

**FIGHTING  
CANCER  
IN THE  
DEVELOPING  
WORLD**



**PACT**



Programme of  
Action for  
Cancer  
Therapy  
**PACT**

**SUPPORTING SOLUTIONS AND INNOVATIONS**



# FOREWORD

## IAEA Director General Calls for Support in the Fight Against Cancer

Cancer is more than a health concern; in developing countries it is a looming crisis.

Cancer already kills more people globally than tuberculosis, HIV and malaria combined, and the number is growing quickly. Unless we take urgent action, by 2030 over 13 million people will die from cancer every year. The majority of these deaths will occur in developing countries.

Cancer is not a death sentence; there are proven ways to prevent and cure cancer. A third of all cancers can be prevented, and a third can be successfully cured.

The IAEA has been working for over 40 years to bring radiotherapy, a highly effective treatment for cancer, to low and middle income countries. The need for radiotherapy, which can shrink and eliminate cancer tumours, is very high in developing countries, where many cancers are diagnosed too late for effective treatment. Sadly, in the developing world, only 20% of patients who need radiotherapy have access to it today.

This is why I decided to make the fight against cancer in developing countries my first priority when I became Director General in December 2009. However, developing radiation medicine capacity is not enough to tackle cancer; a comprehensive approach is needed. Through its Programme of Action for Cancer Therapy (PACT), the IAEA is combining its expertise in radiation medicine with the experience of the World Health Organization and other international partners to deliver comprehensive cancer control to the places that need it most.



PACT is demonstrating how we can achieve success through partnerships in the fight to save millions of lives by closing the gap in cancer control between rich and poor countries. I call on everyone to take action to fight the cancer crisis in developing countries. Let us work together to save lives.

Yukiya Amano

A handwritten signature in black ink, appearing to read 'Yukiya Amano', written in a cursive style.

IAEA Director General

People living in developing countries deserve access to proven standards of cancer control and care.



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Did  
you  
know?

40% of  
all cancer  
deaths can be  
prevented

# THE CALL TO FIGHT CANCER



**72% of  
cancer cases  
occur in  
developing  
countries**

Cancer is a global problem. In 2010, cancer will kill nearly eight million people worldwide, while over 13 million new patients will be diagnosed with this disease. According to the World Health Organization (WHO), more than two thirds of these new cases and cancer deaths will occur in the developing world, where cancer incidence continues to increase at alarming rates.

For new cancer patients fortunate enough to receive treatment, a long process of medical care awaits. For example, the average

treatment of ovarian cancer requires 368 hours of therapy in the first year alone. For many people in developing countries, cancer treatment is unaffordable or, more commonly, unavailable. Currently, there are roughly 30 countries that lack a single radiotherapy machine, and most cancer cases in low and middle income countries will be diagnosed too late for curative treatment to remain an option.

The failure to include cancer and other non-communicable diseases in the Millennium Development

Goals has resulted in global development funds being directed away from cancer, leaving behind those diagnosed with cancer in developing countries.

Services for cancer and other non-communicable diseases continue to be grossly underfunded. Currently, non-communicable diseases are responsible for 60% of deaths globally, but receive only about 1% of health funding worldwide.

**But there are many reasons for hope.**

Effective treatment for cancer exists and comprehensive cancer control programmes have worked in high income countries.

Although cancer continues to affect the populations in higher resource settings, the rate of cancer illness and death has steadied, and many people diagnosed with cancer can expect to survive and live healthy and productive lives after treatment.

New resources, in the form of medical equipment, medicine or health workers, can have an immediate, positive effect. But achieving positive results requires coordinated action, based on a strategic and systematic approach. PACT is working to build partnerships and bring the resources of the global health community together to fight cancer throughout the developing world.



# IAEA's PROGRAMME OF ACTION FOR CANCER THERAPY (PACT)

In developing countries, about 70% of all cancer cases are diagnosed too late for curative treatment to remain an option.

The IAEA, a specialized Agency of the United Nations, is the world's leading organization dedicated to furthering the peaceful use of nuclear science and technology.

A critically important application of nuclear science and technology is radiation medicine, which is often the only option for the diagnosis and treatment of cancer. Controlled doses of radiation can help shrink, and even eliminate, cancerous tumours. Radiation medicine is also used to help diagnose cancer accurately

and reduce pain and suffering associated with the disease. Approximately 50–60% of people with cancer require radiotherapy at some point during their treatment.

Over the last 40 years, the IAEA has provided radiotherapy equipment and training to cancer centres in over 115 developing Member States. Based on this experience on the ground, the IAEA has recognized that providing radiotherapy equipment and training is insufficient to address a country's cancer burden.





Unless comprehensive national plans to control cancer are put in place, rates of cancer will not be reduced. However, countries need assistance to generate the resources and capacity needed to implement comprehensive cancer control guidelines and provide services to their populations. In addition, the different stakeholders fighting cancer need to share information and fully align themselves with the cancer control plans being developed.

That is why the IAEA established PACT in 2004. PACT is an 'umbrella' programme for all of the IAEA's cancer related activities. In this role, PACT assists countries in developing comprehensive national cancer control plans, following WHO guidelines, and works to synchronize the efforts of the IAEA, WHO and other partners, supporting cancer care and control around the world.

To ease the suffering of those who have been, and will be, touched by cancer, PACT has continued to take an innovative approach to support the cancer control efforts of low and middle income countries. This innovation derives from PACT's core strategy, which is designed to assist developing countries in assessing their cancer burden, establish the partnerships needed to create an effective cancer control programme and provide the training necessary to make cancer control planning a success.

The global reach of the IAEA provides the programme with a unique understanding of the cancer burden faced by developing nations all over the world and offers an unmatched opportunity to make a profound difference in the global struggle against cancer.



“Cancer is increasingly treatable in developed countries, but many developing countries lack the equipment and human resources to respond effectively to the growing epidemic of this terrible disease.”

Yukiya Amano, IAEA Director General



# CURRENT CANCER CRISIS

**84 million** people, most of them in developing countries, will die of cancer in the next **10 years**

The world is facing a global cancer crisis. Often considered 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.

- Every minute, 14 people die of cancer.
- Cancer kills more people than HIV/AIDS, tuberculosis and malaria combined.
- 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.
- More than a third of cancers can be prevented and a third can be cured if detected early and treated properly.
- In developing countries, 70% of cancer cases are diagnosed too late for curative treatment to remain an option.





## Meeting Muzne

Muzne Abubakar Haibar, a mother of four in her forties, comes from Zanzibar, a picturesque gem of an island known for its beautiful beaches and stony city center. About three years ago, Muzne discovered a lump in her breast and quickly sought medical treatment. She was first diagnosed with breast cancer at Ocean Road Cancer Institute in 2008 and had a partial mastectomy. Muzne soon followed up this treatment with chemotherapy, and immediately showed positive signs that doctors had removed all cancerous tissue.

Unfortunately, the cancer returned months later, as Muzne began to experience deep pain within her chest. Her doctors then opted for a full mastectomy and a further regimen of chemotherapy.

"I thought I was OK then," she explained, recounting the experience of losing a breast to surgery. Muzne described the toll that her cancer had taken, not just on her body but on her family as well. Since Zanzibar is a three hour ferry ride from Dar es Salaam, she needed to be away from her family for weeks at a time for surgery, chemotherapy and recovery.

Her fight took yet another unfortunate turn for the worse when doctors discovered that her cancer had metastasized, or spread, to her spine. She now receives radiotherapy and remains hopeful that she will pull through.

# SUPPORTING SUSTAINABLE SOLUTIONS



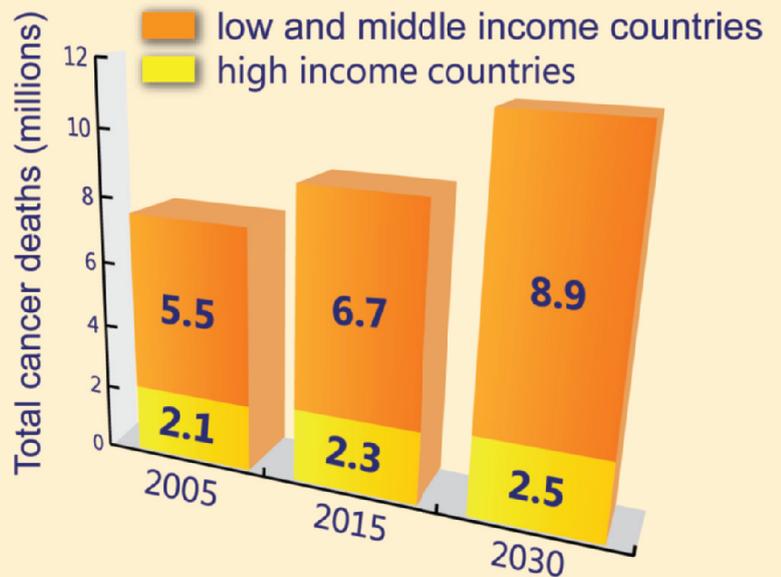
“PACT is more than just a programme addressing a vital, critical global health need... [PACT] focuses on cost effectiveness and on building sustainable relationships between recipient countries and donors.”

His Excellency, Mr. Glyn T. Davies, Ambassador, Permanent Mission of the United States of America to the IAEA, World Cancer Day, 4 February 2010

Saving lives and improving cancer outcomes in developing countries requires an immense, long term commitment to promoting long lasting cancer control solutions. PACT works continuously to support these sustainable solutions:

- Country ownership
- Transfer of knowledge and training
- Building relationships

## Cancer Mortality 25 Year Horizon



Source: WHO

- **Country Ownership**

Commitment from Member States is essential for success. While PACT offers its assistance, governments must take ownership and responsibility for their efforts to control cancer. To reinforce this idea, PACT promotes WHO's approach of National Cancer Control Programmes (NCCPs) as the most efficient way to control cancer locally. NCCPs are comprehensive national programmes that employ strategies that are both cost effective and universally beneficial. They are developed jointly with, and implemented by, governments working to establish a plan for long term action against cancer.

- **Transfer of Knowledge and Training**

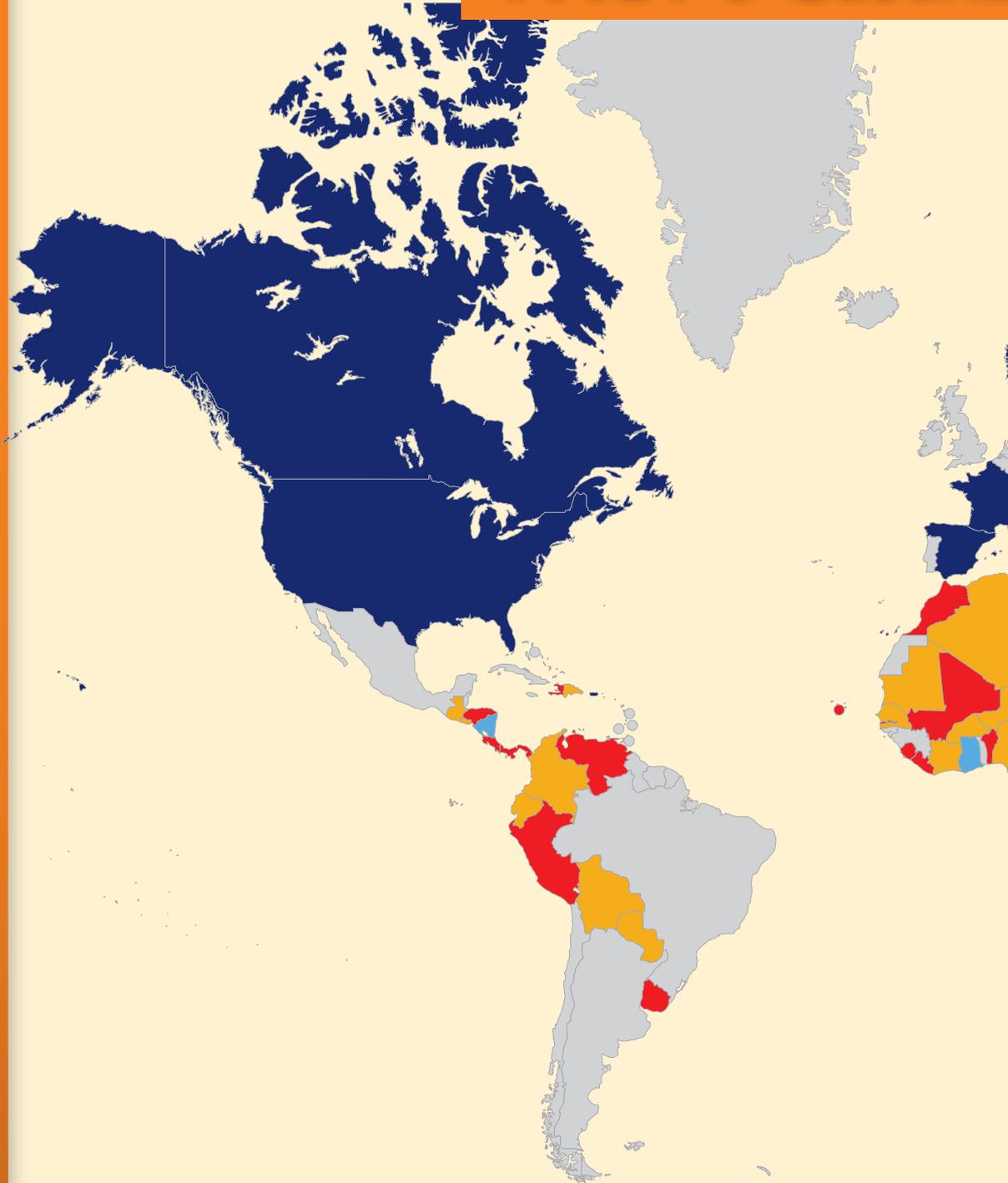
Equipment itself is insufficient to address the cancer crisis, and many countries recognize that the lack of human resources is the greatest obstacle to advancing cancer control capacity. To further the capabilities of developing cancer programmes, PACT facilitates access to

numerous training opportunities and is working to establish regional training and educational mentoring networks, bringing other organizations to the country. These will serve to increase the availability of cancer treatment and the number of cancer care professionals and, eventually, improve cancer survival rates in developing countries.

- **Building Relationships**

Lasting partnerships between developing countries and potential donors or mentors merge resources and offer support and funding beyond what the IAEA is able to offer on its own. Through establishing regional networks, PACT also provides Member States with the potential to support one another in building cancer control programmes.

# PACT's GLOBAL



## imPACT conducted:

- Albania
- Algeria
- Angola
- Armenia
- Bolivia
- Burkina Faso
- Chad
- Colombia
- Cote d'Ivoire
- Dominican Republic
- Ecuador
- El Salvador
- Ethiopia
- Gabon
- **Ghana**
- Guatemala
- Indonesia
- Islamic Republic of Iran
- Jordan
- Kenya
- Lesotho
- Madagascar
- Mauritania
- **Mongolia**
- Montenegro
- Namibia
- **Nicaragua**
- Niger
- Nigeria
- Paraguay
- Philippines
- Republic of Moldova
- Romania
- Senegal
- Serbia
- **Sri Lanka**
- Sudan
- Tajikistan
- Uganda
- **U. R. of Tanzania**
- **Vietnam**
- **Yemen**
- Zambia
- Zimbabwe

## imPACT requested:

- Afghanistan\*\*
- Azerbaijan\*\*
- Bangladesh\*\*
- Benin\*\*
- Bosnia Herzegovina\*\*
- Botswana\*\*
- Cambodia

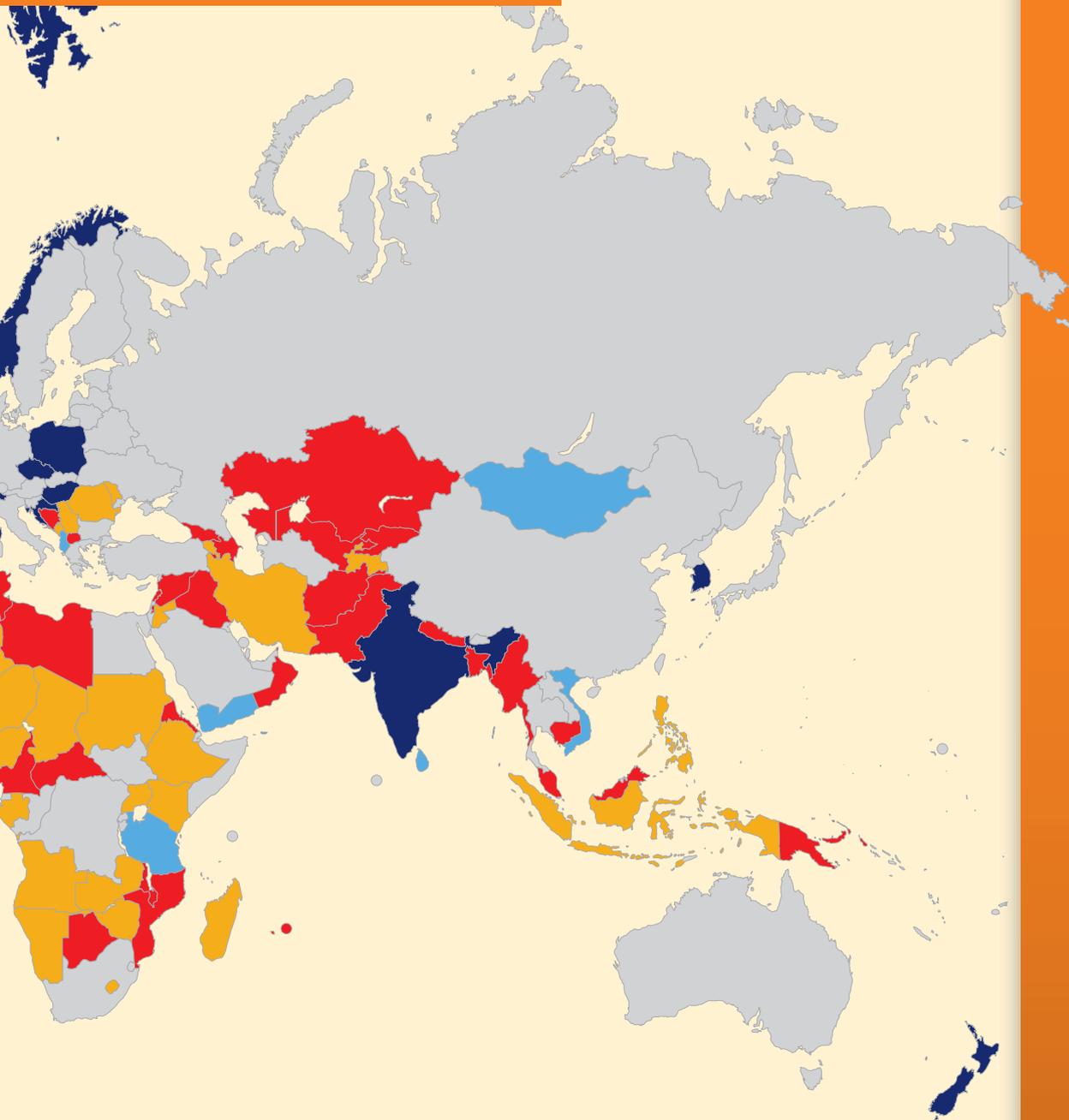
\* Major donor countries to PACT include countries that have contributed \$10 000 or more to the PACT Programme, excluding the cash contributions given by the 58 Member States from the 2004 cash surplus, and other donors, such as OPEC Fund for International Development, F. Hoffmann-La Roche Ltd, UN Women's Guild and UN Federal Credit Union.

\*\* Official request from the Ministry of Health pending.

\*\*\* Country is not yet a full IAEA Member State.

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

# PRESENCE



87 countries have requested assistance to date.

-  PACT Model Demonstration Site (PMDS) [8]
-  Already received a preliminary or full imPACT Review [36]
-  Planning to receive an imPACT Review [43]
-  Major donor countries\* to PACT

## imPACT requested: (continued)

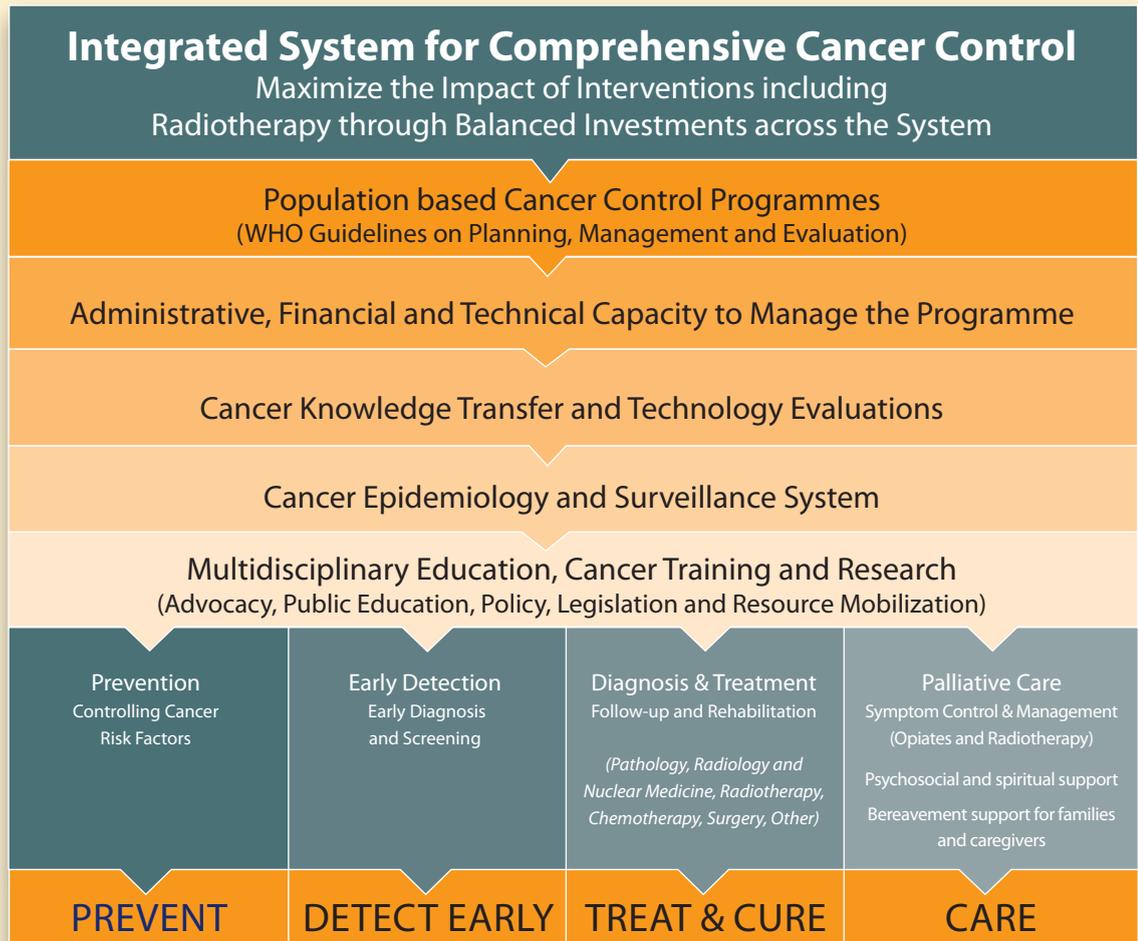
- Cameroon\*\*
- Cape Verde\*\*\*
- Central African Republic\*\*
- Costa Rica
- Eritrea\*\*
- FYR Macedonia\*\*
- Gambia\*\*\*
- Georgia
- Haiti
- Honduras\*\*
- Iraq\*\*
- Kazakhstan\*\*
- Kyrgyzstan\*\*
- Lebanon\*\*
- Liberia\*\*
- Libya\*\*
- Malawi
- Malaysia
- Mali\*\*
- Mauritius\*\*
- Morocco\*\*
- Mozambique\*\*
- Myanmar\*\*
- Nepal
- Oman
- Pakistan\*\*
- Panama\*\*
- Papua New Guinea\*\*
- Peru\*\*
- Sierra Leone\*\*
- Syria\*\*
- Tunisia\*\*
- Uruguay\*\*
- Uzbekistan
- Venezuela\*\*
  
- Palestinian Authority\*\*

## Major donor countries:

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

# CANCER CONTROL: A VITAL INVESTMENT

In developing countries almost **70%** of women with cervical cancer will not survive



Cancer causes poverty. It decimates savings and robs families of income earners. Already, over 85% of health costs in low income countries are paid out of pocket and more than 100 million people are pushed into poverty every year because they lack insurance and have to pay for health care. In some Asian countries, the average cost of one hospital stay for cancer is greater than a farmer's yearly wage.

Comprehensive cancer control is the process through which all areas of cancer control, from prevention to palliative care, are coordinated to reduce the impact of cancer in the community. For comprehensive cancer control to be successful, several cancer components must be synchronized, providing for a strong and unified approach to cancer care.

On a larger scale, the sheer number of cancer cases and deaths impact the national economy. The World Bank notes that the cost of chronic diseases, such as cancer, ranges from 0.02 to 6.77% of GDP. Another estimate found that a 1% increase in the rate of chronic disease corresponds to a 0.05% decline in economic growth.

Much of this cost is avoidable. Investments in comprehensive cancer control can reduce the cost to both individuals and

governments. Currently, in developing countries, more than two thirds of cancer patients are diagnosed very late, making their illnesses more complex and expensive to treat. Taking action in cancer prevention will reduce the number of cancer cases, and early detection programmes can ensure that cancers are found earlier and treated at a lower cost. Of course, some of the returns on investment in cancer control are priceless — returns are relief from suffering and lives saved.



# How PACT HELPS

To lessen the burden of cancer in the developing world, PACT employs several different strategies and approaches, each with specific methods and objectives.



## Fighting Cancer with Understanding

To better understand the cancer issues facing the developing regions of the world, PACT and its partners have developed innovative assessment tools to enable Member States to analyse their cancer burden. Through integrated missions of PACT (imPACT) reviews, the status of policies, plans and infrastructure related to all areas of cancer control are examined by a multidisciplinary team, in order to develop intervention packages that respond to each country's specific needs.

To ensure long term success, imPACT reviews are carried out by experts from IAEA/PACT, WHO and other international partners, only in Member States that request assistance and are committed to advancing their country's fight against cancer. In the past six years, PACT has performed cancer control assessments in nearly 45 countries in Europe, Asia, Africa and Latin America, with over 40 additional countries requesting cancer needs assessments.

## Fighting Cancer with Partnerships

To illustrate the benefits of collaboration on national cancer control programmes, PACT has established global models for action, called PACT Model Demonstration Sites (PMDs). PMDs receive assistance in the design, implementation and evaluation of national cancer control plans and are given support in resource mobilization, to advance all aspects of cancer control in a timely and balanced manner.

These sites demonstrate the potential that all developing nations have to achieve greater success in the struggle to control cancer. This provides low and middle income countries with not only a solid example from which to learn, but also hope in knowing that other countries overcame difficult circumstances to improve cancer standards and outcomes. PACT currently maintains eight PMDs, located in Africa, Asia, Latin America and Europe. Four

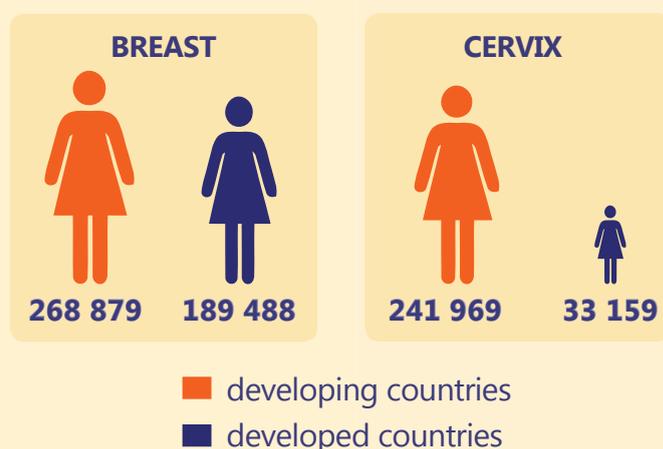
additional PMDs are being considered to make a total of 12 pilot countries.

## Fighting Cancer with Training for Health Professionals

One of the most commonly overlooked aspects of effective cancer control is the training of individuals capable of providing the medical care needed in developing areas. In Africa alone, there is a shortage of nearly 3000 cancer care workers. To reduce this shortage, PACT and its partners have launched the VUCCnet initiative. This initiative establishes a *Virtual University for Cancer Control* and a support *network* of recognized regional cancer training and mentoring centres.

The aim of this programme is to increase the number and capacity of cancer professionals by providing low cost distance learning opportunities for prospective health professionals in participating countries. These educational efforts are provided in addition to practical training and regional certification. The VUCCnet, financially supported by the United States of America, the IAEA and the private sector, is currently in its pilot phase in Africa, with future plans to expand the programme throughout the developing world.

### Women's Cancers Deaths Annually



Source: Globocan 2008

# INNOVATIONS

PACT prides itself on not only utilizing the latest advances in comprehensive cancer control expertise, but also on generating its own approaches to further extend the reach of cancer control efforts.



## Making Radiotherapy Affordable

PACT established the Advisory Group on increasing access to Radiotherapy Technology in low and middle income countries (AGaRT) in 2009. AGaRT brings together radiotherapy users in low and middle income countries, international organizations and experts, and major radiotherapy equipment manufacturers to ensure that developing countries' radiation medicine requirements are met by the diagnostic and therapy equipment being manufactured.

The Advisory Group provides an unprecedented platform through which all parties can voice their concerns and requirements, establishing a mutual understanding between radiotherapy users and suppliers. AGaRT addresses issues of cost, safety, availability and complexity to provide the developing world with machines that are affordable, reliable, safer and easier to use, making the spread of radiation medicine as wide as possible.

Some of the most common cancer types have high cure rates when detected early and treated according to best practices

## Connecting Regional Stakeholders

As a means to connect Member States working towards the common goal of comprehensive cancer care and control, PACT is developing regional cancer training and mentoring networks. Through these networks, countries developing cancer control programmes can work with Member States in the region that have strong cancer programmes, to share relevant knowledge, best practices and positive experiences. This provides Member States with a vehicle to aid in the improvement of cancer care and control throughout their region and establishes a forum through which all participating countries can improve their cancer control capabilities. These networks also provide Member States with the power to develop on their own, and become acquainted with strategies that have worked for other countries sharing similar settings.

## Providing Cost Effective Training

Without an adequate number of cancer control professionals, there is no hope of properly preventing and curing cancer, even if all the necessary drugs or equipment are available. The online learning tool to be developed through VUCC will facilitate access to cancer control education for people in low and middle income countries that do not have access to the facilities needed to obtain the training necessary to work in cancer control. Utilizing on line education combined with adequate practical training helps reduce costs, allowing more people to be trained; it also combats 'brain drain', by permitting those being trained to remain in their native country. This cost effective training will help increase the number of health care professionals in participating Member States and ease the cancer burden around the world.





“The increase in cancer in low and middle income countries could be described as a misfortune. If we fail to do anything about this situation, which is already upon us, then that would be a calamity... It is time to do something. I think the PACT programme at the IAEA is an inspiration.”

Dr. Peter Boyle, President, International Prevention Research Institute and former Director, International Agency for Research on Cancer (2004–2008)



# PROGRAMME HIGHLIGHTS

## 2004

- IAEA Board of Governors and Member States endorse the creation of PACT.

## 2005

- World Health Assembly welcomes the PACT initiative and asks the Director-General of WHO to explore the development of a joint programme with the IAEA on cancer prevention, control, treatment and research.
- Nobel Peace Prize is awarded to the IAEA. A portion of the prize money is contributed to PACT.

## 2006

- African Nobel Laureates Nelson Mandela and Archbishop Desmond Tutu voice support for PACT.
- First major meeting of PACT international partners is held.
- PMDS are established in Albania, Nicaragua, Sri Lanka, the United Republic of Tanzania, Vietnam and Yemen.

## 2007

- Over 70 health professionals from developing countries are supported by PACT to attend international training courses on cancer control.
- Albania, Nicaragua, Sri Lanka, and Yemen hold their first national meetings on cancer control. The United Republic of Tanzania and Vietnam establish national steering committees and working groups begin to plan cancer control implementation priorities.
- OPEC Fund for International Development (OFID) donates \$500 000 to support PMDS, bringing total PMDS pledges and in-kind contributions to over \$2.4 million.
- The Republic of Korea runs a unique fundraising campaign for PACT, contributed to by thousands of individual Korean citizens.

## 2008

- PACT mobilizes \$13.5 million in long term development loans for cancer control in Ghana, funded by OFID and the Arab Bank for Economic Development in Africa (BADEA).
- All PMDSs work on national cancer control planning.

Tobacco causes 80–90% of all lung cancer deaths, and about 30% of all cancer deaths in developing countries

## 2009

- A Joint Programme for Cancer Control is formally signed between WHO and the IAEA. The first WHO–IAEA Steering Committee was held in Vienna in July.
- PACT organizes a side event at the first International Conference on Advances in Radiation Oncology, which becomes the basis for AGaRT.
- PACT adds Ghana as a PMDS.

## 2010

- PACT receives a pledge of \$4 million from F. Hoffmann-La Roche Ltd and the Roche African Research Foundation to help launch the pilot phase of the VUCCnet initiative in Ghana, Uganda, the United Republic of Tanzania and Zambia.
- AGaRT holds its first meeting in Vienna, paving the way for international collaboration to increase the availability of radiotherapy machines worldwide.
- PACT adds Mongolia as a PMDS, bringing the total number of model sites to eight.

## 2011

- The 66th session of the United Nations General Assembly unanimously adopts the “Political declaration of the High-level Meeting of the General Assembly on the Prevention and Control of Non-communicable Diseases”, thereby recognizing the rising prevalence, morbidity and mortality of non-communicable diseases, such as cancer, worldwide.
- Nicaragua discusses the PMDS experience during a panel discussion at the Regional Meeting on Cancer Control in Buenos Aires, Argentina. This was the first time that a PMDS made a presentation on its experience at a regional meeting.

## 2012

- To date PACT has coordinated impACT Reviews in 42 countries throughout the world.



“The PACT programme was built on the principle of taking what we have learned, and applying it where we can.”

Ambassador Nancy Goodman Brinker

Former US Ambassador and WHO Goodwill Ambassador for Cancer Control



# ACHIEVEMENT THROUGH STRATEGIC PARTNERSHIPS

One of the most unique aspects of the PACT programme is its focus on partnerships to achieve the best possible results in furthering the global campaign to control cancer in the developing world. Since its inception, PACT has been devoted to forging partnerships with all organizations working to fight cancer, from WHO to private sector corporations.

PACT believes in the strength and effectiveness of a partnership approach, as the global cancer crisis demands coordinated action. PACT is proud to have shaped strong partnerships with:

- WHO and its regional and country offices, including a WHO–IAEA Joint Programme on Cancer Control
- International Agency for Research on Cancer (IARC)
- Union for International Cancer Control (UICC) and International Network for Cancer Treatment and Research (INCTR)
- National cancer institutes in Brazil, Egypt, France and the USA, and Tata Memorial Centre (India)
- NGOs, including the American Cancer Society (ACS), Breast Health Global Initiative (BHGI), PATH, National Foundation for Cancer Research and the Lance Armstrong Foundation
- Private sector corporations, including the Roche African Research Foundation and Best Medical International, Inc.



# How You CAN HELP

Small investments can make a big difference. Donating to cancer control in developing countries delivers real results to the people that need it most. Every dollar counts.

- Less than \$1 is needed to pay for one outpatient visit for chemotherapy.
- \$3 covers the cost of a PAP smear, helping to detect cervical cancer early.
- \$10 will provide for one complete HPV examination in low income countries, preventing cervical cancer.
- \$100 can relieve pain for a month by providing a 30 day supply of morphine.
- \$350 pays for the complete costs of breast cancer treatment in Asian countries.
- \$1500 is the total cost per life saved with radiation therapy in Nigeria.
- \$5000 covers the cost of training a radiotherapist.
- \$50 000 covers the cost of one imPACT mission.
- \$450 000 is the cost of one basic radiotherapy machine.
- \$500 000 extends the VUCCnet distance learning apparatus to four additional African Member States.
- \$5 000 000 covers one cancer centre, including all necessary equipment and staff, capable of treating hundreds of patients per year.

Only **3.1%** of the **\$285 billion** spent annually on global cancer care goes to developing countries



“Cancer is a serious problem in developing countries; it should be recognized as a vital part of the global health agenda.”

Yukiya Amano  
IAEA Director General





For more information about PACT or to find out more about becoming a PACT partner or donor, please contact:

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