radiotherapy and chemotherapy — now result in increased health awareness and prevention, and the *cure of over 45% of all cancers.* When cure is no longer possible, palliative care should be available to all patients to alleviate suffering and to preserve quality of life. Populations in developing countries deserve the same services.

»Radiotherapy has seen a technology avalanche in the last twenty years that has offered the same level of exciting prospects that the quantum leap from kilovoltage to megavoltage equipment encouraged sixty years ago.«

World Cancer Report 2008, p.72.

RADIATION MEDICINE IN BRIEF

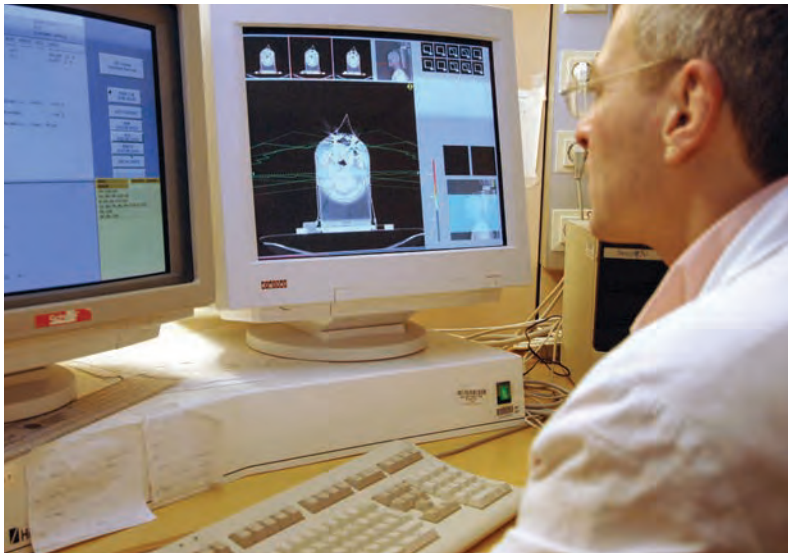
RADIATION MEDICINE
includes radiotherapy, diagnostic radiology, nuclear medicine and medical physics.

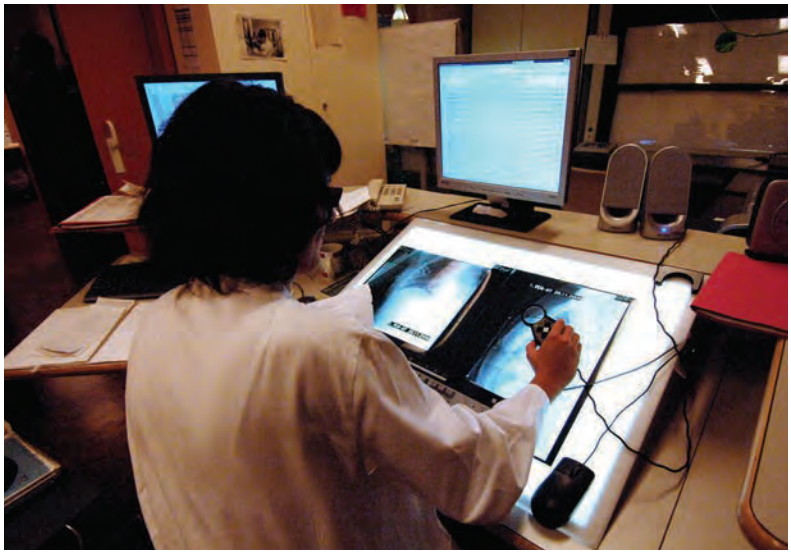
RADIOTHERAPY
entails treating cancer with radiation through external beam or brachytherapy (internal radiation where the radioactive source is placed directly into the tumour or close to it).

NUCLEAR MEDICINE
uses techniques that employ unsealed radioactive material and radiopharmaceuticals in the diagnosis and treatment of cancer.

MEDICAL PHYSICS
ensures the safe and effective diagnosis and treatment of disease through comprehensive quality assurance.

DOSIMETRY
refers to the accurate measurement of radiation doses. It is essential to ensure that patients receive proper medical treatment. By providing dosimetry calibration and audit services to Member States, the IAEA has improved the quality and consistency of radiation dosimetry in national laboratories and medical institutions worldwide.





Beyond Radiation Medicine

In response to the developing world's growing cancer crisis, the IAEA established the Programme of Action for Cancer Therapy (PACT) in 2004 to realize fully the public health impact obtained through technology transfer in radiation therapy and nuclear medicine. PACT was launched as an IAEA initiative, with the vision to see a developing world where everyone has access to equitable and affordable cancer prevention, cure and care; with significant improvements in survival rates. PACT's implementation strategy allows for close collaboration with WHO and other key international health organizations through a coordinated global response in developing strategies, and specific plans for working with national health authorities in the design and management of comprehensive cancer control programmes.

PACT presents ambitious long-term goals for the next 20 years. These goals are:

- **To build a global public-private partnership of interested organizations committed to addressing the challenge of cancer in LMI countries in all its aspects;**
- **To mobilize resources from charitable trusts, foundations, and others in the public and private sectors to assist LMI countries to develop and implement their radiation medicine capacities within a national cancer control programme (NCCP); and**
- **To promote the effective and sustainable integration of radiation medicine technologies and knowledge to all LMI countries where needs remain unmet.**

Since 2005, the IAEA has been working through PACT with the WHO and other partners to raise cancer awareness on a global scale, to assess needs in individual countries and regions; and to develop successful demonstration projects that will attract donors to support, sustain and replicate positive outcomes.

Fighting Cancer Across the Social Divide:
PHILIPPINES

Doctor Miriam Joy Calaguas has been working in two different worlds. The Filipino radiation oncologist was treating cancer patients with state-of-the art radiotherapy treatment at a private clinic in Manila. But on Wednesdays and Thursdays, she would leave the private hospital to work at the two main public hospitals in the city.

"I have had the privilege to work at the premier hospital where cancer patients – who could afford it – get the best in radiation treatment. At the same time, I have witnessed what goes on in the government hospitals – the lack of facilities, the lack of equipment and manpower. I have seen patients lining up to get a slot, sometimes waiting two to three months. By the time their turn for radiation treatment comes, the tumour had already grown so big or even spread."

"In the public hospital we had only one machine, with about 100 patients to treat each day. It was used until 2 a.m. in the morning. The technicians were overworked and underpaid. It was very frustrating because you know what to do, but there are just not the resources.

"We have the people. We have trained staff in the Philippines who are capable and smart. But what can you do without the facilities and radiotherapy equipment? You cannot treat with your hands."

Cancer is the third most prevalent killer in the Philippines. In a country of 66 million people, spread over more than 7 000 islands, only a small sector of Filipino society has access to the advanced technology that can treat cancer.

IAEA Expenditure on Cancer Projects by Region

WHO-IAEA Joint Programme on Cancer Control

WHO and IAEA established the WHO-IAEA Joint Programme on Cancer Control in March 2009. The principal objective of the Joint Programme is to coordinate activities and resources to provide evidence-based and sustainable support to comprehensive cancer control programmes in LMI countries.

The Joint Programme further seeks to raise cancer awareness, assess cancer control needs and develop cancer control demonstration projects. The Joint Programme's strategy also includes support for cancer control review and assessment at the country level.

Through this joint initiative, Member States are receiving thorough advice on the establishment of NCCPs using WHO Guidelines. One very important result for Member States has been to place the development of their diagnostic and treatment capacity, especially radiotherapy, within a NCCP to ensure its suitability and sustainability.

»Cancer is a complex disease that must be tackled on multiple fronts by multiple partners. PACT builds on the long partnership between our two organizations. The IAEA has brought to world attention some 30 developing countries, including 15 in Africa, that do not possess even a single radiation therapy machine.«

Dr Margaret Chan
WHO Director General

Milestones in the IAEA's Fight Against Cancer

1956

States approve the Statute of the IAEA at a UN conference of 82 states. The Statute incorporates responsibilities for both the control and development of nuclear energy for exclusively peaceful purposes.

1958

The IAEA initiates its technical assistance programme with a modest US $125 000. A panel of health and safety experts is set up for preparation of a manual on the safe use of radioactive sources.

1959

The IAEA and WHO jointly sponsor the Agency's first scientific meeting, with 38 experts from 22 countries attending a seminar on medical isotope scanning.

1964

The IAEA establishes greater capabilities in areas of technology transfer, setting up its Department of Technical Assistance as well as the Joint Division with the Food and Agriculture Organization (FAO).

1968

WHO joins the IAEA's initiative for postal distribution of dosimeters for measuring radiation doses to patients at radiotherapy centres. The 1960s saw growing use in developing countries of nuclear and radiation technologies for health care.

1972

The IAEA launches its first agreement for regional technical cooperation in the nuclear field with the Regional Cooperative Agreement (RCA) for Asia and the Pacific.

1976

Jointly with WHO, the IAEA establishes a global network of Secondary Standards Dosimetry Laboratories for promoting standards in the safe use of radiation sources in medicine, industry and other fields.

1982

The IAEA concludes the ARCAL agreement for promotion of nuclear sciences and technology in Latin America

1986

The IAEA initiates the first regional project on radioimmunoassay of thyroid-related hormones, involving 123 laboratories in 13 Asian and Pacific countries.

1993

A cooperative IAEA/UNDP (United Nations Development Programme) initiative is launched to assist the newly independent states of the former Soviet Union in building up their systems for radiation protection and nuclear safety, especially with respect to control and use of radiation sources.

1995

More than 95 per cent of IAEA Member States are reported to have nuclear medicine services for improved health care and diagnosis. A survey finds that more than 2 000 gamma cameras for medical uses have been installed in 78 countries.

2000

An IAEA conference in Buenos Aires finds that many more countries face problems in controlling radioactive sources used in medical, industrial and other fields.

2001

Spain hosts an IAEA conference on radiological protection of patients, an issue of rising concern around the world.

2004

IAEA Board of Governors and IAEA Member States endorse the creation of the Programme of Action for Cancer Therapy (PACT), building upon the IAEA's radiotherapy and nuclear imaging services to include the entire spectrum of cancer prevention and control.

The United States Government makes a voluntary contribution of US $300 000 to kick start PACT activities.

2005

World Health Assembly adopts resolution 58.22, on Cancer Prevention and Control, which recognizes that all countries should make cancer of prime importance at the national level. It welcomes the IAEA's PACT initiative and requests that WHO explore the development of a joint programme with IAEA on cancer prevention, control, treatment and research.

The Nobel Peace Prize is awarded to the IAEA and its Director General. Board of Governors uses money awarded to the IAEA (€ 575 000) to set up the IAEA Nobel Cancer and Nutrition Fund, the basis of initial funding support for PACT.

PACT Programme Office (PPO) established within the IAEA, and Mr Massoud Samiei is appointed Head of the new initiative. The initial budget allocated to PACT from internal savings was about US $300 000.

PACT launches imPACT review missions, providing Member States with a comprehensive assessment of their cancer control capacity and needs. Over subsequent years, some 85 Member States request the service.

2006

First meeting of PACT partners is held in Vienna, including WHO and WHO Regional Offices, the International Agency for Research on Cancer (IARC), the Union for International Cancer Control (UICC), the American Cancer Society (ACS), the U.S. National Cancer Institute (NCI), the International Network for Cancer Treatment and Research (INCTR), and the University of Oxford.

PACT Model Demonstration Sites (PMDS) are established in collaboration with PACT partners and governments in Albania, Nicaragua, Sri Lanka, Tanzania, Vietnam and Yemen, one country for each of the six WHO regions.

The PPO receives over US $1.1 Million in cash donations from 58 Member States after IAEA Board expedites financing of PACT activities. PACT receives its first IAEA regular budget allocation.

2007

Over 70 health professionals from developing countries are supported by PACT to attend international training courses on cancer control.

The IAEA General Conference passes a resolution endorsing the PACT initiative and hailing its work as a clear example of the Agency's "peaceful uses" mandate.

Albania, Nicaragua, Sri Lanka and Yemen hold their first national meetings on cancer control. Tanzania and Vietnam establish national Steering Committees and working groups to plan cancer control priorities.

PACT devises the concept of a Virtual University for Cancer Control (VUCCnet) supported through regional training and mentorship networks.

»Clearly, the challenges of battling cancer are enormous. The fact that in many countries patients are dying when their cancer is curable is shameful and something we must not allow to continue, for human dignity stands at the core of our shared responsibilities as development practitioners.«

Suleiman J. Al-Herbish,
Director-General of OPEC Fund for International Development (OFID)

2008

IAEA helps to mobilize US $13.5 million in development loans for cancer control in Ghana, funded by OFID and the Arab Bank for Economic Development in Africa (BADEA).

Donations for cancer control, provided through the PPO, total over US $20 million to date. PACT completes its 10th imPACT Review with a mission to the Dominican Republic.

2009

The Joint Programme on Cancer Control is formally established between the WHO and the IAEA. The first WHO-IAEA Steering Committee Meeting is held in Vienna in July.

During the first International Conference on Advances in Radiation Oncology, held in Vienna, PACT convenes a meeting of radiation-based cancer therapy equipment manufacturers to encourage them to make their technologies more affordable for developing countries. This leads to the creation of AGaRT, a forum to bring together technical experts, radiotherapy users and manufacturers to improve technology choices.

Ghana becomes the seventh PACT Model Demonstration Site.

IAEA Director General Yukiya Amano designates cancer in developing countries as the IAEA's high-priority issue for 2010.

2010

Mongolia becomes the newest PMDS, bringing the total number of participating countries to eight.

PACT receives a pledge of US$ 4 million from the Roche African Research Foundation to launch the pilot phase of the VUCCnet initiative in four African Member States.

The initial "kick-off" meeting of the VUCCnet is held in Accra, Ghana.

PACT launches the first meeting of AGaRT, paving the way for international collaboration to increase the accessibility of radiotherapy services worldwide.

Zambia is the 20th Member State to receive an imPACT review.

India donates a Bhabhatron-II Telecobalt radiotherapy unit to Sri Lanka.

IAEA Director General Yukiya Amano opens the 2010 Scientific Forum on "Cancer in Developing Countries: Facing the Challenge." The two-day event attracted over 200 high-level experts and health policymakers, and encouraged world leaders to focus on cancer in developing countries, to look for practical solutions and to facilitate fundraising.

A WHO-IAEA Joint Cancer Workshop held in Mongolia becomes the first collaborative event organized under the auspices of the WHO-IAEA Joint Programme.

2011

The UN General Assembly adopts a declaration on the "Prevention and Control of Non-communicable Diseases," recognizing the rising dangers of NCDs, such as cancer, worldwide.

Nicaragua presents its experience as a PACT Model Demonstration Site (PMDS) at the Regional Meeting on Cancer Control in Argentina.

2012

PACT completes its 40th imPACT Review with a mission to Armenia.

OFID pledges US $450 000 to PACT to advance cancer control in Vietnam.

PACT's Strategies in LMI Countries

PACT's vision is to build a global public-private partnership to help LMI countries mobilize new resources and funding for cancer prevention, cure and care, and to promote equitable access to all cancer services for their populations. In the long term, PACT envisions a world in which cancer no longer poses a major public health threat.

PACT is contributing to the improvement of cancer survival in developing countries by promoting the integration of radiotherapy investments into public health systems. To further this mission, PACT and its partners work through seven core initiatives that aim to improve the cancer control capacity of LMI Member States and global awareness of the current cancer crisis.

These 7 core strategic initiatives include:

- **Promoting global** Partnerships **to encourage collaboration in fighting cancer;**
- Resource Mobilization**, to raise money to support the fight against cancer;**
- Cancer control assessment missions**, to evaluate a country's readiness to implement cancer control programmes;**
- PACT Model Demonstration Sites (PMDS) **to test and apply mechanisms for improving cancer control planning;**
- Increasing access to radiotherapy technology in LMI countries **to generate better and more affordable radiotherapy services for patients in need;**
- **Supporting** cancer control education and training **to increase the number of qualified health workers in LMI countries; and**
- **Utilising** Advocacy and Outreach **as a means of building global awareness and promoting actions on the cancer crisis in LMI countries.**

All of the measures undertaken by PACT are meant to assist Member States in their efforts to address the aspects of the cancer crisis that are most pertinent to their country's population, and to advocate, together with WHO, for the development of relevant national cancer control plans and strategies.

Partnerships and Collaboration

Many organizations are working on cancer control in the developing world. But all too often, lack of coordination among them has led to duplication of efforts and sub-optimal use of limited resources. Since the IAEA plays a significant role in providing technical assistance to countries to initiate their radiotherapy centres, it has sought to encourage a stronger coordination among the major players at the country level. From its inception, PACT has endeavoured to facilitate communication among the various organizations so that they may, each with their own area of expertise, work in a complementary and coordinated manner to support integrated and sustainable cancer control programmes.

Through a global public-private partnership, the organizations involved also work together to assess cancer needs in developing countries, help them to define national plans for cancer prevention and control, and raise funding to improve conditions and outcomes for cancer patients. This means focusing on timely, planned and balanced investments to maximize the beneficial impact of radiotherapy and all other interventions in the most cost-effective manner.

PACT Partners

PACT cultivates partnerships with cancer-fighting organizations at many levels, including universities, research institutes, NGOs, foundations, international agencies and the private sector. PACT utilizes these international partnerships to mobilise new resources for health systems development and essential infrastructure.

Its main partners include WHO, IARC, UICC, US NCI, BHGI, INCTR, KIRAMS

Current partners include:

1. African Organization for Research and Training in Cancer (AORTIC)
2. Breast Health Global Initiative (BHGI)
3. Institut National du Cancer (INCa, France)
4. International Agency for Research on Cancer (IARC)
5. International Network for Cancer Treatment and Research (INCTR)
6. Korea Institute of Medical and Radiological Sciences (KIRAMS)
7. Korea Nuclear International Cooperation Foundation
8. London School of Hygiene and Tropical Medicine
9. National Cancer Institute (USA)
10. Organisation of European Cancer Institutes (OECI-EEIG)
11. PATH (Program for Appropriate Technology in Health)
12. Sovereign Military Hospitaller Order of Saint John of Jerusalem of Rhodes and of Malta
13. Tata Memorial Centre
14. Union for International Cancer Control (UICC)
15. World Health Organization (WHO)

Relying on Supporters and Donors
(Totals 2004–2012)

AMOUNT	DONOR
8.400.000,00	OPEC FUND FOR INTERNATIONAL DEVELOPMENT (OFID)
6.500.000,00	ARAB BANK FOR ECONOMIC DEVELOPMENT IN AFRICA (BADEA)
3.459.220,83	USA *(Permanent mission)*
2.515.000,00	F. HOFFMANN-LA ROCHE
1.500.000,00	BEST MEDICAL INTERNATIONAL
1.350.000,00	INDIA GOVERNMENT
1.022.579,00	UNITED STATES NATIONAL CANCER INSTITUTE (US-NCI)
950.889,88	SPAIN *(Permanent mission)*
653.000,00	NOBEL COMMITTEE (NORWAY)
636.811,76	CZECH REPUBLIC *(Permanent mission)*
481.505,70	MONACO *(Permanent mission)*
345.000,00	JAPAN *(Permanent mission)*
200.000,00	KOREA INSTITUTE OF RADIOLOGICAL & MEDICAL SCIENCES (KIRAMS)
155.074,44	CANADA *(Permanent mission)*
146.858,41	POLAND *(Permanent mission)*
137.232,16	NEW ZEALAND *(Permanent mission)*
132.025,00	NATIONAL CANCER INSTITUTE (INCA) (FRANCE)
114.224,00	BRAZIL *(Permanent mission)*
111.246,00	SWITZERLAND *(Permanent mission)*
110.000,00	FRANCE *(Permanent mission)*
90.000,00	KOREA NUCLEAR INTERNATIONAL COOPERATION FUND (KONICOF)
69.175,39	COMMISSARIAT À L'ENERGIE ATOMIQUE (CEA) (FRANCE)
52.789,82	HUNGARY *(Permanent mission)*
46.302,00	ARGENTINA *(Permanent mission)*
41.483,00	NORWAY *(Permanent mission)*
33.473,00	FINLAND *(Permanent mission)*
29.823,00	CROATIA *(Permanent mission)*
29.391,20	UNITED NATIONS WOMEN'S GUILD OF VIENNA (UNWG)
25.788,00	GREECE *(Permanent mission)*
22.076,00	PORTUGAL *(Permanent mission)*
20.000,00	CHINA *(Permanent mission)*
20.000,00	UNITED NATIONS FEDERAL CREDIT UNION (UNFCU)
19.472,00	SOUTH AFRICA *(Permanent mission)*
18.885,00	IRELAND *(Permanent mission)*
16.281,00	INDIA *(Permanent mission)*
14.066,00	THAILAND *(Permanent mission)*
13.024,00	IRAN *(Permanent mission)*
12.279,35	PRIVATE DONATIONS
11.201,00	MALAYSIA *(Permanent mission)*
10.159,00	CHILE *(Permanent mission)*
10.000,00	SAUDI ARABIA *(Permanent mission)*
9.964,00	VENEZUELA *(Permanent mission)*
9.573,00	COLOMBIA *(Permanent mission)*
9.573,00	INDONESIA *(Permanent mission)*
5.210,00	SLOVENIA *(Permanent mission)*
5.000,00	TURKEY *(Permanent mission)*
4.754,00	PHILIPPINES *(Permanent mission)*
3.842,00	EGYPT *(Permanent mission)*
3.842,00	SYRIA *(Permanent mission)*
3.842,00	URUGUAY *(Permanent mission)*
3.386,00	ALGERIA *(Permanent mission)*
3.256,00	NIGERIA *(Permanent mission)*
3.191,00	LIBYA *(Permanent mission)*
2.931,00	PAKISTAN *(Permanent mission)*
2.735,00	ROMANIA *(Permanent mission)*
2.475,00	UKRAINE *(Permanent mission)*
2.084,00	MOROCCO *(Permanent mission)*
1.433,00	CUBA *(Permanent mission)*
1.433,00	TUNISIA *(Permanent mission)*
1.302,00	GUATEMALA *(Permanent mission)*
1.172,00	ECUADOR *(Permanent mission)*
1.107,00	DOMINICAN REPUBLIC *(Permanent mission)*
977,00	SERBIA *(Permanent mission)*
782,00	SRI LANKA *(Permanent mission)*
716,00	MALTA *(Permanent mission)*
586,00	BULGARIA *(Permanent mission)*
521,00	LEBANON *(Permanent mission)*
456,00	LATVIA *(Permanent mission)*
391,00	BOLIVIA *(Permanent mission)*
391,00	KENYA *(Permanent mission)*
391,00	ZIMBABWE *(Permanent mission)*
326,00	NAMIBIA *(Permanent mission)*
261,00	GHANA *(Permanent mission)*
195,00	ETHIOPIA *(Permanent mission)*
130,00	ANGOLA *(Permanent mission)*
65,00	HOLY SEE *(Permanent mission)*
65,00	NICARAGUA *(Permanent mission)*

TOTAL: 29 597 203 US$

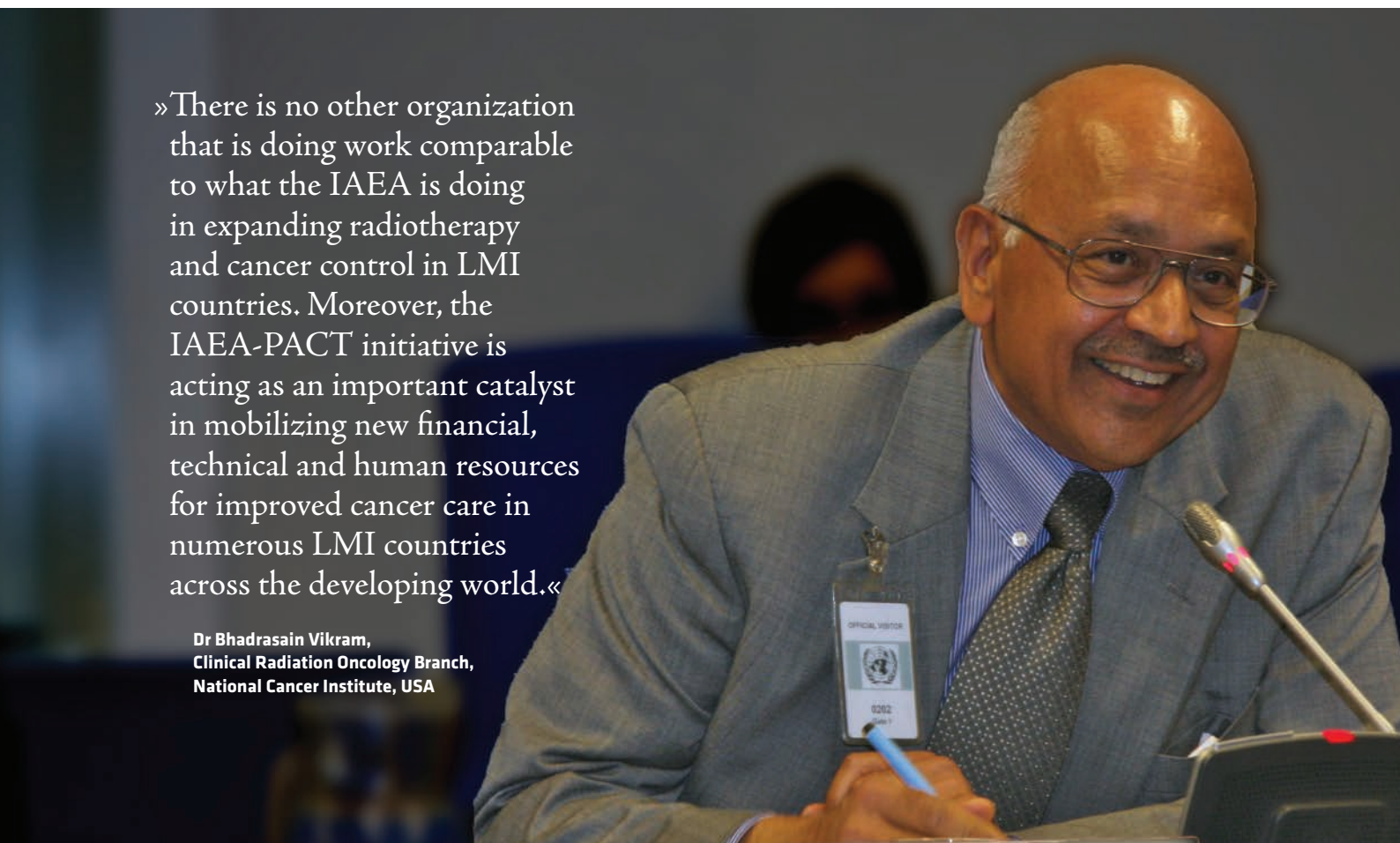
Resource Mobilization

PACT support to Member States' efforts in control cancer relies in part upon external financial resources. In raising funds for the fight against cancer, PACT and its partners strive to communicate that cancer is a major global health threat and that sizeable new resources are required to assist LMI countries in responding effectively to this threat. Though NCDs account for up to 60 per cent of worldwide deaths, currently less than one per cent of global overseas health aid is committed to managing these diseases. In reaching out to new and current donors, PACT emphasizes the tremendous needs of developing countries in their struggle to provide hope and relief to cancer patients and their families.

To assist LMI countries in meeting their financial needs, PACT has adopted a holistic approach to fundraising, mobilizing resources through all available channels, including relevant institution in IAEA Member States, PACT partners, foundations, development banks and the private sector. PACT believes that only through collaboration with all key stakeholders in cancer control can developing countries rely on the sustained flow of funding and investment needed to build effective and sustainable programmes that improve quality of life for all cancer patients.

One key message highlighted during the fundraising process is that all PACT initiatives are driven by the requests of LMI Member States. PACT develops its programmatic activities in response to country needs and often works to match potential donors with projects developed by health ministries as a means to ensure that there is broad local support for the funding initiatives.

To date, the majority of PACT's funding for country projects has come from development banks, the private sector, Member States and partner organizations. Fundraising is an integral component of PACT's mission and is the foremost means by which PACT can assist countries to manage the cancer crisis.



»There is no other organization that is doing work comparable to what the IAEA is doing in expanding radiotherapy and cancer control in LMI countries. Moreover, the IAEA-PACT initiative is acting as an important catalyst in mobilizing new financial, technical and human resources for improved cancer care in numerous LMI countries across the developing world.«

Dr Bhadrasain Vikram,
Clinical Radiation Oncology Branch,
National Cancer Institute, USA

Profile of a PACT Contributor

OPEC FUND FOR INTERNATINAL DEVELOPMENT (OFID)

The OPEC Fund for International Development (OFID) has emerged as one of PACT's strongest partners in supporting improved cancer care in many regions of the developing world. For more than a decade, OFID has been providing both grants and low-interest loans to supply new equipment, buildings, medical supplies, training and other critical inputs to ensure better cancer prevention, detection and treatment through national and regional projects. OFID grant operations to some 13 projects (some arranged by PACT) surpassed US $4.3 million in 2012; new loans to two African countries for improved cancer treatment facilities grew to more than US $19 million from 2001-2009. Major loan recipients are Ghana and Zambia (Please see box on Zambia's Cancer Diseases Hospital, p.31)

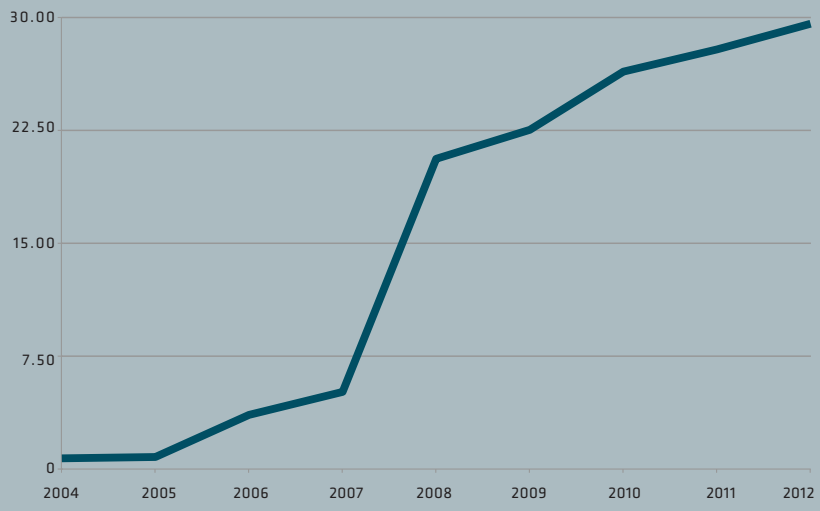
OFID provided a US $500 000 grant in 2006 to strengthen cancer control activities in Albania, Nicaragua and Tanzania through PACT. In 2012, OFID provided another grant of US $450 000 to advance cancer control in Vietnam, particularly to combat women's cancers, through projects facilitated by PACT.

»Good health is a basic building block of human progress. Chronic disease and ill health undermine productivity, prevent children from attending school and hamper a woman's ability to raise her family. For an institution like OFID, whose job is to promote human and economic progress, the statistics relating to cancer prevalence and deaths in developing countries is a grave cause of concern.«

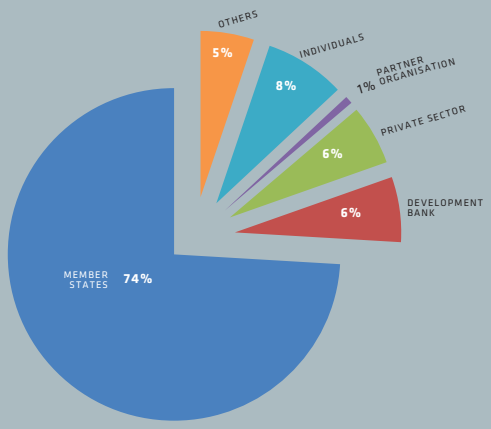
Suleiman J. Al-Herbish,
Director-General of OPEC Fund for International Development (OFID)

DONATIONS

Accumulative Amount of Donations



Donations by Number of Donors



»Zambians have put a lot of faith in the facility and I am confident that CDH has delivered what it set out to do. Patients coming in with early-stage presentation of cancer have a good chance of being cured. Our government has been very supportive in including cancer care in its basic healthcare package.«

Dr Kennedy Lishimpi
CDH's Executive Director
and Clinical and Radiation Oncologist

Country Profile:
ZAMBIA

For many years, the Government of Zambia has been committed to fighting cancer. In view of the increasing number of cancer cases, Zambia has made cancer control one of its highest priorities.

Cancer is on the increase in Zambia. Estimates suggest there are more than 7 000 new cases every year, the most common being cervical cancer. Until recently, cancer patients had to be sent to South Africa or Zimbabwe for treatment. But with limited funds available, waiting lists were hopelessly – often fatally – long. In addition, this medical care was very expensive, costing the government up to US $10 000 for each patient sent abroad.

In July 2007, Zambia's first specialized cancer treatment and radiotherapy centre, the Cancer Diseases Hospital (CDH), was officially opened by the President. From its inception, the project was supported and guided by the IAEA through its Technical Cooperation (TC) Programme. IAEA staff helped Ministry of Health officials to prepare a detailed project proposal, which in 2002 allowed Zambia to secure a US $5.6 million grant from OFID.

The Government of Zambia allocated over US $400 000 for the project, and TC contributed more than US $500 000 towards the training of personnel in key areas such as medical physics, radiotherapy and equipment maintenance. At every stage of planning, constructing and equipping the hospital, expert services were on call to provide advice and solutions.

The CDH is fully operational; it is able to treat about 1 200 new patients each year. The facility – with its purpose built laboratories, treatment and waiting rooms – has greatly improved access to quality diagnosis and treatment for cancer sufferers.

The centre's radiotherapy capabilities give cancer patients undergoing treatment a 45% chance of being cured. The IAEA is continuing to train medical physicists for the new facility and to provide expert advice on the safe and secure use of the equipment. Staff is also being trained in medical dosimetry to determine the dose of radiation needed for safe and effective treatment.

Zambia has recognized the need to develop effective cancer prevention and control and implement a NCCP with the assistance of WHO and the IAEA.

In 2009 the Ministry of Health requested an imPACT Review mission. In response, the PACT Programme Office put together a small multi-disciplinary and multi-agency expert team to carry out a comprehensive and in-depth needs analysis of Zambia's cancer control capacities in all areas: registration and information; prevention; early detection; diagnosis and treatment; palliative care; training and civil society activities. The ultimate goal was to identify priorities and gaps for the effective implementation of a National Cancer Control Plan.

Key mission findings highlighted the:

Commitment of the Government

Commitment of the Government Zambia has recognized the need "to prioritize cancer prevention and control and develop a NCCP with the assistance of WHO and the IAEA. Until recently, communicable diseases were prioritized but with the rise in NCDs, priorities are now shifting, even though the toll of HIV/AIDS remains high. In general, greater awareness needs to be raised on the cancer problem and resources mobilized."

A Cancer Steering Committee is already in place and members have been identified from the Ministry of Health and Cancer Diseases Hospital (e.g. public health services, cervical cancer screening programmes).

Indeed, an NCD Unit has been established and funded at the Ministry of Health and a Steering Committee for cancer was established with members from the Ministry and the CDH. A national situation analysis is planned to identify needs and incorporate critical components, such as cancer registration. This will facilitate priority interventions based on the most urgent needs and available resources.

The Ministry of Health has established partnerships with multilateral partners such as the World Bank, African Development Bank (ADB), European Union and UN Agencies, especially IAEA, WHO, UNICEF, UNDP and UNFPA. Bilateral partners include JICA, USAID and SIDA.

Zambia now has most of the key elements in place for the successful implementation of its NCCP, namely the strong commitment to fight cancer, initiatives in all areas of cancer control that can be strengthened and further developed and excellent collaboration among all the stakeholders.

imPACT Reviews: Integrated Missions of PACT

PACT has developed integrated missions of PACT (imPACT Review) in collaboration with the WHO, Ministries of Health and cancer institutions and through consultations with experts from key international organizations such as the International Agency for Research on Cancer (IARC) and the Union for International Cancer Control (UICC). The imPACT Review is a service provided by the IAEA to a Member State based on a request from its Ministry of Health. It is a process that responds to national needs and priorities and relies on government involvement and ownership of the process. The imPACT review offers an effective tool and a bottom up approach to conducting a capacity and needs assessment of cancer control. It is the first step in the IAEA's strategy to assist countries in addressing their cancer burden based on a comprehensive planning approach.

An imPACT Review is a service that assesses cancer control plans and activities and gauges a Member State's readiness to develop and implement a long-term radiation medicine infrastructure and capacity building, within the framework of an NCCP. The imPACT Review serves to: (a) gather information on the status of a Member State's existing plans, strategies, policies, safety practices, regulations, capacities and infrastructure related to cancer services, (b) assess cancer control capacity and needs, and (c) recommend immediate actions on the issues reviewed.

The imPACT reviews also allow for the identification of project proposals for funding designed to respond to the country's needs effectively. These packages can also be used by the Government for fundraising purposes. Another objective of these missions is to assist in the planning of the country's cancer-related TC projects for future cycles. The outcome of this assessment is the submission of mission findings, conclusions and recommendations in the "Mission Report to the Ministry of Health." The recommendations can be used in the completion or revision of an NCCP, thus accelerating cancer control planning.

Implementation of the imPACT recommendations are expected to lead to a phased planning and an investment plan based on government priorities and the following outcomes:

- **Establishment of a National Cancer Control Steering Committee and nomination of its members involving all stakeholders. The Committee is responsible for eveloping the NCCP;**
- **Development of an NCCP following WHO guidelines;**
- **Development of a 10-year Action Plan with ranking of prioritized activities, objectives, timeframes, milestones and estimated budget. The country's radiation medicine development plan should be an integral part of this Action Plan.; and**
- **Development of specific funding proposals, for incremental short, medium and long term assistance packages/projects to meet the country's needs in each component of cancer control. This process should also enable the Member State to prepare better-defined projects related to the IAEA's mandate in radiation medicine for support through the IAEA's TC programme.**

To date, imPACT missions have been implemented in more than 40 Member States.

»Where a country has already developed an NCCP, such as Albania or Sudan, the imPACT missions have served to add a comprehensive and strategic analysis of the Plan. The teams have helped to refine each of the Plan components and this dialogue with the national authorities has proven to be very effective, and can enhance the strategic approach to implementing the Plan fully.«

Dr.Anshu Banerjee
WHO Country Representative in Sudan

PACT's GLOBAL PRESENCE

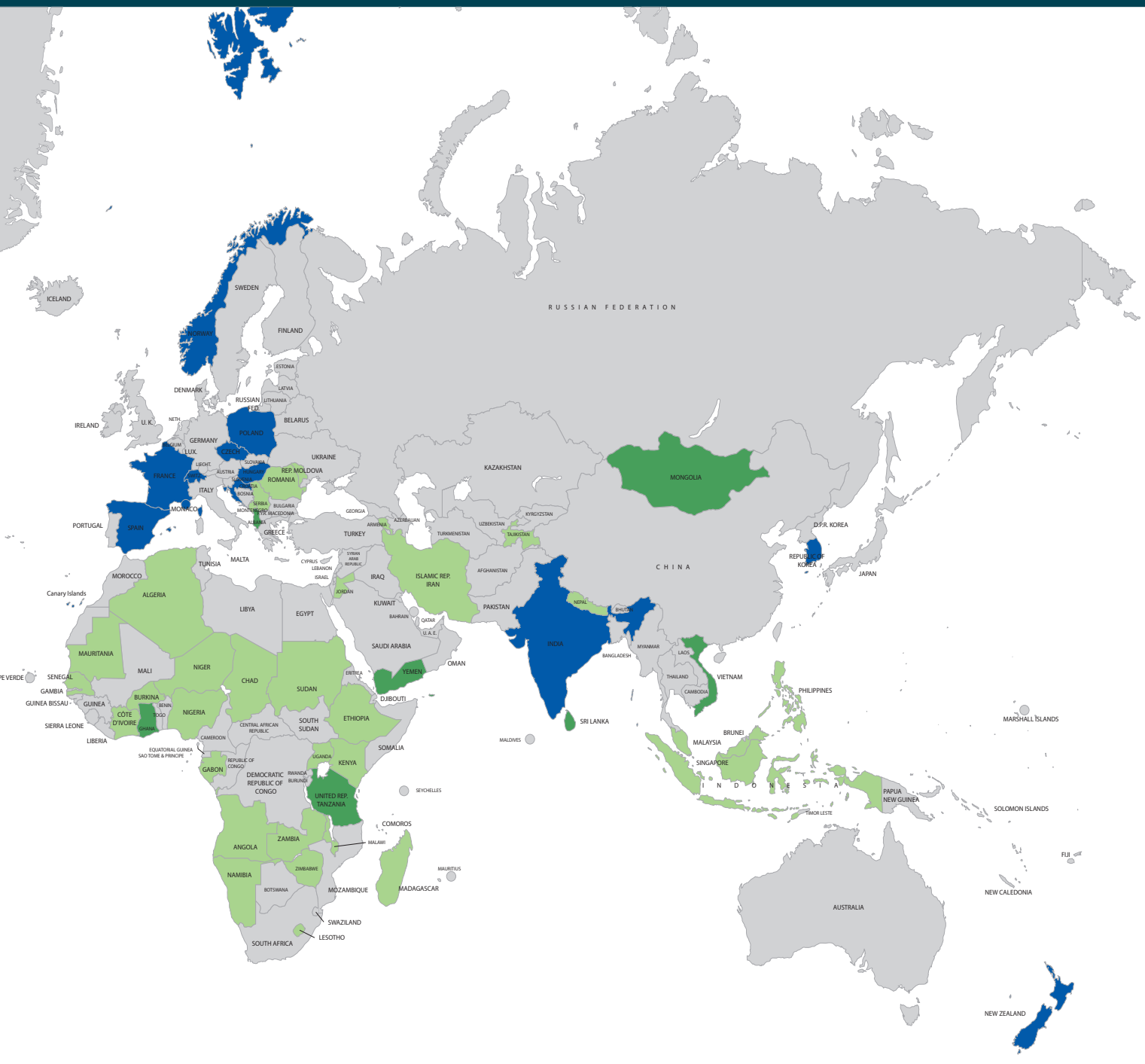
imPACT conducted:

1. Albania
2. Algeria
3. Angola
4. Armenia
5. Bolivia
6. Burkina Faso
7. Chad
8. Colombia
9. Cote d'Ivoire
10. Dominican Republic
11. Ecuador
12. El Salvador
13. Ethiopia
14. Gabon
15. Ghana
16. Guatemala
17. Indonesia
18. Islamic Republic of Iran
19. Jordan
20. Kenya
21. Lesotho
22. Madagascar
23. Mauritania
24. Mongolia
25. Montenegro
26. Namibia
27. Nicaragua
28. Niger
29. Nigeria
30. Paraguay
31. Philippines
32. Republic of Maldova
33. Romania
34. Senegal
35. Serbia
36. Sri Lanka
37. Sudan
38. Tajikistan
39. Uganda
40. U.R. of Tanzania
41. Vietnam
42. Yemen
43. Zambia
44. Zimbabwe

MAJOR DONOR COUNTRIES*:

- Canada
- Croatia
- Czech Republic
- France
- Hungary
- India
- Korea, Republic of
- Monaco
- New Zealand
- Norway
- Poland
- Spain
- Switzerland
- United States of America

* Major donor countries to PACT include countries that have contributed $10 000 or more to the PACT Programme, exluding the cash contributions given by the 58 Member States from the 2004 cash surplus.



PACT Model Demonstration Site (PMDS) [8]

Already received a preliminary or full imPACT Review [36]

Major donor countries* to PACT

The depiction and use of boundaries, geographical names and related data shown on maps do not necessarily imply official endorsement of acceptance by the IAEA.

PACT Model Demonstration Sites (PMDS)

To place cancer on the global development agenda and help LMI countries attract new resources, PACT, in collaboration with WHO, launched an initiative designed to demonstrate the advantages of cross–sectoral collaboration for improved cancer control in public health systems. This initiative identifies LMI Member States around the world as PMDS, designating them as a focal point for integrated and multidisciplinary efforts to address specific cancer control challenges, while showcasing the synergies that international partners can achieve.

In the PMDS initiative, PACT utilises its international partnerships to share evidence-based interventions from similar countries to enable new resources to be mobilised for health system development and cancer control support infrastructure. PMDS combine the individual strengths and resources of each partner and stakeholder to maximize impact and establish sustainable cancer control capacity.

PACT, with various partners, has been supporting PMDS countries notably with resource mobilization, focusing on building capacity for the long-term sustainability of all services via timely and balanced investments. This has helped Member States to increase the long-term effectiveness of nuclear applications, specifically radiotherapy and nuclear medicine, within their health systems.

With guidance from WHO Regional and Country Offices, PMDS have been advancing NCCPs and the establishment of national steering committees to oversee plan implementation, while working towards the creation of project proposals based on priorities and anticipated resources.

To date, PACT has supported eight PMDS: Albania, Ghana, Mongolia, Nicaragua, Sri Lanka, Tanzania, Vietnam and Yemen. Country selection has been based on a thorough analysis of key factors, including the implementation of a successful cancer-related technical cooperation programme with the Agency and maintaining a high priority for cancer control in working with WHO.

The first six PMDS were selected, after consultations with IAEA Departments and WHO, to represent the six WHO health regions and to test the PMDS approach on a range of population sizes and living standards. The initiative expanded later to include Ghana and Mongolia.

Each operational PMDS is demonstrating the feasibility and, value of multidisciplinary, interagency cooperation in combating cancer. PMDS projects are utilizing new funding mechanisms beyond those that were available. PACT partners' collective expertise is being leveraged to define country and resource-appropriate interventions, and to facilitate funding for nationally approved proposals, while generating policy and public awareness in support of regional and global initiatives.

In order to aid in advancing the health care systems of low-resource countries, PACT encourages international actors, national governments and NGOs to share their expertise in support of developing the programmes and infrastructure necessary to control the cancer epidemic. The PMDS projects actively engage the Ministries of Health and the national government, WHO, IARC, INCTR, UICC, OFID and numerous other partners.

PMDS MANDATE

Each PMDS, with assistance of the IAEA, WHO and their partners, is focusing on the following areas with special emphasis on country-specific priorities:

- **DEMONSTRATION OF A POSITIVE CHANGE IN NATIONAL CANCER CONTROL PLANNING AND IMPLEMENTATION BY ESTABLISHING A NATIONAL CANCER CONTROL STEERING COMMITTEE;**
- **DEVELOPMENT AND ENDORSEMENT OF AN NCCP AND A TEN-YEAR ACTION PLAN FOR IMPLEMENTATION;**
- **INCREASING AWARENESS ON CANCER PREVENTION AND EARLY DETECTION;**
- **EXPANSION OF THE CANCER CONTROL WORKFORCE;**
- **EXPANSION AND INTEGRATION OF THE USE OF RADIATION MEDICINE FOR CANCER DIAGNOSIS AND TREATMENT WITHIN THE NCCP;**
- **DELIVERY OF HOLISTIC PALLIATIVE CARE, WHICH INCLUDES SYMPTOM RELIEF AS WELL AS SOCIAL, PSYCHOLOGICAL AND SPIRITUAL SUPPORT TO PATIENTS AND THEIR FAMILIES; AND**
- **FORMULATION OF POLICY AND ENHANCED DONOR AND PUBLIC AWARENESS TO FACILITATE TARGETED FUNDRAISING EFFORTS FOR CANCER CONTROL IMPLEMENTATION**

What is an NCCP?

WHO defines a National Cancer Control Programme (NCCP) as *"a public health programme designed to reduce the number of cancer cases and deaths and improve quality of life of cancer patients, through the systematic and equitable implementation of evidence-based strategies for prevention, early detection, diagnosis, treatment, and palliation, making the best use of available resources."*

"A comprehensive national cancer programme evaluates the various ways to control disease and implements those that are the most cost-effective and beneficial for the largest part of the population. It promotes the development of treatment guidelines, place emphasis on preventing cancers or detecting cases early so that they can be cured, and provide as much comfort as possible to patients with advanced disease."

PACT promotes the concept of NCCPs as the most efficient way to tackle the cancer problem. Each country has particular features in terms of the cancer burden, cancer risk factors, culture, health system, and available financial and human resources as well as infrastructure. These parameters should be carefully assessed in order to establish realistic and achievable priorities for action.

»IARC recognizes the complex political and administrative factors involved in translating and implementing cancer control policies in widely differing environments, and appreciates the pragmatic role played by IAEA. The PACT activities in augmenting human resources are important steps in strengthening cancer control in resource-poor settings.«

Dr. Christopher Wild
Director, International Agency for Research on Cancer

Country Profile:
ALBANIA

Tirana. The crowded corridors of the oncology department of the Mother Teresa University Hospital in Albania's capital reflect the country's growing cancer crisis. Long locked in decades of political and economic isolation, Albanians are now seeing new horizons in the fight against poverty as they re-enter the world economy with rising expectations for better and healthier lives.

Cancer prevention, diagnosis and treatment represent growing and complex problems. Among Albania's 3.6 million people, there were 7 732 new cases of cancer in 2008. Albania has a single radiotherapy service for cancer treatment at the Mother Teresa Hospital. Patient demand for cancer therapy far exceeds available services. Cancer prevention, early detection, palliative care, registration and patient support are all limited. Each year, about 4 230 people die from cancer: principally lung, stomach, prostate, bladder and colorectum cancer in men; and breast, lung, stomach, colorectum and kidney cancer in women. For more than a decade, the IAEA, the WHO and other key partners and donors have been helping the Government of Albania to develop more comprehensive national cancer control.

The IAEA has been collaborating with the Ministry of Health and the Institute of Public Health and Hygiene to tackle the growing cancer crisis. The IAEA, through PACT, together with the WHO, supported Albania's work to draft an NCCP in 2007. At the same time, the country was selected as a PMDS, which, it was hoped, would significantly advance cancer control efforts and attract new technical and outside financial resources. Deployment of a radiotherapy machine (partially donated by MDS Nordion of Canada) to the Mother Teresa Hospital was made possible through PACT, in cooperation with the IAEA's TC Department and Division of Human Health, which have been providing continuing expertise and equipment, and facilitating regional training in fields such as radiation oncology.

More than 70 per cent of all cancer cases in Albania are diagnosed too late for effective, curative treatment and become fatal. That equates to 3 000 terminal cases of cancer every year. Moreover, palliative care services remain limited, and many patients and their families lack end-of-life care or support.

Considerable progress has been achieved on several major fronts. Albania's National Cancer Control Strategy has been endorsed by the Ministry of Health and key components are being implemented. A 10-year Action Plan (2011-2020) including activities, milestones, timeframe and budget has been elaborated. National activities are aimed at increasing early detection of breast and cervical cancer through education and training. Professional training in radiation medicine is being supported through IAEA TC projects. Many NGOs are active in education, prevention, early cancer detection and palliative care. Numerous partners have committed to improvement of cancer control services including OFID, WHO, IARC, the World Bank, MDS Nordion/Best Medical and the Sovereign Military Order of Malta.

»We are in the first steps of dealing with the cancer epidemic in the country. We need very much the help from international agencies, and it's not only about financial support. It's not just about buying more technology. It's about the transfer of knowledge and knowhow. It's about support for taking the right direction, because we are in the early phases. We need an international point of gravity, to show us other experiences, successes and failures, so that we go in the right direction.«

Dr Alban Ylli
Non-communicable Disease Focal Point
Institute of Public Health and Hygiene, Tirana

Country Profile:
NICARAGUA

Cancer Situation and Unmet Needs

Nicaragua has a current population of about 5.9 million people. According to estimates from Globocan 2008, there were 5 591 new cancer cases and 3 345 cancer deaths in 2008.

Cancer is one of the three main causes of death in the country. The most common cancers in women are cervical, breast and stomach. In men, prostate, stomach and liver are the most prevalent. Access to diagnostic and treatment services is limited, as Nicaragua has a single radiotherapy service for cancer treatment, the Centro Nacional de Radioterapia in Managua, which serves the entire population. Currently, patient demand for cancer therapy far exceeds available services.

Nicaragua: PMDS Focus

Over the course of five years, IAEA/PACT, PAHO/WHO and other partners have been assisting in the design, funding, implementation and evaluation of PMDS projects focusing on country specific priorities. The agencies have supplied technical expertise and support to aid government efforts in resource mobilization. This includes support for improving cancer registration, educating and training personnel, introducing prevention and early detection programmes, expanding or improving treatment facilities and services, including radiotherapy, establishing palliative care and promoting the role of civil society in cancer control.

PACT's Logistic Role

PACT and its partners have been coordinating the formulation of national actions plans for all areas of cancer control. PACT, in cooperation with IAEA internal stakeholders, has supported national counterparts in implementing work plans and developing proposals for funding.

Current Status

Nicaragua launched its first National Strategic Plan for Cancer Control 2008–2011. A National Committee for Cancer Prevention and Control was established in 2008 and working groups were established in the areas of palliative care, human resources training and research, treatment, civil society, advocacy and communication, information systems (cancer registration), cervical cancer, breast cancer and paediatric cancer. In the area of cancer registration, Austin Samaritans & the Texas Department of State Health Services have been working with health personnel to help develop the cancer registry (training of registrars, provision of computers with CanReg4, and manuals). Four hospitals are being trained in CanReg 4 and five computers were donated to these hospitals.

Activities in cancer prevention have been expanding. Awareness campaigns for cancer prevention have been carried through local fairs, TV programmes and radio broadcasts, and dissemination of educational materials in the community, particularly in schools. Regarding the early detection of cervical cancer, the use of the VIA (visual inspection with acetic acid) has increased, and training on VIA and cryotherapy has already been conducted in several regions of the country. Nicaragua has also established 25 cryotherapy clinics for the detection of pre-cancerous lesions, out of which nine are already currently operational. PATH, UICC and other NGOs are actively working in cervical cancer prevention. The PACT-donated Equinox Cobalt 60 machine (through MDS Nordion/ Best Theratronics) is operational at the Centro Nacional de Radioterapia. The official launch ceremony was held in March 2009 and was attended by the Minister of Health.

Nicaragua is strengthening palliative care services through the establishment of services in hospital wards across the country. Protocols in palliative care, including home-based care, have been approved and training workshops for nurses, doctors and university students have been held. Training on palliative care has been conducted in six hospitals in Managua.

Proposals are under development by IAEA/PACT and other partners for the early detection of cervical cancer and paediatric cancer, cancer diagnosis and expansion of radiotherapy and nuclear medicine services across the country.

Next Steps and Expected Outcomes

Having already secured some resources for PMDS Nicaragua, PACT continues its fundraising efforts to help the country mobilize the additional resources needed to implement the principal PMDS components.

Expected outcomes include: improved cancer survival rates; increased access to treatment for cancer patients; increased coverage for the early detection of cancer; earlier detection of cervical cancer through public awareness, with improved opportunity for and delivery of curative treatment; improved knowledge on cancer prevention; enhanced palliative care services; and expansion of radiotherapy centres.

Interagency Partners

PACT works with the Pan American Health Organization (PAHO), IARC, American Cancer Society (USA), MDS Nordion (Canada),Best Medical International (USA/Canada), International Network for Cancer Treatment and Research (INCTR), International Union Against Cancer (UICC), Program for Appropriate Technology in Health (PATH) and the U.S. National Cancer Institute (NCI).

Country Profile:
VIETNAM

Cancer Situation and Unmet Needs

Vietnam has a population of 87.1 million people and an estimated 111 581 new cases of cancer per year. There are 15 radiotherapy facilities in Vietnam, but the country aspires to establish treatment centres in all major cities. Indeed, the Vietnam Atomic Energy Commission (VAEC) has confirmed the national goal of having one radiotherapy machine per million people in the next decade. Further programme development in cancer prevention, registration, early detection, palliative care, and a cancer society are all needed.

Current Status

Vietnam initiated its cancer control planning in 2002. The National Cancer Control Programme (NCCP) 2006-2010 was approved by the Government in mid-2007 and has been operating since January 20081. An imPACT report was delivered to the Ministry of Health (MOH) in August 2007. The Government has established a national cancer steering committee. The MOH and other key national stakeholders and PACT partner organizations have formed working groups to carry out activities in their fields of competence. A mission to assess opportunities for fundraising was carried out in May 2009. A Bhabhatron II Cobalt-60 unit, donated by the Government of India through PACT, was installed and a launching ceremony took place at the Can Tho Oncology Hospital in October 2009.

PMDS Focus

PACT, WHO (Regional and Country Offices) and other partners have been assisting the national authorities in the design, funding, implementation and evaluation of PMDS projects focusing on country specific priorities. They provided technical expertise and support to government efforts in resource mobilization for the implementation of the NCCP. This includes improving cancer registration, educating and training personnel, introducing prevention and early detection programmes, expanding and improving treatment facilities and services, including radiotherapy, establishing palliative care and supporting cancer societies and NGOs.

PACT's Logistical Role

PACT has organized, reported, and followed-up on the imPACT review in Vietnam. It has also helped in preparation of the PMDS project proposals and work plans, and coordinated interagency collaboration and resource mobilization and deployment during PMDS project execution.

Next Steps and Expected Outcomes

PACT and its partners, together with Vietnamese counterparts, have formulated interagency work plans on strengthening all areas of cancer control, each agency according to its mandate and areas of competence. PACT, in cooperation with IAEA internal stakeholders, is supporting national counterparts in implementing work plans and developing funding proposals.

Expected outcomes: Improved cancer survival rates; effective implementation of NCCP; organized screening; earlier detection of common cancers with improved opportunity for and delivery of curative treatment; increased treatment of cancer patients; improved cancer registration; improved public awareness of and knowledge about cancer early detection and its prevention; and a reinvigorated cancer society.

Interagency Partners

PACT works with WHO Headquarters, WHO Regional Office for the Western Pacific (WPRO) and WHO Country Office in Vietnam, IARC, American Cancer Society (USA), International Union Against Cancer (UICC) and the Tata Memorial Centre (India).

AGaRT: Promoting Suitable, Safe, Reliable and Affordable Technologies

Radiotherapy can, in many instances, save lives. Even in cases where the disease is too advanced to be cured, radiotherapy can provide palliation that allows patients to live out their lives as comfortably as possible. In high income countries, between 50 and 60% of patients diagnosed with cancer will be administered radiotherapy at some point during their treatment.

For many living in LMI countries, however, radiotherapy remains an unattainable treatment option, with only about 40% of radiotherapy patients in LMIs having access to the treatment they need to increase their chances of survival.

Today, approximately 25 countries have no available radiotherapy units. Despite being home to 85% of the world's population, there are only around 4 400 megavoltage machines in LMI countries, less than 35% of the world's radiotherapy facilities, leaving most cancer patients in LMI countries without any access to potentially life-saving radiotherapy treatment. The current incidence of cancer in LMI countries (about 8 million new cases per year) indicates a need for about 9 600 units; a shortage of over 5 000 megavoltage machines.

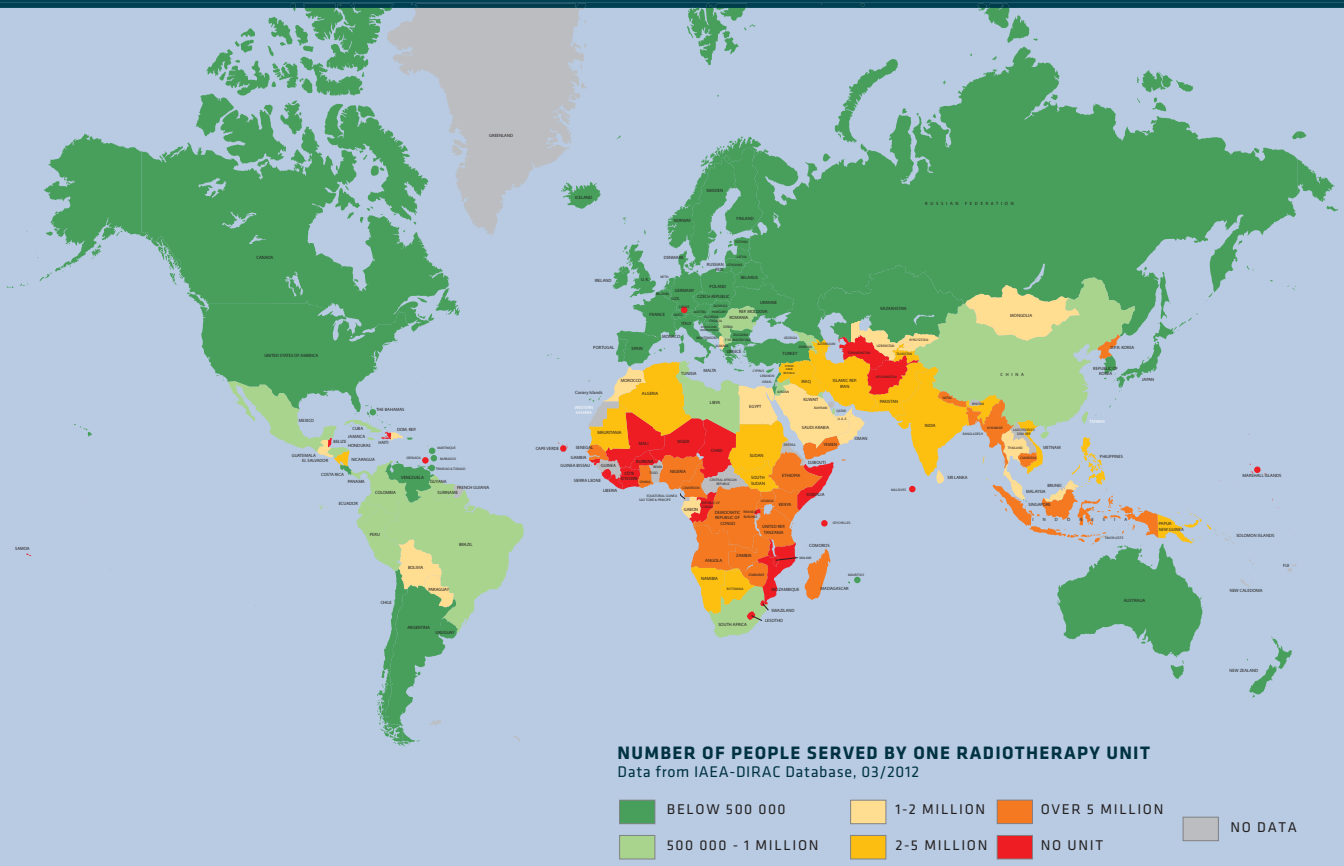
Many cancer patients from LMI countries thus need to spend large sums of money to be treated abroad, or more commonly, must go without treatment. Even when radiotherapy is available, it is often inadequately resourced for the number of cancer patients in need.

Most high income countries have at least one radiotherapy unit available for every 250 000 people among whom there could be around 700-800 cancer patients each year. About half of these patients would need radiotherapy as part of their treatment. In contrast, in nearly 20 LMI countries, each unit must provide services for more than 5 million people, and in some cases for 20 million people or more. But more than just greater availability of equipment is required to address the issue of global access to radiotherapy. In some countries, even if radiotherapy services are available, economic or geographic barriers can prevent treatment. In others, inadequate staffing, the acquisition of unsuitable equipment or poor equipment maintenance can leave cancer patients without proper access to treatment. Until LMI countries can acquire the proper capacity for providing radiotherapy, millions of cancer patients throughout the world will continue to be deprived of an essential element of cancer treatment and palliation.

To address the shortfall of radiotherapy services and equipment in LMI countries, PACT established the Advisory Group on increasing access to Radiotherapy Technology in low and middle income countries (AGaRT) in 2009, with the technical support of the IAEA Division of Human Health, the Division of Radiation, Transport and Waste Safety, the Technical Cooperation Programme and IAEA's Procurement Services. AGaRT acts as a neutral facilitator to bring together radiotherapy users in LMI countries, independent international experts and major radiotherapy equipment suppliers, to encourage dialogue that will ensure that the unique radiotherapy service requirements of LMI countries are met by the technology available. AGaRT provides an unprecedented platform to:

- **Assess current radiotherapy opportunities and capacities, and to increase access to radiotherapy technology;**
- **Identify gaps in the accessibility of radiotherapy services and the limitations in the delivery, operation and maintenance of radiotherapy equipment in LMI countries;**
- **Recommend criteria for radiotherapy equipment that is affordable, effective and appropriate for the conditions of LMI countries; and**
- **Recommend minimum requirements to operate a radiotherapy facility safely and ensure its sustainability in LMI countries.**

ACCESS TO RADIOTHERAPY



Radiotherapy programmes offered by the IAEA are an essential part of the treatment of cancer.

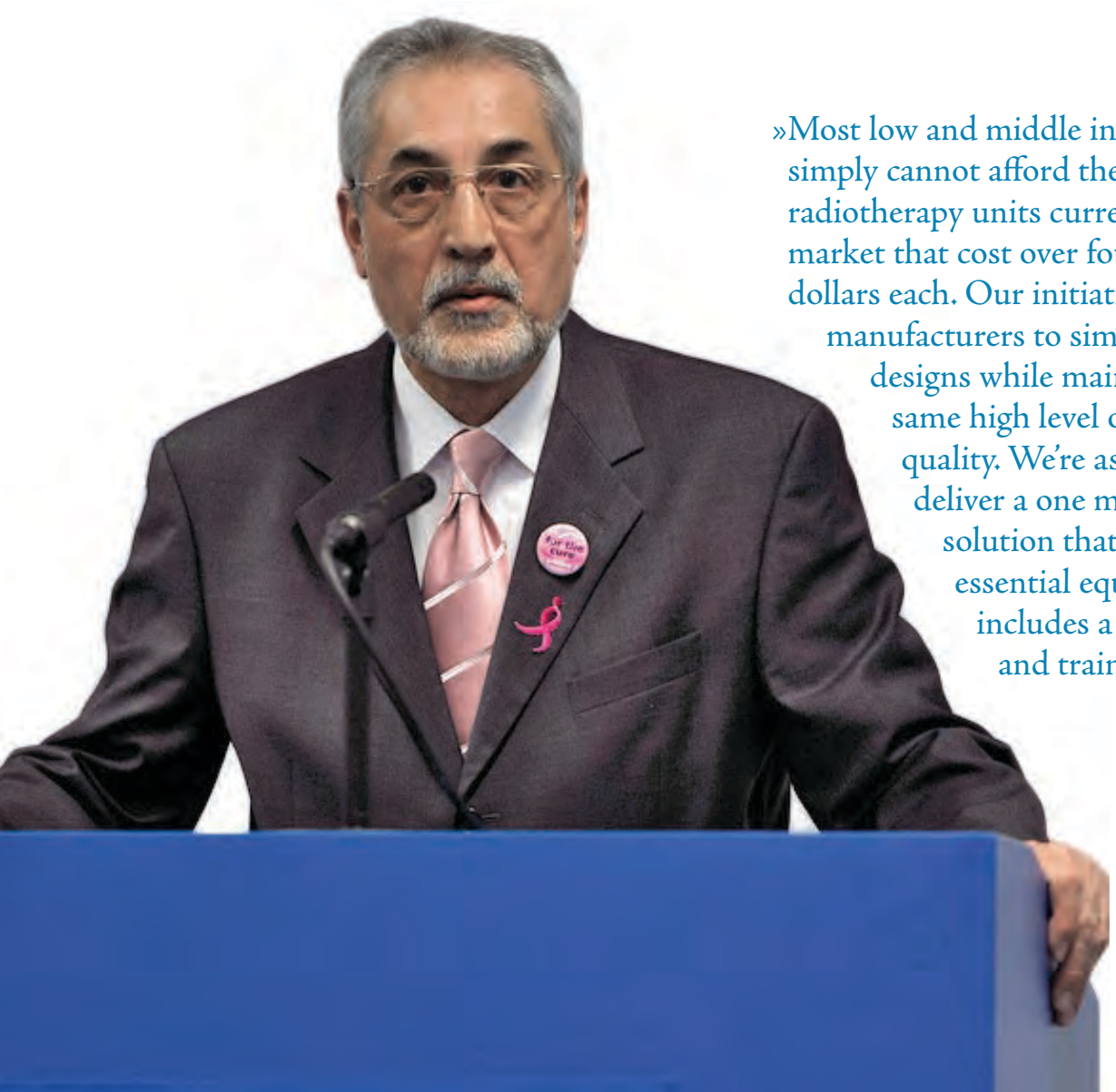
There is a shortfall of over 5000 radiotherapy machines in developing countries.

IAEA's PACT builds partnerships to fight the global cancer epidemic.

Through these activities, AGaRT is establishing a mutual understanding among radiotherapy users and suppliers. By addressing issues of cost, quality, availability, sustainability and complexity, AGaRT will encourage the selection of radiotherapy equipment that is affordable, sustainable and suitable for LMI countries and, in so doing, increase access to radiotherapy.

A Global Radiotherapy Shortage

While in some high income countries external radiotherapy only accounts for 5% of the total cost of cancer care, for many LMI countries the infrastructure for and capital costs of initiating radiotherapy are very high, sometimes reaching more than US$4 million per unit. When auxiliary costs such as training and maintenance are added, the total price is vastly increased. To make radiotherapy equipment more accessible, it is imperative that the equipment produced can be sold and maintained at a lower cost, without sacrificing safety or quality, thus making radiotherapy affordable to LMI countries that could not otherwise afford it. The AGaRT initiative has been designed to foster a collaborative environment where participants from LMI countries, the radiotherapy industry and regional radiotherapy experts can collaborate effectively. The recommendations of AGaRT aim to encourage manufacturers to gradually adjust their technological developments, financial strategies and service policies to address the needs of emerging markets in LMI countries, while at the same time enabling LMI countries to develop realistic plans for investments in radiotherapy over the longer term, taking into account key issues such as equipment choices, contracting and human resource requirements.



»Most low and middle income countries simply cannot afford the complex radiotherapy units currently on the market that cost over four million dollars each. Our initiative encourages manufacturers to simplify their designs while maintaining the same high level of safety and quality. We're asking them to deliver a one million dollar solution that contains all the essential equipment and includes a maintenance and training package«

Mr. Massoud Samiei
Former Head of the PACT Programme Office

Those participating in AGaRT include:

- **• Radiation medicine users and experts from IAEA regions, including Africa, Europe, Latin America, and Asia and the Pacific;**
- **• Manufacturers of radiotherapy equipment from around the world;**
- **• Experts from international organizations and other relevant institutes, including the IAEA, the WHO, the International Electrotechnical Commission (IEC), the International Organization for Medical Physics (IOMP), the Korea Institute of Radiological and Medical Sciences (KIRAMS), and the United Nations Scientific Committee on the Effects of Atomic Radiation (UNSCEAR) .**

"AGaRT is a group that serves as a facilitator between radiotherapy vendors and users, allowing them to discuss their problems in regards to radiotherapy and find a solution so that these problems can be overcome", said Prof. Dr. Shyam Shrivastava, Head of the Department of Radiation Oncology at Tata Memorial Hospital in India. Doctor Shrivastava chaired AGaRT's second meeting in November 2011.

"We hope that, in coming years, coordination between radiotherapy suppliers and users will grow, and a sustainable solution will come from the Advisory Group."

Over the next two to three years, AGaRT hopes to review and recommend radiotherapy operation requirements; affordable and suitable radiotherapy equipment packages and solutions; and financial schemes for the delivery of radiotherapy packages.

Morocco's Drive to Expand Services

Professor Brahim El Gueddari is Director of the Institut National d'Oncologie (INO), in Rabat, Kingdom of Morocco. The Institute, which is the country's main cancer facility, has worked closely with the IAEA's TC Department over many years, organising workshops and regional training courses in radiotherapy, brachytherapy and medical physics.

According to WHO, there are some 45 000 to 50 000 new cancer cases each year in Morocco (population 30 million).Of these, by far the most common are those afflicting women: breast (20 per cent) and cervix (15 per cent). A major problem is that up to 80 per cent of all cancer patients only report to hospital when the disease is at an advanced stage and curative treatment is no longer an option.

Currently Morocco has about ten medical centres (including private and military facilities) offering cancer treatment, equipped with a total of 10 linear accelerators, 8 Cobalt units and 22 brachytherapy machines. But these fall far short of meeting the country's needs. Prof. El Gueddari says that as few as 12 000 cancer patients even reach a cancer hospital.

"Our challenge is to reduce the incidence of cancer and ensure that people throughout the country have access to cancer facilities," he says.

To achieve this, he acknowledges, massive investment is required, along with a rigorous system of prevention and early diagnosis.

Morocco's cancer burden is heavy, but in the last two years significant progress has been made thanks largely to the involvement of HRH Princess Salma, the wife of King Mohammed VI. Under her patronage, a national cancer association has been founded and a number of programmes initiated, including prevention, early diagnosis, procurement of drugs and expansion of hospitals.

Prof. El Gueddari is proud of his own institution's record as a teaching hospital and centre of excellence. The INO runs two diploma courses, one in radiation oncology and one in medical oncology, which are attended by African doctors in training.

"We can offer our know-how and experience to improve the skills of professional workers in Africa," he says. "We are most willing to be more involved in the PACT initiative."

VUCCnet: Closing the Human Resource Gap

A Health Care Emergency

In 2006, the WHO reported that there was a shortfall of 4.3 million trained health workers around the world. Without an adequate supply of health workers, any attempt to increase global access to health services will be ineffective and world health objectives, such as those foreseen in the Millennium Development Goals, will be impossible to achieve.

According to WHO, 57 countries are currently experiencing a health care workforce crisis, including 36 in sub-Saharan Africa. One area where the shortage of trained health care professionals makes a very detrimental impact is in cancer control.

Virtual University for Cancer Control (VUCC)

In the face of the looming crisis in LMI countries, PACT, in cooperation with its international partners in cancer control and experts in radiation medicine within the IAEA, conceptualized a Virtual University for Cancer Control (VUCC) in 2007 supported by a Regional African Cancer Training network, collectively called VUCCnet.

The VUCCnet concept was formulated in 2008 as a Pilot Project which initially aims to contribute to ongoing efforts by Member States in Africa to address cancer control workforce shortages by promoting a combination of e-learning and traditional teaching approaches that provide effective, low-cost educational opportunities to students in sub-Saharan Africa. The Project received essential funding from IAEA Member States and the private sector and was launched in 2010.

The first component of the VUCCnet is the Virtual University for Cancer Control. The VUCC is designed as an innovative learning apparatus that, working alongside conventional teaching methods, integrates affordable cancer control education into the curricula being offered at existing African education and training institutions. Through the VUCC, it is expected that students will have access to learning materials that can be used at their own pace, either alongside other course work, or as a means for practicing health care professionals to refine or update their knowledge base, while hands on practical training will still take place in conventional institutions.

The ease of access and affordability offered by the VUCC anticipates enabling more learners to receive cancer control training, thereby increasing the number of health care professionals available in participating Member States.

VUCCnet Africa Pilot Project

The Africa Pilot phase of the VUCCnet project was officially launched in 2010, during a kick-off meeting in Accra, Ghana, which was attended by over 35 leaders in cancer control from Africa, as well as representatives from the IAEA and its partner organizations.

The pilot project, funded by the Roche African Research Foundation, the US Government and the IAEA, is focusing initially on four Member States that represent the English-speaking component of VUCCnet-Africa: Ghana, Uganda, Tanzania and Zambia. The selection of pilot countries was based on a number of factors, including on-going IAEA assistance to these Member States, the Government's decision to embark on a comprehensive cancer control programme, existing baseline capacity at cancer centres within the country and required technical capacity and government commitment

to build human resources in cancer control. A French speaking segment of the project is anticipated to be initiated if additional funding is available.

In further developing cancer education and training in the pilot countries, South Africa and Egypt are expected to operate as mentors as they currently maintain considerable educational capacity and can provide access to institutions focused on training cancer professionals, particularly the IAEA's radiation medicine related candidates.

PPO has been working with the VUCCnet pilot countries to develop the next steps of the VUCCnet project. Plans currently include ten new courses, developed by PACT partners and confirmed by IAEA Member States, with six courses provided for the in-service training of current professionals and four courses established for new students at the pre-service level. The new courses will address areas specified by the pilot countries as priorities, and at least one course will be established for each core component of cancer control.

PPO and its partners are also seeking support from Member States in Africa that are more advanced in the area of cancer control training to share best practices and develop a culture of cooperation in cancer care education, eventually leading to the establishment of sub-regional cancer control workforce training hubs.

»The US views PACT as a model of how the IAEA should promote the peaceful use of nuclear technology in a results-based manner that focuses on cost effectiveness and building sustainable partnerships between recipient countries and donors. Recently, the United States provided $750,000 for a three-year project to establish Regional Cancer Training Networks and a Virtual University for Cancer Control – regional centres for multidisciplinary cancer control training within each global geographic region.«

Ambassador Glynn T. Davies
Former Permanent U.S. Representative to the IAEA

PACT Advocacy and Outreach Activities

Building a Global Campaign

Even before the formal creation of PACT in 2004, the IAEA recognized that broad scale communication about the growing cancer crisis in developing countries would be critical to mobilizing the required financial, technical and human resources to meet the needs for expanded cancer control and care. The IAEA launched a series of public outreach activities about the cancer crisis beginning in 2003. This early campaign included: public information brochures; a public service announcement (PSA) that aired on CNN International; a global press campaign; public appearances by the Director General; a heightened presence on the IAEA website; and expanded outreach activities during the IAEA General Conference and numerous other international fora. Indeed, the IAEA's award for the 2004 Nobel Peace Prize was devoted by the IAEA Board of Governors to a "Global Cancer and Nutrition Fund" dedicated to development projects in these two fields of pressing need.

Strategic Objectives

Thus, the overarching goal of PACT's communications work has been to expand public awareness and mobilize popular and official support for the coordinated work of PACT and the IAEA in the fight against the global cancer epidemic. Over time, and in order to reach this goal, four strategic objectives of PACT's Communication and Outreach Strategy have emerged as central:

1. **To raise awareness and provide information to Member States about the progress, value and impact of PACT initiatives to develop comprehensive cancer control capacity in Member States and regions.**

2. **To build recognition among current and potential partners and donors of the mission achievements of PACT and its role as an umbrella programme for cancer within the IAEA, leading to stronger partnerships, and an increase in fundraising revenue.**

3. **To provide information to internal IAEA audiences about PACT and its role within the IAEA, in order to inform colleagues and enhance support and collaboration.**

4. **To raise awareness and provide information to global leaders and decision makers about the growing cancer crisis in low- and middle-income countries and advocate for the inclusion of cancer on the global health agenda.**

Key Stakeholder Audiences

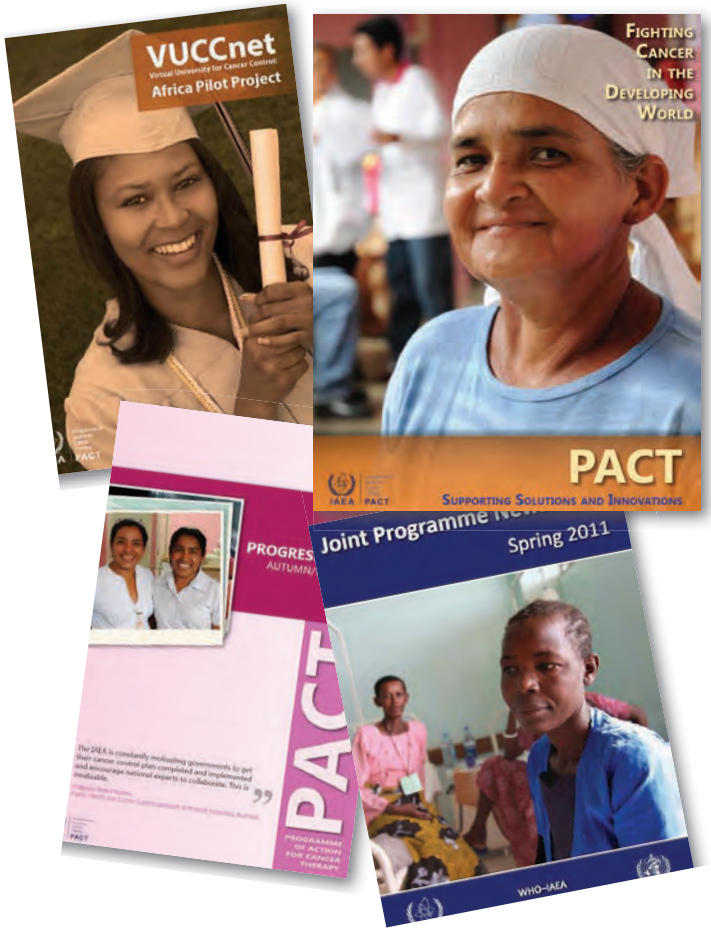
To achieve these objectives, PACT has been providing audiences with the information necessary to both understand the cancer crisis and the role PACT plays. To ensure that this crucial information is supplied to all appropriate audiences, the PACT Strategy aims to reach:

- **IAEA Member State Permanent Missions**
- **Member State Counterparts**
- **Implementation and Advocacy Partners**
- **Decision Makers in national and international bodies**
- **Donors (both current and prospective)**
- **Suppliers of radiation medicine and technologies**
- **Global scientific community and professional associations**
- **Mass media and general Public**
- **IAEA internal stakeholders and staff**

Communication Channels

PACT communicates widely and frequently with internal and external audiences. Numerous outreach products have been identified as central to communication efforts, and several key categories of activities have been defined in a strategy.

- **PACT Web Site** http://cancer.iaea.org/
- **PACT Brochure**
- **PACT Progress Report**
- **WHO-IAEA Joint Newsletter**
- **Country Cancer Profiles**
- **Media releases**
- **Outside Publications such as journal articles**
- **Promotional materials,** including posters, banners and bookmarks
- **Commemoration of the World Cancer Day since 2005**



IAEA Events/Meetings

- **During the IAEA General Conference PPO holds bilateral meetings with Member States delegations and inform Member States of progress achieved**
- **PACT-Sponsored policy-level regional seminars are implemented through the IAEA's TC Department**
- **PACT also hosts seminars for general audiences of Member States representatives, IAEA internal departments and Vienna International Centre (VIC) general staff. They are often organized along thematic lines.**
- **PACT also organizes special seminars with partners to be presented at the VIC, for example 2009's seminar with WHO Ambassador for Cancer Control on the Globalization of Cancer.**

World Cancer Day

World Cancer Day (February 4) is PACT's most public event. Speeches, displays, educational material and other aspects are organized and an event is held over the lunch break in the VIC Rotunda.

Major Annual Events/Conferences

A partial listing of key events attended by the PPO. PACT leverages these events as communications opportunities for strategic audiences.

- **General Debate at UN General Assembly**
- **Breast Cancer Awareness Month**
- **American Society of Radiation Oncology Annual Meeting**
- **IARC Annual Meeting**
- **World Economic Forum**
- **WHO World Health Assembly**
- **UICC World Cancer Congress**
- **BHGI Global Summit on International Breast Health**

Finding Ways Forward in Cancer Control

More than six years into an intensive international campaign aimed at enhanced cancer control in LMIs, many important lessons have been drawn that can guide the PACT initiative in the future. The outstanding challenges, however, loom very large. Several of the most important of these lessons and challenges are outlined briefly below:

The Cancer Crisis in LMIs

Knowledge of the cancer crisis has expanded enormously around the world since the launch of PACT in 2004. But clearly the crisis is only growing larger with time. Moreover, efforts to challenge the cancer epidemic must be better integrated into broader efforts to address the growing threat of NCDs at the international level. Coordinated partnerships against cancer must be expanded at global, regional and national levels. Massive new levels of investment will be required to meet the human resources, technological and infrastructure requirements for expanded cancer control. Greater political will at all levels must be harnessed to build and sustain support for expanded investments and effective national control strategies.

Human Dimensions

All too often in LMIs, cancer cases are discovered in late stages, when the changes for successful treatment are marginal at best. Clearly, prevention and early detection are the keys to bringing down patient fatalities from all forms of cancer in LMIs. But the structures, knowledge and institutions for achieving these objectives remain severely underdeveloped throughout the developing world. Comprehensive cancer control – from prevention to palliative care – has to be implemented in the content of integrated national cancer control strategies for this tragic equation to be altered toward cancer survival.

International Responses

PACT has made sizeable progress in forging working partnerships to address the cancer challenge at the national and international levels. Partnerships remain the key to effective international support to national cancer control planning and implementation. These may be formal (WHO/IAEA) or informal, and must vary according to needs and priorities at the national level. The global cancer control community needs to drive even harder to get the cancer epidemic into the mainstream of the global health and development agenda (Millenium Development Goals).

PACT Strategies

The 7 components of the PACT Strategy have proven effective in promoting integrated and comprehensive strategies for effective cancer control at the national level in numerous countries. But each component of the strategy can benefit from further strengthening and elaboration. Partnership building, fundraising, needs assessment and model demonstration sites have all achieved new landmarks in contributing to NCCPs and action agendas across the developing world. But resources gaps remain at every level. Major deficits in human resources capacities and efficient technology solutions loom largest.

Affordable Technologies

The AGaRT initiative has launched an important new process of dialogue among radiation medicine users, equipment manufacturers and technology specialists from international and engineering organizations. The outstanding challenge will be to recommend radiotherapy operation requirements, suitable and affordable equipment packages and solutions, and financial schemes for the effective delivery of radiotherapy packages.

Human Resources

The tremendous shortfall in trained heath care workers in LMIs is likely to grow for the foreseeable future. PACT's initiative to establish a Virtual University for Cancer Control (VUCC) with an initial focus on the shortfall in Africa is laudable. It is providing one pioneering example of how the shortfall in trained personnel may be addressed. But it is only a beginning. Obviously, similar training efforts are needed for other developing regions of the world; and efforts on an even larger scale will be required in order to facilitate the realization of cancer control plans of many LMIs.

Advocacy and Outreach

PACT's communications and outreach work has succeeded in expanded public and media awareness of the cancer crisis. It has served to mobilize popular and official support for the work of PACT and the IAEA in the fight against the global cancer epidemic. But the public health challenge posed by cancer remains low on the political agenda in most LMIs, and still holds secondary status compared to most communicable disease around the world. A larger and more concerted global campaign will be needed to elevate the fight against cancer to the high priority status it deserves. Governments, local communities, international organizations, the media and political leaders will all need to be targeted with tangible messages that serve to mobilize new resources for concerted actions at the regional, country and community levels.

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