How the IAEA contributes to the Sustainable Development Goals

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The 17 Sustainable Development Goals (SDGs) are a range of objectives agreed on by the United Nations General Assembly in September 2015. They aim at stimulating action over the next 15 years in areas of critical importance for humanity and the planet. They balance the three dimensions of sustainable development: the economic, social and environmental.

The IAEA makes peaceful nuclear technology available to its Member States in many fields including energy, human health, food production, water management and environmental protection — all important areas recognized under the SDGs.

To shed light on the role of nuclear science and technology, and in turn the IAEA, in some areas covered by the SDGs, here is a look at how the IAEA is providing support to countries in using nuclear and isotopic techniques. This work is expected to intensify in the light of the SDGs, and will help to bring the world closer to achieving the relevant targets.

Hunger and malnutrition are often rooted in food insecurity and agricultural challenges, causing well-being to suffer and economies to grow strained. Through the IAEA, and its partnership with the Food and Agriculture Organization of the United Nations (FAO), several countries around the world are improving food security and agriculture by using nuclear and isotopic techniques to protect plants from insect pests and to breed new plant varieties that show improved crop yields, disease resistance and/or drought tolerance. Others use these techniques to protect the health of their livestock and enhance reproduction. For example, the IAEA assists countries like Senegal to use the sterile insect technique in eradicating tsetse flies, which used to decimate livestock.

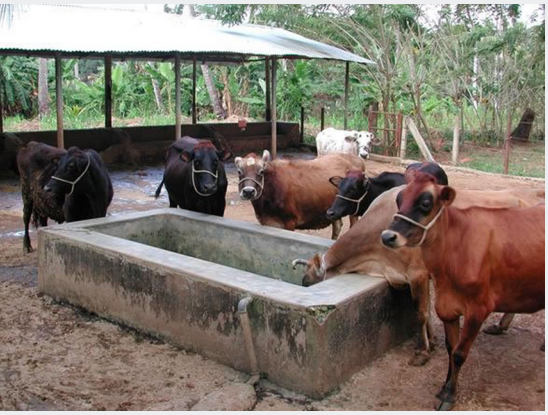
As foodstuffs are prepared for consumption, irradiation helps to ensure quality and safety. With IAEA assistance, some countries use irradiation to eliminate potentially harmful bacteria and unwanted insect pests, while others benefit from their use in extending food shelf life.

Food insecurity and agricultural challenges often lead to hunger and malnutrition. Using stable isotope techniques, health professionals can monitor body composition and food intake and absorption to better understand the complexities of malnutrition and whether treatment and prevention measures are effective.

Achieving sustainable development is not possible if health suffers due to debilitating diseases and health conditions. To help achieve the SDGs target of reducing deaths from non-communicable diseases by one third, the IAEA is well-positioned to assist countries in tackling cancer by helping them to devise comprehensive cancer control programmes, establishing nuclear medicine, radiation oncology and radiology facilities, as well as supporting education and training for specialized health professionals. The IAEA's work contributes to improved cancer management and access to care worldwide.

The IAEA also works to improve the utilization and reliability of facilities, including research reactors, that produce life-saving radioisotopes and to support countries in limiting patients' overexposure to radiation during medical procedures.

With greater access to radiation and nuclear medicine technologies, countries are also able to more precisely diagnose and manage diseases, like cardiovascular disease, as well as monitor and evaluate health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conditions, such as tuberculosis and other infections.

With the help of nuclear techniques, for example, scientists and health workers in Guatemala are now able to identify the causes and consequences of malnutrition in the country's children, enabling policymakers to devise strategies to combat obesity and stunting. The IAEA also supports countries in developing capabilities for the early detection of diseases that spread from animals to humans, such as Ebola.

Water is essential to life. As populations grow and economies expand, access to clean and safe water is imperative. Isotopic techniques shed light on the age and quality of water. Some countries, such as Brazil, use this to implement integrated water resource management plans to sustainably use resources and to protect water and water-related ecosystems, while others use the data to address scarcity and improve freshwater supplies.

The IAEA's work includes helping farmers in Africa to use their scarce water resources efficiently through nuclear and isotopic techniques, establishing isotope laboratories in the Middle East for studying groundwater resources, and assisting in the development of water use and management policies in the Sahel region.

As society leaves its mark, water pollution is also a challenge. With IAEA support, some countries are now turning to radiation technology to treat industrial wastewater, reducing contaminants and improving water quality, making water safer for reuse.

Access to clean, reliable and affordable energy is a precondition for sustainable economic growth and improved human well-being, affecting health, education and job opportunities. The IAEA fosters the efficient and safe use of nuclear power by supporting existing and new nuclear programmes around the world, catalysing innovation and building capacity in energy planning, analysis, and in nuclear information and knowledge management. The IAEA helps countries meet growing energy demands for development, while improving energy security, reducing environmental and health impacts, and mitigating climate change.

The IAEA supports countries considering and planning the introduction or expansion of their nuclear power generation capacities, assisting and guiding them through all stages of the process towards the safe and secure use of nuclear power.

Cutting-edge industrial technologies underpin the success of strong economies, in developed and developing countries alike. Nuclear science and technology, in particular, can make a major contribution to economic growth, and have an important role to play in support of sustainable development.

With the IAEA's help, some countries have increased the competitiveness of their industries by using these technologies for non-destructive testing in safety and quality tests, and irradiation techniques for improving product durability, from car tyres to pipelines and medical devices to cables.

Industrial testing using nuclear technology has contributed to the competitiveness of Malaysia's manufacturing sector, for example. The country has built itself a niche in South-East Asia, offering non-destructive testing with nuclear devices to manufacturers in neighbouring countries.

Irradiation also improves industrial sustainability by helping to lower environmental impact through treatment of flue gases at coal-fired power plants and through the identification of pollution pathways in the air.

Nuclear science, including nuclear power, can play a significant role in both climate change mitigation and adaptation. Nuclear power, along with wind and hydro, is one of the lowest-carbon technologies available to generate


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electricity. The IAEA works to increase global awareness of the role of nuclear power in relation to climate change, in particular to try to ensure that the role that nuclear power can and does play in assisting countries to reduce their greenhouse gas emissions is properly recognized.

Nuclear power forms an important pillar of many countries' climate change mitigation strategies, and an increasing number of countries are considering nuclear power within their national energy portfolios.

Nuclear science and technology can play a vital role in assisting countries to adapt to the consequences of climate change. With the IAEA's support, the use of nuclear techniques has led to better flood control in the Philippines, to the development of new irrigation techniques in increasingly arid regions of Kenya, and to the creation of new wheat seed varieties in Afghanistan that thrive in harsh environmental conditions.

Oceans contain vast ecosystems brimming with marine life, and are a vital resource for people that rely on the sea for their livelihood, day-to-day nutrition, or both. To sustainably manage and protect oceans and, in turn, support coastal communities, many countries are using nuclear and isotopic techniques, with support from the IAEA, to better understand and monitor ocean health and marine phenomena like ocean acidification and harmful algal blooms.

The IAEA assists Member States in the use of nuclear techniques to measure ocean acidification, and provides objective information to scientists, economists, and policymakers to make informed decisions.

National, regional and international laboratory networks established through IAEA coordination also offer several countries an avenue for scientific collaboration, and are key resources for analysing and monitoring marine contaminants and pollutants.

Desertification, land degradation and soil erosion can jeopardize lives and livelihoods. Isotopic techniques provide accurate assessments of soil erosion and help to identify and trace erosion hot spots, providing an important tool to reverse land degradation and restore soils. These include using fallout radionuclides, which help to assess soil erosion rates, and compound specific stable isotope analysis, used to identify where eroded soil originated. Furthermore, the IAEA is supporting Member States to fulfill their obligations to combat desertification.

The IAEA's support in these areas helps many countries to gather information using these techniques to shape agricultural practices for more sustainable land use. This contributes to higher incomes, while also improving conservation methods and protection of resources, ecosystems and biodiversity.

Farmers in developing countries such as Viet Nam use these tools to identify the source of soil erosion afflicting their plantations, allowing them to save their farms and earn extra income.

Partnerships with Member States are at the heart of the IAEA's activities. Close collaboration between the IAEA, United Nations organizations and other international and civil society organizations also helps to maximize the impact of the IAEA's support towards the achievement of Member States' development priorities.

In 2014, the IAEA provided support to 131 countries and territories through its technical cooperation programme.

In cooperation with its partners, including a global network of regional resource institutions and collaborating centres, the IAEA promotes science-based policy making and access to technology and innovation.

Longstanding partnerships, such as the ones with the Food and Agriculture Organization of the United Nations (FAO) and the World Health Organization (WHO), allow international organizations to combine their skills and resources in their respective areas of expertise and mandate to support Member States.

To ensure that the IAEA's assistance is tailored to the specific needs and priorities of its beneficiaries, and is sustainable in the long term, activities are based on consultations with Member States. Over 90 Member States already have in place Country Programme Frameworks that identify areas of cooperation with the IAEA in support of their national development priorities.

IAEA Member States also share their knowledge, technologies and best practices through regional technical cooperation projects – including regional/cooperative agreements – coordinated research projects and projects involving the IAEA's specialized laboratories. The IAEA promotes and facilitates bilateral, South–South, sub-regional and topical collaboration among countries, regulators and institutions.