Dear partners, country representatives, dear friends of Rays of Hope,

On World Cancer Day in February 2022, the IAEA launched Rays of Hope: Cancer Care for All. The flagship initiative was inaugurated at the African Union summit together with Senegalese President Macky Sall, chairperson of the African Union, with firm support from Tedros Ghebreyesus, Director-General of the World Health Organization.

We launched Rays of Hope in Africa because it is where the cancer care gap is starkest. More than 20 African nations lack even a single radiotherapy machine. Many patients across the continent receive limited or no care, while others must travel many miles to neighbouring countries.

It is a priority for the IAEA and for me personally to help make it possible for all patients who need radiotherapy to access this life-enhancing treatment, whether they live in Africa or beyond.

We know radiotherapy helps in about half of all cancer cases. But we also know that this form of treatment requires substantial initial funding, large scale and sustainable financing streams, a body of highly trained medical professionals, and a robust safety, security and quality assurance framework. We cannot do it alone. The global scale of the challenge requires a dedicated and concerted response.

This is why we need your support. I hope you will join us in our quest to provide #CancerCare4All.

Rafael Mariano Grossi
Director General, IAEA
The challenge that lies ahead

In 2022, 10 million people died from cancer.

In 2022, 20 million new cases were recorded.

In 2045, 33 million new cases are expected.

In 2045, 17 million deaths are expected.

This number is expected to grow over the next two decades, with low and middle income countries expected to carry the highest burden.

Source: Globocan 2022
The unequal distribution of radiotherapy resources worldwide means not all patients benefit from the same access to cancer care.

Lisa Stevens
Director of Programme of Action for Cancer Therapy, IAEA
The situation is most acute in countries that lack radiotherapy facilities and trained personnel.

+70% of the population in Africa do not have access.
A worrying trend

Along with information collected by the International Agency for Research on Cancer (Globocan 2020), data from the IAEA's Directory of Radiotherapy Centres (DIRAC) reveals an alarming trend: in 2022, technology adoption was developing positively across the board with one exception—radiotherapy.

This means that cancer cases requiring radiotherapy are outpacing available technology.

World Intellectual Property Organization, 2023 Global Innovation Index
20.9% of countries worldwide meeting the minimum radiotherapy resource requirements in 2022 (↓ from 21.5% in 2019)

-1.3%

Reduction in availability of cancer treatment infrastructure worldwide between 2012 and 2022
Half of cancer patients who need radiotherapy in low- and middle-income countries do not have access to it. This is a sobering statistic. And it is unacceptable.

Rafael Mariano Grossi
Director General, IAEA
Our vision

Cancer care for all

With the support of a variety of partners, Rays of Hope strives to reduce cancer deaths worldwide by increasing access to safe and secure radiotherapy and diagnostic imaging. It works with national governments to strengthen radiation safety and nuclear security legislation and infrastructure based on needs and commitment. Focusing on those countries where the needs are the greatest, Rays of Hope prioritizes high-impact, targeted and sustainable interventions.
Member States work to lay the foundations in terms of legislation, radiation safety, nuclear security and physical infrastructure.

The Member State is encouraged to prepare a National Cancer Control Plan on which to base their request for support.

On the basis of the needs analysis and with strong quality assurance and safety foundations in place, the Ministry of Health officially requests RoH support.

IAEA experts can advise on legislation, regulatory infrastructure, radiation safety, nuclear security and physical infrastructure.

IAEA/WHO/IARC cancer experts can provide a full gap analysis and advise on future needs, including through imPACT Reviews.

IAEA experts analyse the request.
Member States are supported to approach financial institutions, banks and private donors directly to help raise funds.

Highly trained professionals are essential for radiotherapy and radiodiagnostics to be provided safely, securely and accurately in the Member State.

The Member State is responsible for ensuring a safe and stable operating environment for the new equipment.

**Sourcing funds**

IAEA experts can help with the preparation of strategic funding documents.

**Training professionals**

IAEA training is channelled through technical cooperation projects with the support of Anchor Centres—regional leaders in cancer care.

**Procuring equipment**

The IAEA can advise on which specialist equipment to procure and coordinate the purchase.

through Rays of Hope (RoH)
The role of Anchor Centres

Anchor Centres are regional leaders in cancer care with decades of experience participating in IAEA coordinated research projects and training programmes. They are selected based on technical, sustainability, quality assurance, logistics and governance criteria. Their role is to create opportunities for regional, subregional and interregional advancement on education, training, research, quality assurance and innovation, as well as to catalyse the development of global databases and platforms for cancer care providers around the world.

Expected functions

<table>
<thead>
<tr>
<th>Expected functions</th>
<th>Education and training</th>
<th>E-learning</th>
<th>Experts</th>
<th>Research</th>
<th>Guidelines</th>
<th>Quality improvement</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>• Provide supervised,</td>
<td>• Support the production of training and e-learning materials</td>
<td>• Provide expertise to support: plans and designs for new facilities; implementing best practices; introducing new imaging and treatment methods; quality assurance; on-site education and training, etc.</td>
<td>• Designing, implementing and following up on IAEA coordinated research activities</td>
<td>• Support IAEA activities in the development of best practice and evidence-based guidelines on medical uses of radiation and imaging</td>
<td>• Support IAEA activities in quality improvement by promoting and conducting local Quality Assurance/Control audits or by promoting the implementation of relevant IAEA methodologies (QUATRO, QUANUM, QUAADRIL) in the region</td>
</tr>
<tr>
<td></td>
<td>structured and practical clinical training</td>
<td>• Publish training materials to support capacity building in the medical uses of radiation and imaging</td>
<td></td>
<td>• Provide countries with training in the design and implementation of clinical trials</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
“As capacity building and knowledge hubs for their respective regions, Anchor Centres play a pivotal role in advancing cancer care by directly benefiting neighbouring countries. Through Anchor Centres, the progress that has been achieved in each country—these individual rays of hope—can be sustained and scaled up, ensuring a brighter future of equitable cancer care for all.”

May Abdel-Wahab
Director of Division of Human Health, IAEA
“Together, and with Rays of Hope adding new impetus, the IAEA and WHO remain committed to upscaling their long-standing close collaboration toward common goals, closing the cancer care inequity gaps and accelerating progress toward the achievement of the 2030 UN Agenda for Sustainable Development.”

IAEA/WHO Joint Statement on Reducing Inequity in Access to Cancer care through Rays of Hope Initiative, 4 February 2022
The role of partner organizations

The IAEA works in close partnership with Member States, United Nations agencies, research organizations, the private sector and civil society to maximize the impact of the Rays of Hope initiative.

Organizations such as the World Health Organization and other global leaders work with the Agency to increase access to cancer care through capacity building and training, and to collaborate on research, quality assurance and data collection.

Through Rays of Hope, the Agency is engaging with the private sector, banks, international development funds and development agencies in Member States to leverage support at every level.

Partner expertise, educational resources and training are also channelled through regional Anchor Centres, building on the IAEA’s established strengths in South-South and triangular cooperation to foster long term solutions.

Construction of radiotherapy centre on-going in one of the first African countries to benefit from Rays of Hope support.
How you can get involved

There are many ways in which you can support Rays of Hope, including:

• Amplifying the visibility of Rays of Hope for increased access to cancer care
• Partnering with the Agency in training, technology, innovation and other areas
• Providing in-kind support by offering equipment, educational grants and hosting fellowships
• Contributing financial resources
• Participating as an expert in Agency missions and events

Supporters of Rays of Hope are its best advocates—we encourage you to reach out to your networks!

If you are interested in collaborating, supporting or partnering with the IAEA on the Rays of Hope initiative, please contact partnerships@iaea.org

Find out more
In the spotlight
In the spotlight: **Rays of Hope Anchor Centres**

Between February 2022 and December 2023:

- Ege University Faculty of Medicine (Türkiye)
- University Hospital Centre of Bab El-Oued and Pierre and Marie Curie Cancer Centre (Algeria)
- Institut National d’Oncologie (Morocco)
- King Hussein Cancer Centre (Jordan)
- Atomic Energy Cancer Hospital, Nuclear Medicine, Oncology and Radiotherapy Institute, Islamabad (Pakistan)

20 cancer centres applied to become Anchor Centres
7 were approved by the IAEA’s review process
5 signed an agreement with the IAEA to become Anchor Centres
A few numbers we are especially proud of

Since its launch in February 2022, Rays of Hope has:

€60m+

- Received more than €60m from different kinds of donors and partners, including Member States and the private sector.

70+

- Received 70+ requests for support.

11

- Signed a partnership agreement with 11 of the largest professional societies in cancer care.

7

- Delivered tangible results in 7 ‘first wave’ countries.

5

- Established an agreement with its first 5 Anchor Centres.

80

- Commenced the training of over 80 medical professionals in the fields of radiotherapy and medical imaging.

15

- Initiated the procurement of 15 specialized radiotherapy and medical imaging machines.
In the spotlight: our goal

Over 70 Member States have already requested IAEA support through the Rays of Hope initiative.

We have estimated that the needs for support to improve access to cancer care in each of these countries could range from €7.5m* to €16m*.

Will you help us reach our goal?

* Based on packages of assistance that are tailored to specific country needs
In the spotlight: donors and partners

A special thank you.

We would like to thank our community of donors and partners whose contributions are already helping patients with cancer in low and middle income countries. With this support, patients can access life saving diagnostic and radiotherapy equipment, and countries can build a trained, sustainable medical workforce.

Member States donating to support others through Rays of Hope

Australia  Monaco
Belgium  Philippines
Finland  Russian Federation
France  Saudi Arabia
Germany  Spain
Israel  Sweden
Japan  United States of America
Republic of Korea  Malta

Member States sharing the costs of Rays of Hope interventions

Benin  Malawi
Jordan  Niger
Kenya

Partners supporting the initiative

GE HealthCare  medi+physics  Roche
Sumitomo Heavy Industries, Ltd.  Controlla Technology Corporation  TNS
In the spotlight: the United States of America

Why the USA backs Rays of Hope

The United States of America has generously supported the IAEA’s efforts to fight cancer and close the global cancer care gap for the past two decades. At the IAEA’s General Conference in September 2023, the United States announced a further seven million dollars of support to Rays of Hope, bringing the total United States contribution so far to $49 million.

By contributing to the Rays of Hope initiative, the United States is reaffirming its commitment to promoting the benefits of peaceful nuclear science and technology, equity in global healthcare, adoption and development of machine-based radiation sources, and the pursuit of the United Nations Sustainable Development Goals.

“Through Rays of Hope, we can bring together experts in healthcare, policy, security, and development, from all over the world, and marshal the resources needed to improve and expand global access to crucial radiotherapy technology.”

Jennifer Granholm
US Secretary of Energy
In the spotlight: **private sector partners**

**The private sector as strategic ally in support of Rays of Hope**

The IAEA is exploring new ways to collaborate with the private sector, with the aim of closing the gap in access to the medical uses of radiation technology in low and middle income countries, and expediting the implementation of Rays of Hope.

In 2023, the Agency formalized partnership agreements with three leading health technology companies—each of which has committed time and resources to strengthen cancer diagnosis and treatment capacity in countries around the world.

**Join us as our partner in the fight against cancer.**

No one can tackle this major health crisis alone. We must amplify our joint efforts to help save lives, including by cooperating with leading medical technology companies. We can’t afford to lose any more time.

*Rafael Mariano Grossi*  
IAEA Director General
In the spotlight: the role of innovation

How innovation can speed up the progress towards #CancerCare4All

Innovation can accelerate the speed and scale of progress in the global fight against cancer through:

- groundbreaking research that provides the much needed evidence base for resource efficient treatment approaches;
- global databases that generate novel insights; and
- state-of-the-art learning platforms that advance education and training.

Through Anchor Centres, Rays of Hope will support the IAEA’s efforts on innovation to help upscale global access to cancer care even further.

May Abdel-Wahab
IAEA Director of Division of Human Health
In the spotlight: examples of innovation

A few ways in which the IAEA is breaking boundaries through cancer research

Some recent examples of the IAEA’s work on innovation in cancer care include:

• Applied research (the HYPNO trial) examining a more intensified treatment regimen (hypofractionation) for head and neck cancer. Through this technique, radiation oncologists can treat patients in nearly half the time, shortening waitlists and enabling more patients to receive timely treatment.

• The development of virtual reality models for three cancer treatment procedures. This cost effective tool provides trainees with an immersive learning environment to strengthen their skills. It can be particularly advantageous when the necessary medical equipment has not yet been installed or made available.

Healthcare professionals (a medical physicist and a radiation oncologist) in Mozambique using the IAEA’s new virtual reality tool to train in brachytherapy procedures.
Yesterday, my doctor confirmed that I am getting ahead of the disease. And I feel good, I feel good.

Maria Bavera, Paraguay

Expanding access to brachytherapy

Maria is from Paraguay, where cervical cancer killed one in three women diagnosed with the disease in 2020 (Globocan).

When Maria started her treatment, there were only two public radiotherapy machines available in the country, and a lot of people needing treatment. Thanks to IAEA support for training personnel and delivering the country’s first public brachytherapy machine in 2018, Maria is alive and feeling well. But we need to do more for women like Maria, much more.

Will you help us increase access to this life-saving technology in Paraguay and beyond?
In the spotlight: Kenya

Ensuring radiation safety for patients and staff

As one of the first countries to benefit from the Rays of Hope initiative, Kenya has received assistance from the IAEA for both training and procurement.

In particular, the IAEA helped Kenya build an appropriate radiation safety infrastructure. As a result, Kenya has been able to issue the regulations that ensure the proper protection of workers and patients, and the safe use of radiation in medicine.

With this safety infrastructure in place, two external beam radiotherapy units (linear accelerators, or linacs) will soon be installed in the country, each of which has the capacity to treat up to 1000 people per year.

“Kenya is fully aware that an adequate radiation safety infrastructure is a pre-requisite for any IAEA equipment. With the two linacs installed, not only are patients healthier, but they and the medical staff who treat them are safer.”

James Keter Chumba
Director General, Kenya Nuclear Regulatory Authority
In the spotlight: Malawi

On the way to national treatment capacity

With a cancer population of nearly 18,000 expected to double by 2040 (Globocan 2020), Malawi was one of the first countries to benefit from Rays of Hope support.

So far, training has begun for 13 radiotherapy and medical imaging professionals, and procurement is underway for 1 linear accelerator, HDR brachytherapy machine, CT-simulator and dosimetry equipment. The procurement of additional specialised equipment is under review and the construction of radiotherapy bunkers is ongoing.

Funding remains a challenge, as does the training of enough qualified professionals to safely and securely provide radiotherapy services to patients.

“We are a testimony of what Rays of Hope is doing in terms of training young scientists in nuclear related fields, providing expert services and procuring radiotherapy equipment. As a country, we are delighted that very soon we will be able to treat our cancer patients in Malawi.”

Khumbize Kandodo Chiponda
Malawi Minister of Health
In the spotlight: Tanzania

Building capacity to treat patients in their home country

In the United Republic of Tanzania, cancer is the second leading cause of death among women, with cervical cancer accounting for nearly a third of all newly diagnosed cancers in 2020 (Globocan).

With IAEA support, these women now have access to much needed radiotherapy through the delivery and installation of a high dose rate (HDR) brachytherapy machine in Dar es Salaam.

This is an example of the sort of comprehensive assistance the IAEA can provide to countries in their fight against cancer. But we need to do more, much more to increase access to cancer diagnosis and treatment.

“Now we can offer treatment within the county and treat many more patients who otherwise would face expensive trips abroad. I think we are able to give patients with cancer more hope.”

Dr Sadiq Siu
The United Republic of Tanzania
In the spotlight: Ethiopia

Sharing knowledge to build national and regional capacity

Staff work long hours and the radiotherapy machine is available 95% of the time. However, there is currently a two year waiting list for radiotherapy treatment at the Black Lion Hospital in Ethiopia, and many patients die before having the chance to receive it.

It was Dr Munir A Aman who led the clinical implementation of the hospital’s only linear accelerator. He is also one of the first radiation therapists to have been trained by the IAEA in Ethiopia. He is now sharing that knowledge with others.

Will you help medical professionals like Dr Aman give their patients the treatment options they deserve?

“Thanks to an IAEA fellowship, I led the first linear accelerator clinical implementation at Black Lion Hospital in Ethiopia, and over 3000 cancer patients have been treated.

Dr Munir A Aman, Ethiopia”
In the spotlight: Mongolia

Building on South-South and triangular cooperation

The situation of cancer care in Mongolia is alarming, with the nation experiencing the world’s highest rate of cancer mortality per 100,000 population (one in five).

With national cancer cases expected to double in the next 20 years (Globocan 2020), Mongolia is one of the countries who has requested support from Rays of Hope.

Harnessing existing technical cooperation projects in the field of health and building on several IAEA missions to the country, Mongolia signed a trilateral partnership agreement with the IAEA and the Korea Institute of Radiological and Medical Sciences (KIRAMS) in September 2023 with the aim of establishing a robust and sustainable healthcare infrastructure.

“We are confident that our agreement with the IAEA and KIRAMS will help strengthen and improve our national capacity, including technological advancement, equipment and human resources development.”

Manlajjav Gunaajav
Secretary of the Nuclear Energy Commission of Mongolia
Join our mission
rays-of-hope@iaea.org