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BALANCING THE THREE PILLARS OF THE NPT: HOW CAN PROMOTING PEACEFUL USES HELP?

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I. INTRODUCTION

The Treaty on the Non-Proliferation of Nuclear Weapons (NPT) is founded on three pillars: non-proliferation (Pillar I); disarmament (Pillar II); and peaceful uses of nuclear energy (and nuclear science, technology and applications) (Pillar III). These three pillars are also reflected in the work of the International Atomic Energy Agency (IAEA).

While the IAEA is not a party to the NPT, it has a specific verification role as defined under Article III.1 of the treaty. This role is to verify the fulfilment of obligations assumed under the NPT by non-nuclear-weapon states (NNWS) that are party to the treaty 'to prevent the diversion of nuclear energy from peaceful uses to nuclear weapons or other nuclear explosive devices'.[1] This obligation is in line with the IAEA's statute, in particular, Article III.A.5, regarding the establishment and administering of safeguards at the request of the parties to any bilateral or multilateral arrangements.[2] However, the IAEA is more than a nuclear watchdog. In terms of its mandate, the IAEA, in accordance with Article II of its statute, 'seeks to accelerate and enlarge the contribution of atomic energy to peace, health and prosperity throughout the

[1] United Nations, Office for Disarmament Affairs, 'Treaty on the Non-Proliferation of Nuclear Weapons (NPT)', Article III.1.

[2] IAEA, 'The Statute of the IAEA', Article III.A.5.

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SUMMARY

The Treaty on the Non-Proliferation of Nuclear Weapons (NPT) is the cornerstone of the non-proliferation regime and the centrepiece of global efforts to promote cooperation in the peaceful uses of nuclear energy and further the goal of general and complete nuclear disarmament. Although there is no implementation body for the NPT, the International Atomic Energy Agency (IAEA) has been entrusted with key verification responsibilities under Article III of the treaty, where it plays an important role in achieving the objectives under Article IV to foster international cooperation for peaceful uses of nuclear energy.

This paper argues that peaceful uses of science, technology and applications have an important role to play in achieving the United Nations Sustainable Development Goals (SDGs). Noting that the European Union (EU) is the biggest donor of development assistance, the paper suggests that the EU enhance its contribution to peaceful uses of nuclear science, technology and applications through supporting the IAEA's technical cooperation activities. This will contribute to delivering the EU's non-proliferation goals, thus strengthening global human security.

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world', and as such has an important role to play in achieving the objectives under Article IV of the NPT to foster international cooperation in the peaceful uses of nuclear energy.[3]

The landscape of the IAEA and the NPT is marked by attempts to establish a balance between non-proliferation, nuclear safety, and security measures on the one hand and access to nuclear power and nuclear science, technology and applications (hereafter 'peaceful uses') on the other. This paper further distinguishes between nuclear power applications, such as the production of electricity using nuclear power, and nuclear non-power applications, which refers to all other applications, such as those used to improve health care and enhance food security.

The European Union (EU) is an important contributor to the IAEA. This cooperation is based on the Financial and Administrative Framework Agreement signed in 2003 between the European Community and the United Nations (UN).[4] The EU provides financial support to the IAEA in the areas of nuclear safety, security and safeguards. While the EU's support of these activities facilitates the responsible application of nuclear science and technology for peaceful uses in IAEA member states, it does not provide budget support to the IAEA for the research and development of non-power applications or to the IAEA's Technical Cooperation (TC) programme, which is the primary vehicle for the transfer of peaceful uses to its member states.

This paper focuses on how increased cooperation on peaceful uses can help to restore the balance between the three pillars of the NPT. It argues for investment in peaceful uses and contributions to the IAEA's TC activities through both the TC programme and the Peaceful Uses Initiative (PUI). Budget constraints prevent the IAEA from meeting the needs of all its member states. Therefore, such investment will expand developing countries' access to peaceful uses by improving the IAEA's ability to transfer such technology and know-how to its member states.

To this end, the paper proposes that the development arm of the European Commission, the Directorate-General for International Partnerships (DG INTPA), contribute to the IAEA's TC activities, in particular its efforts to give developing countries equal access to radiotherapy for cancer treatment. Increasing support to the IAEA in this manner will align with the EU's commitment to global security and stability and its support to developing countries in the achievement of the UN Sustainable Development Goals (SDGs), as outlined in the EU's Development Consensus strategy (2017).

The contribution of peaceful uses to the UN 2030 Agenda for Sustainable Development, which defines the 17 SDGs, has been recognized by the EU and the international community alike.[5] Peaceful uses can, among other uses, mitigate the impact of climate change on food security, improve soil and water management, improve human health, and prevent future pandemics, thus contributing to global human security.

The ongoing Covid-19 pandemic has derailed progress on the SDGs. The war in Ukraine and the reallocation of resources to address the current humanitarian crisis will also have a significant impact on development and efforts to reduce global poverty and hunger. In addition, the war is threatening the integrity of the NPT, which is the cornerstone of the non-proliferation regime. Frustration regarding the lack of meaningful progress on disarmament under Article VI has been long-standing, but the current crisis throws this into sharp relief. During these difficult times, it is imperative that the international community harness the full potential of peaceful uses to address these challenges and achieve lasting human security. This will bolster the non-proliferation regime writ large and contribute to upholding the NPT as the cornerstone of global strategic stability.

The paper argues that investing in peaceful uses both supports and strengthens non-proliferation and nuclear safety and security efforts. It first provides a broad overview of the current global landscape and the state of the NPT (section II). Thereafter, it looks more closely at the role of the IAEA and its peaceful uses activities, including a closer examination of its budget and the goals of those activities relevant to Article IV of the NPT (section III). The paper then focuses on the European Union, its strategies, positions, and

[3] IAEA, 'The Statute of the IAEA', Article II, Objectives; and United Nations (note 1), Article IV.

[4] IAEA, Partnerships, 'European Union', [n.d.].

[5] The Sustainable Development Goals are at the heart of the 2030 Agenda for Sustainable Development and comprise 17 goals that all countries are urged to act on in global partnership. The 17 SDGs are: (1) No poverty; (2) Zero hunger; (3) Good health and well-being; (4) Quality education; (5) Gender equality; (6) Clean water and sanitation; (7) Affordable and clean energy; (8) Decent work and economic growth; (9) Industry, innovation and infrastructure; (10) Reduced inequalities; (11) Sustainable cities and communities; (12) Responsible consumption and production; (13) Climate action; (14) Life below water; (15) Life on land; (16) Peace, justice and strong institutions; and (17) Partnerships for goals. For more information see <https://sdgs.un.org/goals>.

contributions relevant to the NPT, global security, and development (section IV). Finally, it explores ways in which the EU can increase its contribution to the IAEA's peaceful uses activities and offers recommendations (section V).

II. OVERVIEW OF THE GLOBAL LANDSCAPE

Even before the Russian invasion of Ukraine, the Covid-19 pandemic was negatively impacting national budgets and those of multilateral institutions, with far-reaching consequences for global economic stability and the achievement of the SDGs. In 2020, the year the Covid-19 pandemic gained a global foothold, nearly one in three people in the world did not have access to adequate food. Direct economic losses amounting to $7.6 billion were reported by 35 countries for that year, of which close to 50 per cent ($3.7 billion) were recorded in the agricultural sector.[6]

Adding to the impact of the pandemic is the growing frequency and intensity of natural disasters that are putting vulnerable communities and food systems worldwide at risk. The UN Food and Agriculture Organization (FAO) concluded in its SDG Progress Report that the impact of climate change highlights the urgency of building more resilient agricultural systems.[7] In his remarks in 2021 to the High-Level Meeting on Financing for Development in the Era of Covid-19 and Beyond, UN Secretary-General Antonio Guterres spoke of the pandemic as leading to a lost decade for development, noting that the number of extremely poor people around the world is set to increase by up to 224 million.[8]

The impact of the war in Ukraine will be even more far-reaching for global economic stability and the achievement of the SDGs. Together, Ukraine and Russia account for 30 per cent of the world's wheat market and 80 per cent of the world's sunflower seed oil production, both important staple foods.[9] The war and the sanctions on Russia have resulted in the worst disruptions to wheat supplies since World War I.[10] In addition to affecting other commodities produced by these two countries, these disruptions will have a significant impact on food security in developing countries that are net importers of these commodities. Urgent and substantial policy actions are required by governments and the international community to stem the tide of hunger, poverty and the ensuing instability that will follow in the wake of the ongoing Covid-19 pandemic and the war.

On the human health front, the picture is also bleak, as the incidence of cancer is on the rise. The World Health Organization (WHO) warns that the number of new cases worldwide in 2040 is likely to be 47 per cent higher than in 2020. Developing countries will shoulder the brunt of the burden due to the lack of access to affordable cancer diagnosis and treatment options.[11] In addition, the Covid-19 pandemic has spotlighted the global impact of communicable diseases, and there is now a keen realization that countries and multilateral institutions alike must invest in measures that will prevent or mitigate the impact of future pandemics. The pandemic also highlighted inequities in the global health system, as was seen in the distribution of vaccines and tests, with most supplies having been widely available in developed countries but less accessible in developing countries.[12]

An overview of the current state of the world would be incomplete without mentioning the energy crisis that is wreaking havoc on food prices and threatening the already tenuous political stability in many countries. In sub-Saharan Africa, an estimated 660 million people will remain without access to electricity in 2030, while 90 per cent of the world's economy committed itself to net-zero targets at the 26th UN Climate Change Conference (COP26) held in 2021.[13] Another development that will make the energy crisis more pronounced is the impact of the war in Ukraine on gas and oil prices. As Europe looks for ways to reduce its dependence on Russian gas and oil,

[6] Food and Agriculture Organization of the United Nations (FAO), *Tracking Progress on Food and Agriculture-related SDG Indicators 2021: A Report on the Indicators under FAO Custodianship* (FAO: Rome, 2021), p. 8.

[7] FAO (note 6), p. 8.

[8] United Nations, Secretary-General, 'Remarks to high-level meeting on financing for development in the era of Covid-19 and beyond: Jobs and social protection for poverty eradication', 28 Sep. 2021.

[9] IndexMundi, Statistics for global wheat and sunflower oil production.

[10] *The Economist*, 'War and sanctions have caused commodities chaos', 12 Mar. 2022.

[11] UN News, Health, 'Impact of Covid-19 on cancer care has been "profound", warns UN health agency' 2 Feb. 2021.

[12] Here, the IAEA played an important role in supporting developing countries by providing 129 countries and territories with real-time RT-PCR and diagnostic kits and related items. See IAEA, 'IAEA assistance for the rapid detection and management of COVID-19', Fact sheet, 14 Jan. 2022.

[13] World Bank, 'Report: Universal access to sustainable energy will remain elusive without addressing inequalitites', Press release, 7 June 2021.

innovative nuclear technologies could play a greater role in the energy mix in Europe in the future.

Current state of the NPT

Against this backdrop, the 10th NPT Review Conference (RevCon), originally scheduled for August 2020, is now scheduled to take place in August 2022 due to the Covid-19 pandemic. While the inevitable delay of the RevCon could have contributed to a more constructive conference, as states parties were given more time to make progress on issues which threatened to derail it in 2020, the unfolding developments in Ukraine are likely to halt much of the progress made in that regard. As relations between the West and Russia continue to deteriorate, the prospect of a meaningful NPT RevCon looks grim. If the RevCon takes place in August 2022 as currently planned, it seems unlikely that it will deliver a conference outcome that reaffirms the role of the NPT in strengthening global security.

In regard to arms control, even before the war in Ukraine, global stability had been threatened by the demise of the Intermediate-Range Nuclear Forces (INF) Treaty and the 2018 withdrawal of the United States from the Joint Comprehensive Plan of Action (JCPOA) reached between the E3/EU+3 (France, Germany, and the United Kingdom/the EU plus China, Russia and USA) and Iran. In the past two years, the USA and Russia extended the New Strategic Arms Reduction Treaty (New START)—the last remaining US–Russian arms control treaty—for another five years, and JCPOA parties returned to the negotiating table. However, additional progress on arms control does not look promising given escalated tensions between Russia and the West. In addition, a successful revival of the JCPOA remains uncertain.

Since the last NPT RevCon in 2015, frustration over the lack of progress on disarmament on the part of NNWS, especially among the countries of the Non-Aligned Movement (NAM), continues to mount.[14] The concern that nuclear-weapon states (NWS) are not taking their nuclear disarmament commitments under Article VI of the NPT seriously resulted in the 2017 negotiation of the Treaty on the Prohibition of Nuclear Weapons (TPNW) and its entry into force in January 2021.[15] While many argue that this may weaken the NPT, this paper argues that the TPNW is the result of an already weakened treaty. As noted by Harald Müller and Carmen Wunderlich, the TPNW 'has not divided the NPT community, but is the product of a foundational division that has grown worse since 2005, largely due to NWS policies'.[16]

The TPNW exists because the NWS failed to deliver on one part of the 'Grand Bargain' at the core of the NPT. The Grand Bargain is between the three pillars: non-proliferation (Pillar I), under which the NNWS agree to forego nuclear weapons while placing all nuclear materials, facilities and activities under IAEA safeguards; disarmament (Pillar II), under which the NWS agree to undertake good faith efforts to end the nuclear arms race and make progress towards general and complete disarmament; and cooperation on peaceful uses (Pillar III), under which NNWS exercise their inalienable right to access peaceful uses.

It has been observed that 'any compliance failure by a prominent state-party to the NPT is a potentially serious blow to the long-term survival of the treaty, the existing non-proliferation norm that the treaty has helped nurture, and the hopes for a peaceful world'.[17] This is particularly true in the current political climate, in which the veiled threat of the use of nuclear weapons by Russia to prevent other countries from joining forces with Ukraine has pushed the world to the brink of a nuclear war. Given this threat, it can be argued that this proves the ultimate failure of the NPT Grand Bargain.[18] Russia's actions give impetus to the TPNW supporters highlighting the lack of progress on nuclear disarmament and the frustration within the NPT that largely stems from NWS policies.[19] While the promoters of the TPNW have not suggested that the treaty replace the NPT, the argument that stronger

[14] United Nations, General Assembly, 'Statement by HE Mr Mohammad K. Koba, Chargé d'Affaires/Ambassador of the Republic of Indonesia, on behalf of the Non-Aligned Movement', First Committee General Debate 76th Session of the United Nations General Assembly, 4 Oct. 2021. See also 'Statement by HE Mohammad Koba, Ambassador/Deputy Permanent Representative of the Republic of Indonesia, on behalf of the Non-Aligned Movement', First Committee General Debate 75th Session of the United Nations General Assembly, 9 Oct. 2020.

[15] Erästö, T., 'The NPT and the TPNW: Compatible or conflicting nuclear weapons treaties?' SIPRI WritePeace blog, 6 Mar. 2019; Erästö states that 'the issue should be seen in the context of the broader legitimacy crisis within the NPT, which is caused mainly by the lack of implementation of Article VI, and which also contributed to the negotiation of the TPNW'.

[16] Müller, H. and Wunderlich, C., 'Nuclear disarmament without the nuclear-weapon states', *Daedalus, Meeting the Challenges of a New Nuclear Age*, vol. 149, no. 2 (Spring 2020), p. 184.

[17] Weiss, L., 'Nuclear-weapon states and the Grand Bargain', *Arms Control Today*, 2003.

[18] Umland, A. and von Essen, H., 'Putin's war is a death blow to nuclear non-proliferation', *Foreign Policy*, 21 Mar. 2022.

[19] Hudson, K., 'Nuclear disarmament now', *Tribune*, 11 Mar. 2022.

measures are required to remove nuclear weapons from the equation will gain traction. As the integrity of the NPT hangs in the balance, it is a reminder to states parties that the NPT is about not only non-proliferation and disarmament but also access to peaceful uses, which is equally important for global security and could serve as a lifeline for the NPT.

Preparations in advance of the 10th NPT Review Conference

Efforts to achieving a successful 10th NPT Review Conference started when then President-Designate Rafael Grossi embarked on regional consultations to win over technical communities in developing countries to the cause of having a successful NPT RevCon outcome. These consultations were supported by the EU under Council Decision (CFSP) 2019/615 to provide an opportunity for the President-Designate to share his vision of all three pillars with regional states parties and to listen to their priorities and concerns.[20]

Further regional consultations were conducted in Africa, East Asia, and Latin America with the support of Canada, the USA, and the UK, specifically in relation to strengthening Pillar III of the NPT. The purpose of these consultations was to highlight the work of the frontline users of nuclear technology and nuclear industry, mainly in the energy, agriculture and medical sectors, and to hear from them about the challenges and opportunities at national and regional levels for improving access to peaceful uses. The consultations also served to consider how the NPT RevCon could be leveraged in this regard.[21] In August 2021, the now President-Designate, Ambassador Gustavo Zlauvinen, completed the regional consultations process started by his predecessor. The consultations identified the importance of raising awareness of the benefits of peaceful uses and highlighted the need to expand and increase access to nuclear technology and human capacity as some of the key priorities under Pillar III of the NPT.[22]

In his January 2021 statement on the value of these consultations, Ambassador Zlauvinen spoke about the ways in which states parties could improve awareness of the benefits of peaceful uses and achieve a balance between the three pillars. One of the ways he mentioned would be for the RevCon to consider 'how to strengthen the IAEA's facilitation of peaceful uses, broaden its impact and ensure its long-term security, so that all who need to derive its benefits are able to do so'.[23]

At the RevCon, states parties should aim to advance the role of peaceful uses in addressing growing global development challenges under Pillar III of the NPT. This is one area in which all states parties should be able to agree and could serve as 'low-hanging fruit'. To this end, state parties could also highlight the link between peaceful uses and the SDGs in their national statements and at side events to create awareness of the benefits of peaceful uses. Given the lack of progress on disarmament and the current state of the world, a display of support to Pillar III could contribute to salvaging the NPT and strengthen the role of the IAEA in facilitating access to peaceful uses.

III. PILLAR III AND THE ROLE OF THE IAEA

For more than 60 years, the IAEA has been evolving to meet the needs of its member states. The IAEA, created in 1957 after US President Eisenhower's 'Atoms for Peace' speech, has the mandate of working with its member states and partners to promote safe, secure and peaceful nuclear technologies. The IAEA statute outlines its objectives, in which Article II states:

The Agency shall seek to accelerate and enlarge the contribution of atomic energy to peace, health and prosperity throughout the world. It shall ensure, so far as it is able, that assistance provided by it or at its request or under its supervision or control is not used in such a way as to further any military purpose.[24]

[20] Council Decision (CFSP) 2019/615 of 15 Apr. 2019 on Union support for activities leading up to the 2020 Review Conference of the Parties to the Treaty on the Non-Proliferation of Nuclear Weapons (NPT), *Official Journal of the European Union*, L105/25, 16 Apr. 2019.

[21] Ingrid Kirsten, one of the authors, assisted with the conceptualization of these workshops, the development of their agendas and the identification of experts.

[22] Some of the areas in which the effectiveness of peaceful uses cooperation and assistance can be improved at national and international levels identified during these consultations are reflected in 'Facilitating Dialogue to Support Enhanced Peaceful Uses Cooperation as Envisioned under Article IV of the Treaty on the Non-Proliferation of Nuclear Weapons', Working paper submitted by Canada, Japan, the Republic of Korea, the United Kingdom of Great Britain and Northern Ireland and the United States of America, 2020 NPT Review Conference, NPT/CONF.2020/WP.46, Jan. 2022.

[23] Zlauvinen, G., 'Wilton Park: Sustainable approaches to peaceful uses of nuclear energy and technology', Remarks by Ambassador Gustavo Zlauvinen, President Designate of the 10th NPT Review Conference, 26 Jan. 2021, p. 4.

[24] IAEA (note 3), p. 5.

While the IAEA is not party to the NPT, in accordance with NPT Article III, it is entrusted with key verification responsibilities 'to prevent diversion of nuclear energy from peaceful uses to nuclear weapons or nuclear explosive devices'.[25] Under NPT Article III, NNWS are required to conclude a comprehensive safeguards agreement with the IAEA. Furthermore, the IAEA has an important role to play in the implementation of Article IV of the NPT that indicates the 'inalienable right of all the Parties to the Treaty to develop research, production and use of nuclear energy for peaceful purposes without discrimination' and indicates that all parties 'undertake to facilitate, and have the right to participate in, the fullest possible exchange of equipment, materials and scientific and technological information for the peaceful uses of nuclear energy'.[26] Through the IAEA's peaceful uses activities, it serves an important role in facilitating the exchange and promoting the application of nuclear science and technology and in supporting 'its Member States in attaining their SDGs'.[27]

The IAEA assists countries in their application of nuclear science and technology and supports its member states in finding innovative solutions to fast-track their development. Assistance provided by the IAEA includes, but is not limited to, research and development, the transfer of technologies and related techniques, and capacity development. This support enables countries to use nuclear non-power applications to improve health care, reduce poverty and hunger, and mitigate the impact of climate change, among others. In terms of nuclear power applications, the IAEA's support to countries with existing nuclear power plants includes enhancing the performance and safe long-term plant operation as well as the effectiveness of engineering processes for new builds. For member states embarking on nuclear power programmes, the IAEA's support includes giving scientific and technical assistance as well as providing guidance and services for the development and deployment of nuclear power and research reactor technology.[28]

To support the responsible use of nuclear power and non-power applications, the IAEA assists its member states in developing and implementing a robust, necessary, and complementary nuclear safety and security infrastructure. It also applies safeguards to verify that States honour their international legal obligations to use nuclear material and technology for only peaceful purposes.

While some may argue that the benefits of peaceful uses and the role of the IAEA are widely known and therefore there is no need for their further promotion, this paper demonstrates that this is not the case. The IAEA is commonly associated with its role as a 'nuclear watchdog', which refers to its mandate to monitor and verify that all nuclear material is used for peaceful purposes and not diverted for military use. In 2010, then IAEA Director General Yukiya Amano made cancer the focus of the Science Forum at the 54th IAEA General Conference 'to change the widespread perception of the Agency as simply the world's "nuclear watchdog" because it does not do justice to [the IAEA's] extensive activities in other areas, especially in nuclear energy, nuclear applications and technical cooperation'.[29]

The goal of focusing the IAEA's activities beyond that of a nuclear watchdog have been intensified under the current Director General, Rafael Grossi, who participated in the UN Climate Change Conference (COP26) in 2021 to highlight the contribution of peaceful uses to tackling climate change.[30] Director General Grossi is also making every effort to raise awareness of the contribution of the IAEA and its peaceful uses activities to the UN SDGs. On 16 March 2021, in the first address by an IAEA Director General to the European Parliament, Director General Grossi highlighted the scope of the IAEA's work and its contribution to the SDGs by explaining that 'Nuclear techniques and technologies help countries protect their crops, protect their health through nuclear medicine all over the world' and emphasizing the IAEA's role in fighting plastic pollution and reducing the risk of future pandemics.[31]

During the regional consultations referred to in section II of this paper, national voices have been added to those of the two DGs in calling for peaceful uses to be given more attention so that their full potential

[25] United Nations (note 1), Article III.1.

[26] United Nations (note 1), Article IV.

[27] IAEA, 'The IAEA and the Non-Proliferation Treaty', [n.d.].

[28] For more information on the IAEA's services see <https://www.iaea.org/>.

[29] Henriques, S., 'More than a "Watchdog"', IAEA Division of Public Information, 20 Sep. 2010.

[30] Liou, J., 'IAEA at COP26: How nuclear power and technologies can help tackle climate change', IAEA Office of Public Information and Communication, 29 Oct. 2021.

[31] Liou, J., 'IAEA Director General highlights global impact of cooperation with European Union, calls for closer partnership', IAEA Office of Public Information and Communication, 16 Mar. 2021.

can be realized.[32] The VCDNP task force of high-level policy makers and experts on peaceful uses released a report in November 2021, which is expanded on later in the paper, highlighting the lack of awareness of the benefits of peaceful uses, particularly of non-power applications and of the contribution of the IAEA to achieving the SDGs.[33]

It is useful to explain why a distinction is made between power and non-power applications. It is no secret that nuclear power in Europe is a divisive topic, and this became ever more evident in the negotiations on the EU Taxonomy Regulation adopted on 4 June 2021 and the question surrounding whether nuclear should be considered a green and sustainable energy technology in Europe's pursuit to be climate neutral by 2050. The debate had France and Germany on opposing sides, where France backed nuclear energy and Germany opposed it. While many understand the low-carbon power advantages to nuclear, opponents find the lack of a sustainable solution to deal with radioactive waste as running contrary to classifying nuclear energy as a green and sustainable energy source for the future. The Complementary Climate Delegated Act on 2 February 2022 resulted in the conclusion that specific nuclear activities would be covered under the EU Taxonomy Regulation as a 'transitional' category subject to strict conditions.[34]

In the authors' interactions with members of the public and policy makers in Europe, they have noted that peaceful uses are often equated with nuclear power, and people are less informed about how nuclear technology is used for lifesaving applications in treating cancer, improving food security, and detecting and fighting disease. Therefore, within the context of the European Union, it is helpful to make the distinction between power applications (i.e. the production of electricity using nuclear power) and non-power applications (i.e. all other applications) when discussing matters related to peaceful uses of nuclear power and nuclear science, technology and applications.

[32] Wilton Park, 'In support of Africa's Agenda 2063: Pathways forward for expanding peaceful uses of nuclear energy and nuclear technology in Africa', Report, Feb. 2020, pp. 2, 15.

[33] Sokova, E. K. and Kirsten, I. (eds), *VCDNP Task Force on Peaceful Uses of Nuclear Science and Technology: Report and Recommendations* (VCDNP: Vienna, Dec. 2021).

[34] World Nuclear News, 'A guide to the EU's "green" taxonomy—and nuclear's place in it', 10 Feb. 2022.

Balancing the priorities of the IAEA programme and budget

The IAEA carries out its work in two main areas: the regular programme and the TC programme. The regular budget consists of an operational and a capital component and comprises six major programmes (MPs).[35] The IAEA's main sources of funding are the regular budget fund and extrabudgetary programme funds. The latter are mainly supplied by member states, and in some cases, by other donors. Contributions to the extrabudgetary funds are voluntary.[36]

The Medium-Term Strategy of the IAEA is prepared in consultation with its member states and serves as a roadmap for the Secretariat to assist in identifying priorities while preparing the IAEA's programme and budget during the period covered by the strategy. It covers the six MPs of the IAEA's work: nuclear power (MP1); nuclear science, technology and applications (MP2); nuclear safety and security (MP3); safeguards (MP4); efficient management (MP5); and technical cooperation (MP6). The 2012–17 Medium Term Strategy set a clear objective to strengthen the promotion of nuclear science, technology and applications for the achievement of the Millennium Development Goals.

The current Medium Term Strategy offers more forecasting of the demands for the future, including an anticipated increase and interest of member states in peaceful uses, and a higher global energy demand.[37] It recognizes the role of peaceful uses to address development challenges, especially concerning poverty and hunger, human health and climate change.[38] It further identifies the TC programme as the main vehicle for

[35] The six MPs are: MP1 (Nuclear Power, Fuel Cycle and Nuclear Science); MP2 (Nuclear Techniques for Development and Environmental Protection); MP3 (Nuclear Safety and Security); MP4 (Nuclear Verification); MP5 (Policy, Management and Administration Services); and MP6 (Management of Technical Cooperation for Development).

[36] IAEA, 'Budget', [n.d.].

[37] IAEA, 'Medium Term Strategy 2018–23', [n.d.].

[38] Some of the key nuclear science, technologies and applications covered in the 2018–23 Medium Term Strategy include food safety, security and sustainable agricultural production through the Joint FAO/IAEA Programme of Nuclear Techniques in Food and Agriculture; nuclear techniques in the assessment and treatment of noncommunicable diseases, such as cancer and cardiovascular diseases; isotopic techniques for water resources mapping and enhanced water security; measuring, monitoring and mitigating environmental impacts through the use of isotopes and nuclear techniques; production of medical isotopes for medical diagnostic imaging procedures; and applications for advanced nuclear and radiation techniques for industrial development.

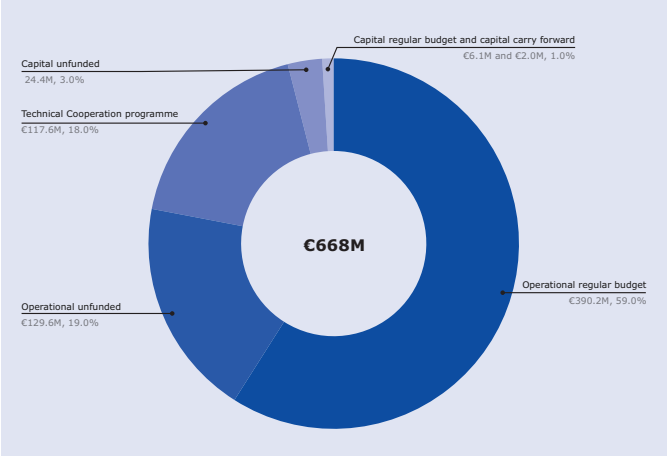

Figure 1. IAEA 2022–23 programme and budget overview

Notes: This figure shows the total required resources for the IAEA's activities during the budget year 2022–23. Of the total, the figure shows 19 per cent or €129.6 million of the budget as unfunded activities, for which extrabudgetary resources from member states or non-traditional funders will need to be sought.

Source: IAEA, *The Agency's Programme and Budget 2022–2023*, GC(65)/2 (IAEA: Vienna, July 2021), <https://www.iaea.org/sites/default/files/gc/gc65-2.pdf>, p. v.

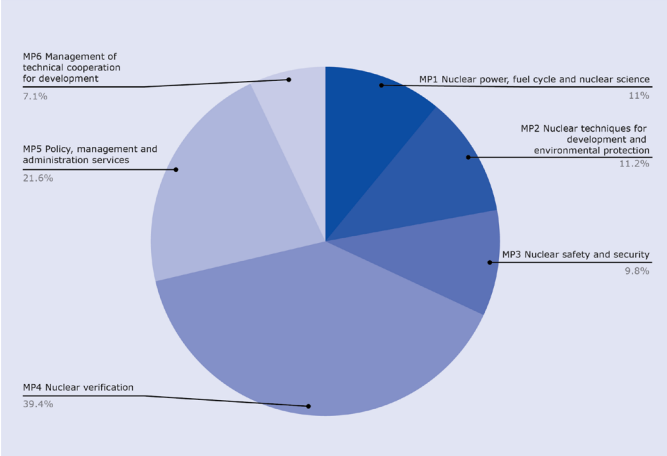

Figure 2. IAEA 2022–23 operational regular budget

Notes: This figure shows the IAEA's regular budget for the 2022–23 budget cycle, in which €390.2 million is proposed. The budget is broken down into the six major programmes.

Source: IAEA, *The Agency's Programme and Budget 2022–2023*, GC(65)/2 (IAEA: Vienna, July 2021), <https://www.iaea.org/sites/default/files/gc/gc65-2.pdf>, p. 11.

assisting member states in the achievement of the SDGs through 'facilitating and enhancing the development of nuclear technology and know-how and their transfer to and among member states for peaceful uses'.[39] The Medium Term Strategy emphasizes that in order to maximize the contribution of peaceful uses to achieve development priorities through the TC programme, the need for global partnerships with the UN and other multilateral organizations, intergovernmental and non-governmental bodies, and the private sector, as envisaged under SDG 17, is needed. In addition to SDG 17, peaceful uses contribute to eight other SDGs, from SDG 2 on zero hunger to SDG 14 on life below water.[40]

The TC programme is funded by the Technical Cooperation Fund (TCF), extrabudgetary contributions, government cost-sharing (funding where the recipient state also contributes to the overall cost of the project) and in-kind contributions. The TCF is funded by annual voluntary contributions from member states to their share of the TCF Target (established using UN assessment rates). The TCF Target is set by the IAEA Board of Governors following consultations with member states and is used to implement national, regional, and interregional technical cooperation projects proposed by member states and approved by the IAEA Board of Governors. The management of the TC programme is funded through MP6 of the IAEA's regular budget.[41]

While the TCF is a voluntary fund, it is not an extrabudgetary fund. The contributions are not earmarked and do not have conditionalities attached to them, as in the case of the extrabudgetary funds. Member states are strongly encouraged to contribute to the TCF, and the overall attainment rate is estimated annually for planning purposes in the IAEA's programme and budget.[42]

The IAEA has been operating largely under the constraints of a zero real growth budget for several decades, which means the IAEA's budget cannot grow to match the increase in demand for its services. For the 2022–2023 budget cycle, the IAEA's total required resources, consisting of the regular budget and extrabudgetary resources (including resources for the TC programme and unfunded activities in the

[39] IAEA (note 37).

[40] The IAEA and its support to countries on the use of nuclear science and technology contributes to 9 of the 17 SDGs. These include SDG 2 Zero Hunger; SDG 3 Good Health and Well-Being; SDG 6 Clean Water and Sanitation; SDG 7 Affordable and Clean Energy; SDG 9 Industry, Innovation and Infrastructure; SDG 13 Climate Action; SDG 14 Life Below Water; SDG 15 Life on Land; and SDG 17 Partnerships for the Goals. For further information see <https://www.iaea.org/about/overview/sustainable-development-goals>.

[41] IAEA, 'Funding the programme', [n.d.].

[42] IAEA, 'Technical Cooperation Fund Allocation for 2022', IAEA GC(65)/RES/5, Sep. 2021.

regular budget for which extrabudgetary resources are required), amounts to €668 million (see figures 1 and 2). Of that total, unfunded activities, for which extrabudgetary resources will be sought from member states and non-traditional funders, account for 19 per cent or €129.6 million of the budget (see figure 1).[43]

It is not uncommon for the allocation of scarce resources to become a source of tension among member states due to divergent priorities. The primary reason developing countries join the IAEA is to benefit from the transfer of nuclear technology and know-how for peaceful uses, which takes place largely through the TC programme.[44] Within the context of the IAEA, the Group of 77 (G77), a coalition of 134 developing countries, is the platform for them to voice their concerns and cooperate on issues of mutual interest. Within the context of the NPT, the forum for developing countries is known as the NAM. The G77 promotes a balanced distribution of the IAEA's budget between what it refers to as 'the three pillars of the IAEA', namely (*a*) the promotion of peaceful uses of nuclear technology, including technical cooperation, (*b*) safety, and (*c*) safeguards.[45]

In the opinion of the majority of G77 countries, there is an imbalance in the distribution of the IAEA budget between these 'three pillars'. In 2009 IAEA Director General Mohamed ElBaradei made an emotional appeal to member states in the June meeting of the Board of Governors to accept his budget proposal, which he characterized as 'credible instead of realistic'.[46] He asked member states to consider their needs and what it would cost for the IAEA to meet all of them, meaning those related not only to safeguards, security and safety but also to fighting poverty. He noted that fighting poverty was a statutory function of the IAEA and at the heart of the global security system.[47] In his appeal, he echoed the concern of the G77 that prioritizing non-proliferation, safety and security comes at the expense of access to peaceful uses.

In 2002 the IAEA Board of Governors made the decision, after the September 2001 attacks on the United States, to expand the IAEA's activities in support of physical protection of nuclear facilities and nuclear material to include activities relevant to preventing acts of terrorism involving nuclear materials and other radioactive materials.[48] The Nuclear Security Fund (NSF) was established as an extrabudgetary mechanism to fund these activities. In the wake of the 2007–2008 financial crisis, member states contributing to the NSF argued that the IAEA's nuclear security activities should be funded from the regular budget. This was met with strong opposition by the G77, as it views budget negotiations in the IAEA as a zero-sum game in which the TC programme will inevitably be on the losing side of the equation.[49] To date, most of the IAEA's nuclear security activities continue to be funded through the NSF. As pressure on national budgets increase, tensions related to funding nuclear security are expected to increase as well.

Developed countries, particularly the leading technology holders, argue that non-proliferation and nuclear security measures are essential to global security. However, within the context of the NPT, nuclear weapon states have failed to make meaningful progress on disarmament, which the NAM argues belies their concern for global security and reflects a fundamental imbalance between the three pillars of the treaty. Nuclear material categorized as 'military materials' make up 83 per cent of weapons–usable materials and fall outside the scope of safeguards and current international security standards, mechanisms, and confidence-building arrangements. Only 17 per cent of nuclear materials are used for peaceful civilian applications.[50] Therefore, NNWS, especially developing countries, bear a disproportionate amount of the burden in the implementation of safeguards. This imbalance highlights the unequal relationship derived from the Grand Bargain of the NPT, which contributes

[43] IAEA, *The Agency's Programme and Budget 2022–23*, GC(65)/2 (IAEA: Vienna, July 2021).

[44] Ingrid Kirsten, one of the authors, is well versed with the priorities of the G77, given her appointment as a South African diplomat for 20 years and 'friend of the coordinator of the G77', as well as the coordinator of the G77 during her tour at the South African Embassy in Vienna between 2012 and 2015.

[45] Group of 77, 'Statement of the Group of 77 and China during the IAEA Informal Programme and Budget Committee Meeting, on 3 Feb. 2022, delivered by HE Mr Azzeddine Farhane, Ambassador, Permanent Representative of Morocco'.

[46] ElBaradei, M. 'Director General's intervention on budget at the IAEA Board of Governors', IAEA, 16 June 2009.

[47] ElBaradei (note 46).

[48] IAEA, 'Nuclear security: Progress on measures to protect against nuclear terrorism', Report by the Director General to the 46th General Conference, GC(46)/RES/13, Sep. 2002.

[49] Group of 77, 'Statement of the Group of 77 and China during the IAEA Board of Governors starting 7 Sep. 2009, Delivered by HE Ambassador Eugenio María Curia, Permanent Representative of Argentina'.

[50] NTI, *Bridging the Military Nuclear Materials Gap* (NTI: Washington, DC, Nov. 2015).

to increased tensions in the IAEA when considering budgetary priorities and the allocation of resources.

Tensions between IAEA member states on budgetary priorities within the IAEA are likely to increase due to the strain on national budgets caused by the Covid-19 pandemic and the war in Ukraine. This will add an increased urgency to Director General Grossi's commitment to seek non-traditional sources of funding for the IAEA to meet the growing needs of developing countries, as these events are expected to have a disproportionate long-term impact on their economies.[51] The VCDNP Task Force also recommended that the IAEA and its member states mobilize additional resources, such as ODA funds, to expand access to and improve the deployment of peaceful uses in developing countries.[52] Receiving funding from non-traditional sources to support the IAEA's peaceful uses activities is addressed in more detail later in the paper.

IV. THE EUROPEAN UNION: POSITION AND STRATEGIES

The European Union is a strong supporter of multilateralism, as outlined in the EU Global Strategy, in which it states, 'the EU will promote a rules-based global order with multilateralism as its key principle'.[53] This pledge is repeatedly emphasized in the EU statements at the IAEA General Conferences, where the EU expresses its commitment to nuclear non-proliferation and disarmament as well as its strong support for the full, complete and effective implementation of the NPT. The NPT is viewed as a key multilateral instrument for international peace, security and stability and is seen as essential for the 'further development of the applications of nuclear energy for peaceful purposes'.[54]

The Council Conclusions on the 10th NPT Review Conference express the EU's 'unequivocal support for the NPT as the cornerstone of the global nuclear non-proliferation regime' as well as its 'unwavering support for the safeguarding and strengthening of the nuclear disarmament, non-proliferation and arms control architecture'.[55] The Council Conclusions highlight the EU's resolve 'to ensure the highest standards of nuclear safety, security and safeguards' while recognizing the IAEA's central role and the EU's funding of such activities .[56]

The European Instrument for Nuclear Safety Cooperation has a budget of €300 million for the period from 2021 to 2027 to support third countries in the areas of nuclear safety and radiation protection, nuclear waste management and nuclear safeguards.[57] In addition, the EU Council Decision (CFSP) 2020/1656 identified €11.5 million in funds focused specifically on the EU's support towards nuclear security in the framework of implementing the EU's strategy against the proliferation of weapons of mass destruction (WMD), which was adopted in 2003 as a 'living action plan'.[58] The strategy against the proliferation of WMD emphasizes a multilateral approach as the best way to maintain international order and stresses the need to uphold and strengthen existing multilateral treaties on non-proliferation and disarmament.[59] The European External Action Service (EEAS) works on the implementation of the EU strategy against proliferation of WMD.

In the nuclear realm, the EU focuses primarily on nuclear safety, security, and safeguards, in line with the strategy that emphasizes 'non-proliferation should be mainstreamed in overall policies' through supporting institutions that work to uphold treaty compliance and verification and the need for strong export controls.[60] The focus on nuclear safety, security and safeguards is reflected in the EU's funding to the IAEA as well. However, the strategy also notes that 'the EU will continue to address the root causes of instability including through pursuing and enhancing its efforts in the areas

[51] IAEA, Report on the Implementation of the Strategic Guidelines on Partnerships and Resource Mobilization, Report by the Director General, GOV/INF/2021/41.

[52] Sokova and Kirsten (note 33), p. 12.

[53] European Union (EU), EU Global Strategy, 2016, p. 8.

[54] European Union (EU), EU Statement on 65th General Conference, IAEA, 20–24 Sep. 2021.

[55] Council of the European Union, Council conclusions on the 10th Review Conference of the parties to the Treaty on the Non-Proliferation of Nuclear Weapons (NPT), 13243/21, 15 Nov. 2021, para. 1.

[56] Council of the European Union (note 55), para. 20.

[57] Council of the European Union (note 55), para. 20.

[58] Council Decision (CFSP) 2020/1656 of 6 Nov. 2020 on Union support for the activities of the International Atomic Agency (IAEA) in the areas of nuclear security and in the framework of the implementation of the EU Strategy against Proliferation of Weapons of Mass Destruction, *Official Journal of the European Union*, L372 I/4, 9 Nov. 2020, Article 3(1).

[59] Council of the European Union, 'Fight against the proliferation of weapons of mass destruction: EU strategy against proliferation of Weapons of Mass Destruction', 10 Dec. 2003.

[60] Council of the European Union (note 59), para. 14.

of political conflicts, development assistance, reduction of poverty and promotion of human rights'.[61]

The European Consensus on Development (2017) presents the EU's shared vision and framework for development cooperation and aligns the EU's development policy with the 2015 UN agenda, 'Transforming our World: The 2030 Agenda for Sustainable Development'.[62] The consensus stresses that the SDGs are based on a human rights and sustainable development approach that is consistent with the EU's core values and principles outlined in the Treaty on the European Union (TEU), Article 21(1), namely 'democracy, the rule of law, the universality and indivisibility of human rights and fundamental freedoms, respect for human dignity, the principles of equality and solidarity, and respect for the principles of the United Nations Charter and international law'.[63]

The Development Consensus emphasizes that its main goal is poverty eradication, while highlighting that human health, environmental degradation, climate change, sustainable use of biodiversity and ecosystems, sustainable agriculture and enhanced access to clean energy solutions are also key to accomplishing the SDGs. In addition, there is a desire to assist where the need is greatest, identifying both Africa and the EU's neighbourhood as priority regions. To accomplish these goals, the Development Consensus indicates a need for stronger partnerships, promotion of cross-sectoral initiatives at the international, regional, and local levels, and the need for greater effectiveness both in internal and external action. The mandate to implement the Development Consensus rests largely with the European Commission's DG INTPA.

The European Union and its member states are the world's biggest donor of development assistance.[64] To better streamline such assistance, the European Parliament and Council endorsed the new Neighbourhood, Development and International Cooperation Instrument (NDICI)–Global Europe, that aims to modernize the external dimension of the EU budget and simplify the funding process.[65] The money will be used towards eradicating poverty and promoting sustainable development, prosperity, peace and stability through an integrated approach.[66] The purpose of this instrument is to support the EU's multilateral agenda, both development and non-proliferation, and give it 'the flexibility needed to respond faster and in a more coherent way to ongoing and emerging global challenges, while supporting global priorities such as peace and stability, good governance, trade and inclusive and sustainable growth'.[67] NDICI–Global Europe has €79.46 billion available for cooperation with third countries outside the EU for the period from 2021 to 2027. Of these funds, at least €29.18 billion have been allocated for sub-Saharan Africa.[68]

V. INCREASING THE EU'S CONTRIBUTION TO PEACEFUL USES AND TO THE IAEA

EU institutions have to date not financially contributed in any direct substantive way to IAEA technical cooperation activities not relating to nuclear safety and security. Despite the EU's statements to the IAEA that the EU is the second largest contributor to its TC programme, this support reflects direct EU member state contributions rather than EU institutional funding.[69] This lack of institutional support can be explained by siloing in the EU where institutions not working directly with the IAEA are not aware of its activities, particularly those related to development.[70]

On his appointment as Director General of the IAEA, Rafael Grossi noted that the needs of developing countries continue to grow and that it was unrealistic to expect a significant increase in the budget of the IAEA in the coming years. To this end, he undertook to seek new and innovative sources of funding for the IAEA, which would require developing new partnerships.[71] Director General Grossi committed to

[61] Council of the European Union (note 59), para. 14.

[62] European Commission, Directorate-General for International Cooperation and Development, *The New European Consensus on Development: Our World, Our Dignity, Our Future*, Joint statement by the Council and the representatives of the governments of the Member States meeting within the Council, the European Parliament, and the European Commission (European Commission Publications Office: Luxembourg, 2018).

[63] Consolidated version of the Treaty on the European Union, *Official Journal of the European Union*, C326/13, 26 Oct. 2012, Article 21(1).

[64] European Commission, 'Neighbourhood, development, and international cooperation instrument (NDICI)—"Global Europe"', 9 June 2021, Fact sheet.

[65] European Commission, 'European Commission welcomes the endorsement of the new €79.5 billion NDICI-Global Europe instrument to support EU's external action', Press release, 19 Mar. 2021.

[66] European Commission (note 65).

[67] European Commission (note 65).

[68] European Commission (note 65).

[69] European Union (note 54) (also indicated in earlier statements); and IAEA and EU officials, Interviews with authors, 10 Dec. 2021, 14 Jan. 2022, 21 Jan. 2022 and 1 Feb. 2022.

[70] IAEA and EU officials (note 69).

[71] IAEA, 'Director General Designate's statement to Second Special Session of the IAEA General Conference', 2 Dec. 2019.

establishing a new dialogue at the highest level with the European Commission DG INTPA (previously DG International Cooperation and Development, DEVCO).[72] In the first meeting of its kind between the directors general of the IAEA and DG INTPA in October 2021, they discussed ways in which the IAEA could more closely collaborate with the EU on peaceful uses to advance sustainable development and human health programmes. Here, Director General Grossi highlighted the IAEA's programme on fighting cancer, on early detection and control of zoonotic diseases, and on curbing plastic pollution with a view to strengthen cooperation in support of the SDGs.[73] The IAEA and EU officials involved said that the meeting was positive.[74]

Under the stewardship of Jacek Bylica, the IAEA Chef du Cabinet and erstwhile Principal Adviser and Special Envoy for Non-Proliferation and Disarmament in the EEAS, the IAEA produced a document to explain the official development assistance (ODA) coefficient for the IAEA.[75] This explanation is intended to assure IAEA member states that ODA funds can be used to support the work of the IAEA, particularly those relating to its technical cooperation activities. As such, 100 per cent of member states' contributions to the TCF are ODA eligible. Extrabudgetary contributions to the TC programme are 100 per cent eligible if earmarked to countries qualified to receive ODA, and 33 per cent of member states' contributions to the IAEA regular budget are ODA eligible. For extrabudgetary contributions to regular budget projects, distinct coefficients apply up to 89 per cent, determined by the MP under which a given contribution will be implemented. Other ODA eligible programmes are Nuclear Science and Applications (MP2) at 70 per cent, and Nuclear Energy (MP1) at 61 per cent.[76]

Director General Grossi is not the first director general to seek funding from development organizations. However, he is the first to adapt the IAEA's approach to project development and the promotion of peaceful uses to bring more positive attention to IAEA activities in this area and to make the funding of these activities attractive to potential new partners. Non-traditional partners in general and development agencies in particular have not considered funding the IAEA for a variety of reasons, chief among which are (*a*) lack of awareness of the benefits of non-power applications and their contribution to the SDGs; (*b*) the size and nature of the IAEA TC programme; and (*c*) the perception on the side of the development organizations, DG INTPA in particular, that recipients have not been requesting support for nuclear non-power applications in areas such as health and agriculture.[77]

Most of these challenges are being addressed with the IAEA's current approach of developing large thematic initiatives under the stewardship of Director General Grossi. However, a paradigm shift is required on the part of the EU if it is to benefit from this opportunity and realize the innovation that nuclear science and technology can bring to achieving the SDGs and closing the gap between developing and developed countries.

The lack of awareness of the benefits of peaceful uses

The general public associates 'nuclear' with nuclear weapons or nuclear power. Few people know that radiation is used to create crop varieties that are drought and disease resistant or to control and eradicate insect pests that destroy livestock and fruit crops, contributing significantly to agriculture growth and production globally.[78] The support provided by the IAEA to its member states in non-power applications to adapt and build resilience in agriculture and food security systems to mitigate the impact of climate change and reduce greenhouse gas emissions is similarly unknown. While many are aware of the global cancer crisis, the benefit and cost-effectiveness of radiotherapy for cancer treatment is not known, espe-

[72] IAEA (note 51).

[73] Madsen, M. A., 'IAEA Director General meets with EU: Human health, energy and non-proliferation', 28 Oct. 2021.

[74] IAEA and EU officials, Interviews with authors, 14 Jan. 2022 and 4 Feb. 2022.

[75] Official Development Assistance definition (OECD 2019): The DAC defines ODA as flows to countries and territories on the DAC list of ODA recipients and to multilateral development institutions which are (*a*) provided by official agencies, including state and local governments, or by their executive agencies; and (*b*) concessional (i.e. grants and soft loans) and (*c*) administered with the promotion of the economic development and welfare of developing countries as the main objective.

[76] IAEA, 'The ODA coefficient for the IAEA explained', Oct. 2020.

[77] VCDNP, 'Assessment of the current landscape of peaceful uses and nuclear security: Challenges and opportunities', Workshop report, 24 Nov. 2020, pp. 2–3; and former and current EU officials, Interviews with authors, 10 Dec. 2021, 14 Jan. 2022, 21 Jan. 2022 and 1 Feb. 2022.

[78] The lack of awareness of the benefits of peaceful uses in Europe and Africa was addressed in interviews with EU officials, IAEA officials working with African counterparts, and African representatives working with the IAEA and EU. These interviews were conducted with the authors on 10 Dec. 2021, 24 Jan. 2022, 1 Feb. 2022, 3 Feb. 2022 and 9 Mar. 2022.

cially in the more than 20 African countries without access to a single radiotherapy device.[79]

On 4 February 2022 the IAEA launched its Rays of Hope initiative on the eve of an African Heads of State Summit at the African Union headquarters in Ethiopia. Director General Grossi and Senegalese President Macky Sall, who is the 2022 Head of the African Union (AU), called for action at the highest level in Africa and globally to address the current cancer crisis in the region. The Rays of Hope initiative, developed by the IAEA in cooperation with the WHO, is focused on making cancer treatment accessible worldwide, especially in countries without radiotherapy or with inequitable access. The initiative recognizes that the global cancer burden in low- and middle-income countries (LMICs), especially in Africa, has increased, with current statistics indicating that by 2040 over 70 per cent of cancer deaths are likely to occur in LMICs.[80] This initiative and its launch are geared at focusing the world's attention on a continent where only 30 per cent of women survive cervical cancer compared to 70 per cent of women in high-income countries, and the childhood cancer survival rate is 20 per cent, compared to more than 80 per cent in high-income countries.[81] To help close this gap the initiative prioritizes a limited number of high-impact, cost-effective and sustainable interventions in line with national needs and commitments, which facilitates funding by donors, such as the EU.

Less than a month later, the life-saving application of nuclear technology highlighted by the Rays of Hope initiative was overshadowed by the threat of the use of nuclear weapons and radiation release from besieged nuclear power stations in Ukraine.[82] The IAEA takes the spotlight yet again as the world's nuclear watchdog and the destructive power of nuclear energy is uppermost in the minds of the public.

As discussed, the lack of awareness of the benefits of peaceful uses impacts on the realization of their full potential. Recognizing this, the VCDNP Task Force called for engagement at the highest level of government on peaceful uses, especially cancer therapy.[83] Nuclear applications are traditionally the purview of departments of energy, science and technology, and foreign affairs, who are the counterparts of the IAEA. Policy makers and experts in areas such as development, agriculture, environment, finance and planning are therefore often unaware of the many uses and benefits of non-power applications. This 'siloing' of peaceful uses is a substantial barrier to their inclusion in national and regional development agendas and ODA funding.[84]

Understanding the demand for peaceful uses

As noted earlier, DG INTPA, like other development entities, responds to demand from recipient states and argues that developing countries are not requesting assistance from development partners for projects that include non-power applications. The support provided by the IAEA is, however, fundamentally driven by the needs and requests of its member states. Developing countries turn to the IAEA for support when peaceful uses can address their development needs.

Dr Shaukat Abdulrazak, director of the IAEA Division for Africa, explained that his division works closely with the IAEA's partners in the region to encourage the inclusion of all stakeholders, including donor partners in the development of individual country programme frameworks.[85] In his view, the best way to overcome the issue of siloing and improve communication and awareness across all sectors of government is to establish intragovernmental steering committees on peaceful uses. By doing so, information on peaceful uses and their contribution to development could be more effectively shared with national entities that work directly with development organizations, such as DG INTPA. This would result in the inclusion of peaceful uses in their development assistance requests.

[79] Dahl, F., 'Director General Grossi outlines plans to "recalibrate" IAEA', IAEA Office of Public Information, 5 Feb. 2020.

[80] Grossi, R. M. and Ghebreyesus, T.A., 'IAEA/WHO Joint Statement on Reducing Inequity in Access to Cancer Care through Rays of Hope Initiative', IAEA, 4 Feb. 2022.

[81] IAEA, 'Rays of Hope: Cancer care for all', Information video, 2022; and UN News, 'Childhood cancer care in Africa hit hard by pandemic', 13 Aug. 2021.

[82] For more information see IAEA, 'Nuclear safety and security in Ukraine', [n.d.].

[83] The VCDNP convened a Task Force of high-level policy makers and experts to consider the challenges related to expanding access to nuclear science and technology. At the end of 2021, the Task Force provided its recommendations for approaches that could overcome these challenges and increase the contribution of peaceful uses to achieving the SDGs while maintaining non-proliferation and nuclear security objectives.

[84] Sokova and Kirsten (note 33), pp. 14, 16.

[85] Abdulrazak, S., IAEA, Interview with authors, 9 Mar. 2022. A Country Programme Framework (CPF) prepared by a member state in collaboration with the Secretariat defines mutually agreed priority development needs and interests to be supported through technical cooperation activities

During the Africa–Europe week, 14–18 February 2022, which culminated in the AU–EU Summit, Messaoud Baaliouamer, the Executive Secretary of the African Commission on Nuclear Energy (AFCONE), reported on the recommendations from the 'Science for the Africa–EU partnership' side event. The recommendations included expanding cooperation activities in the nuclear field between the EU and Africa to include nuclear science and technology for health, agriculture, research and development, and nuclear power. Fighting cancer through radiation technology was identified as the top priority for AFCONE in the implementation of peaceful uses.[86] This recommendation demonstrates that there is a demand at the highest levels in Africa for more cooperation with the EU and to incorporate peaceful uses in joint projects. As demonstrated earlier, the IAEA is the vehicle through which this support is provided, and funding to its TC programme or the PUI would directly support the needs of its member states to expand access to peaceful uses.

There are those that argue that the IAEA's TC programme is running at near full capacity in terms of the absorption capacity of recipient member states, and that increasing the TC programme substantially over current limits may be an inefficient use of resources. However, as demonstrated in this paper and as noted by successive directors general to the IAEA, the needs and demands of IAEA member states are ever increasing. Dr Abdulzarak explained that the IAEA designs projects with an understanding of the possible available resources and rates of attainment. If more resources become available, then bigger and more integrated technical cooperation projects would be designed to meet the needs of member states.[87]

Recommendations for increasing the EU's contributions to peaceful uses and the IAEA

The issue of siloing both within the EU and recipient countries requires more mainstreaming of peaceful uses and greater understanding of its benefits. One way to start breaking down the silos within the EU, is to focus efforts on cancer care, as there is a clear demand and need for treating cancer using radiation technology, as has been demonstrated. The fight against cancer is one that impacts everyone, and as EU Commission President Ursula von der Leyen indicated when launching Europe's Beating Cancer Action Plan, 'It should not matter where you are born, or where you live' to have the same right to health.[88] In this regard, funnelling development funds to the IAEA to support the Rays of Hope initiative and help with treating cancer, is a step towards ensuring that peaceful uses are accessible and reach those with the greatest need, while promoting strong security and safety architectures for the use of radiotherapy. Improving access to cancer care is an example of where DG INTPA could make a significant impact using the new NDICI–Global Europe instrument, which aims to modernize the external dimension of the EU budget and simplify the funding process.[89]

Cervical cancer kills nearly 300 000 women every year in the developing world, although it is a largely preventable and curable disease in developed countries, where it can be detected early and managed effectively. According to the WHO, 19 of the 20 countries in the world recorded with the highest cervical cancer burden in 2018 were in sub-Saharan Africa.[90] The data shows that higher rates of death due to cervical cancer in developing countries correlates with the lack of radiotherapy facilities in Africa, where more than 20 countries have no access to radiotherapy. Radiotherapy is an essential tool in cancer care and more cost-effective then both surgery and chemotherapy.[91]

To establish and expand radiotherapy services in these countries would require a significant investment in infrastructure, equipment and human capacity development. The IAEA has more than half a century of technical expertise and unrivalled experience in working with developing countries to build capacity in diagnostic radiology, nuclear medicine, and radiotherapy services at the national level. Rays of Hope will scale up this effort by providing clear packages to donors for the funding of sustainable radiation medicine in African countries. DG INTPA, through NDICI–Global Europe, is well suited to support the IAEA in achieving the goals outlined in the EU's Development Consensus through the efficient means

[86] JRC side event, Science for the Africa–EU partnership, Thematic reporting for: Nuclear Science for a Safer Society to the EU–Africa week, 14–18 Feb. 2022.

[87] Adbulrazak (note 85).

[88] European Commission, 'Speech by President von der Leyen at the Europe's Beating Cancer Plan conference', 4 Feb. 2020.

[89] European Commission (note 65).

[90] WHO, Regional Office for Africa, 'Cervial cancer', [n.d.].

[91] Samiei, M., 'Challenges of making radiotherapy accessible in developing countries', Cancer Control, 2013.

of peaceful uses to combat cancer in Africa and around the world.

Noting the need for larger multi-country projects to maximize the impact of peaceful uses and to attract ODA funding, the IAEA has, in addition to Rays of Hope, developed other substantive regional and interregional thematic projects, including ZODIAC (Zoonotic Disease Integrated Action), to prevent future pandemics caused by diseases transferred from animals to humans, and NUTEC Plastics, for a nuclear solution to plastic pollution, to which DG INTPA could also contribute.[92] In the authors' interviews with current and former EU officials, it was emphasized that developing large projects where the contribution of peaceful uses is clear and the demand from recipient countries is visible would be key to attract development funding, such as from DG INTPA.[93]

Enhancing EU support to peaceful uses aligns with the Council Conclusions recognition that the IAEA's activities assist in the achievement of the SDGs and with the EU's development strategies and overall guiding principles.[94] It also strengthens the EU's existing support for safety, security and safeguards while facilitating the good implementation of peaceful uses projects. The EU has already contributed significantly in its support of the IAEA's efforts to assist member states in building resilient safety and security infrastructure, which enables countries to apply nuclear applications responsibly. However, increased investment in countries' expanded access to peaceful uses will maximize this infrastructure and contribute to the SDGs. In addition, spreading peaceful uses also enhances incountry capacity, which in turn strengthens the global nuclear safety and security architecture.

[92] Zoonotic Disease Integrated Action (ZODIAC) was launched in June 2020 by the IAEA to help countries improve their capabilities and preparedness to detect and respond to future pandemics caused by bacteria, parasites, fungi or viruses that originate in animals and can be transferred to humans; for more information see <https://www.iaea.org/services/zodiac>. Nuclear Technology for Controlling Plastic Pollution (NUTEC Plastics) is an effort by the IAEA to help mitigate plastic pollution through recycling using radiation technology and marine monitoring through isotopic tracing techniques. The goal is to assess marine microplastic pollution and use ionizing radiation to transform plastic waste into reusable resources; for more information see <https://www.iaea.org/services/key-programmes/nutec-plastics>.

[93] Former and current EU officials, Interviews with authors, 10 Dec. 2021 (current EU official), 14 Jan. 2022 (former EU official), 21 Jan. 2022 (former EU official), 24 Jan. 2022 (current EU official), and 1 Feb. 2022 (current EU official).

[94] Council of the European Union (note 55), para. 21.

VI. CONCLUSIONS

The NPT is the cornerstone of the global non-proliferation regime. An important lesson to draw from the events since the last NPT Review Conference is that the longevity of multilateral arms control treaties can no longer be taken for granted. In the current political climate, the value of these treaties cannot be underestimated for their role in underpinning global strategic stability. This is particularly true for the NPT, with its near universal membership.

Despite its cornerstone status, the longevity of the NPT is threatened by the lack of meaningful progress on disarmament under Article VI and the likelihood that there will be no progress in the near future given the war in Ukraine. In addition, the Covid-19 pandemic and the war in Ukraine will have a long-lasting negative impact on global economic stability and the achievement of the SDGs.

Given the current global challenges, substantial investment is required to expand the benefits of peaceful uses to bridge the growing gap between developing and developed countries and to achieve the SDGs. As the world's biggest donor of development assistance, the EU could make a significant contribution in this regard by supporting countries' increased access to peaceful uses by funding the technical cooperation activities of the IAEA. While the IAEA is not party to the NPT, it promotes the development of nuclear technology and know-how and is the vehicle for their transfer to and among member states. Developing countries turn to the IAEA for support on peaceful uses to meet their development objectives; therefore, development funding should be provided to the IAEA to assist in meeting these needs.

While the EU has contributed substantially to the IAEA's efforts on safety, security and safeguards, additional support for the IAEA's technical cooperation activities will help countries draw the maximum benefit of peaceful uses. The need for better coordination among EU institutions that work directly with the IAEA and other EU institutions, such as DG INTPA, is needed to ensure broader, efficient, and sustainable engagement on peaceful uses that align with the EU's core values and existing strategies on non-proliferation and development.

DG INTPA, as the development arm of the EU, is ideally suited to the task by using the newly launched NDICI–Global Europe tool that provides an integrated approach to development funding. Given its focus on

Africa, supporting African countries without access to radiotherapy to establish radiotherapy facilities with the support of the IAEA through the Rays of Hope initiative over the next five years would be a highly impactful and visible intervention on the part of the EU. This support will not only strike a balance between the three pillars of the NPT but also promote global human security, which is particularly important today, with global security at its lowest point since the end of World War II.

Recognizing that the crisis in Ukraine is a priority for the EU, its institutions, and member states, especially in terms of the allocation of funds, there is a danger that funds earmarked for developing regions, such as Africa, could be reallocated to supporting Ukraine. This would have a negative impact on developing countries and the achievement of the SDGs. It will also create a vacuum that could be filled by Africa's other development partners, such as China. Ensuring that funds for other regions, like Africa, remain available will be crucial to not only upholding the balance between the three pillars of the NPT, but to global security more broadly.

Every effort should be made to preserve the most widely subscribed nuclear arms control treaty in history. Recognizing that peaceful uses strengthen non-proliferation will help uphold the integrity of the NPT and allow progress to be made even during difficult times. Such an investment would meet not only the EU's development goals but also its non-proliferation goals. In the words of NPT President Designate Zlauvinen, 'non-proliferation commitments enable peaceful uses, but it is the promise of the benefits under the third pillar that prop up the other two pillars'.[95]

[95] Zlauvinen, G., 'Wilton Park: Sustainable approaches to peaceful uses of nuclear energy and technology', Remarks, 26 Jan. 2021, p. 2.

ABBREVIATIONS

AFCONE	African Commission on Nuclear Energy
AU	African Union
CFSP	Common Foreign and Security Policy
COP26	26th UN Climate Change Conference
DEVCO	DG International Cooperation and Development
DG	Director General
DG INTPA	Directorate-General for International Partnerships
EEAS	European External Action Service
EU	European Union
EUNPDC	European Union Non-Proliferation and Disarmament Consortium
FAO	UN Food and Agriculture Organization
G77	Group of 77
IAEA	International Atomic Energy Agency
INF	Intermediate-Range Nuclear Forces Treaty
JCPOA	Joint Comprehensive Plan of Action
LMICs	Low- and middle-income countries
MP	Major programme
NAM	Non-Aligned Movement
NDICI	Neighbourhood, Development and International Cooperation Instrument
New START	New Strategic Arms Reduction Treaty
NSF	Nuclear Security Fund
NWS	Nuclear-weapon states
NNWS	Non-nuclear-weapon states
NPT	Treaty on the Non-Proliferation of Nuclear Weapons
NUTEC Plastics	Nuclear Technology for Controlling Plastic Pollution
ODA	Official development assistance
PUI	Peaceful Uses Initiative
RevCon	NPT Review Conference
RT-PCR	Real-Time Polymerase Chain Reaction
SDG	Sustainable Development Goal
TC	Technical Cooperation
TCF	Technical Cooperation Fund
TEU	Treaty on the European Union
TPNW	Treaty on the Prohibition of Nuclear Weapons
VCDNP	Vienna Center for Non-Proliferation and Disarmament
WHO	World Health Organization
WMD	Weapons of mass destruction
ZODIAC	Zoonotic Disease Integrated Action

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A EUROPEAN NETWORK

In July 2010 the Council of the European Union decided to support the creation of a network bringing together foreign policy institutions and research centers from across the EU to encourage political and security-related dialogue and the long-term discussion of measures to combat the proliferation of weapons of mass destruction (WMD) and their delivery systems. The Council of the European Union entrusted the technical implementation of this Decision to the EU Non-Proliferation Consortium. In 2018, in line with the recommendations formulated by the European Parliament the names and the mandate of the network and the Consortium have been adjusted to include the word 'disarmament'.

STRUCTURE

The EU Non-Proliferation and Disarmament Consortium is managed jointly by six institutes: La Fondation pour la recherche stratégique (FRS), the Peace Research Institute Frankfurt (HSFK/ PRIF), the International Affairs Institute in Rome (IAI), the International Institute for Strategic Studies (IISS), the Stockholm International Peace Research Institute (SIPRI) and the Vienna Center for Disarmament and Non-Proliferation (VCDNP). The Consortium, originally comprised of four institutes, began its work in January 2011 and forms the core of a wider network of European non-proliferation and disarmament think tanks and research centers which are closely associated with the activities of the Consortium.

MISSION

The main aim of the network of independent non-proliferation and disarmament think tanks is to encourage discussion of measures to combat the proliferation of weapons of mass destruction and their delivery systems within civil society, particularly among experts, researchers and academics in the EU and third countries. The scope of activities shall also cover issues related to conventional weapons, including small arms and light weapons (SALW).

www.nonproliferation.eu

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