Conference report:

The Peaceful Application of Nuclear Science and Technology in the Development Agenda

13 May 2022 – Hybrid

On 13 May 2022, the 'Atoms for Development' Project of the South African Institute of International Affairs (SAIIA) hosted a conference to discuss the Peaceful Application of Nuclear Science and Technology in the Development Agenda. The conference was divided into three sessions covering the following topics:

- Session one: Supporting the peaceful application of nuclear science and technology in Africa through institutional regulation and regional and international cooperation
- Session two: A place for civil society: women and youth in nuclear; and
- Session three: Our collective future beyond the pandemic

Ms Elizabeth Sidiropoulos opened the conference by welcoming participants and speakers to the event. She reflected on the Atoms for Development (A4D) Project at SAIIA, highlighting that the project is about more than nuclear weapons, it is about nuclear as a force for good. The importance of Africa in the conversation about nuclear technology and energy and how to protect it was highlighted. Ms Sidiropoulos further thanked the Norwegian Ministry of Foreign Affairs which has provided funding for the A4D project for the past three years.

Session 1 focused on supporting the peaceful application of nuclear science and technology in Africa through institutional regulation and regional and international cooperation. The session was moderated by Ms Elizabeth Sidiropoulos, the Chief Executive at SAIIA. The panellists in this session were Mr Messaoud Baaliouamer, the Executive Secretary of the African Commission on Nuclear Energy (AFCONE); Mr Ali Ada (joined virtually from Niger), the chair of the African Regional Cooperative Agreement for Research, Development and Training related to Nuclear Science and Technology (AFRA); and Mr Kamen Velichkov (joined virtually from Kazakhstan), from the International Centre for Science and Technology (ICST).

Mr Baaliouamer began the session by outlining the Pelindaba Treaty and highlighted the correlation between the AFCONE vision and AU vision for nuclear use. Mr Baaliouamer foregrounded that a key

question often asked by stakeholders is “what is the value of the Pelindaba Treaty as an additional structure to existing international instruments?” Mr Baaliouamer highlighted that AFCONE’s mission is to promote all UN mechanisms to promote nuclear non-proliferation and disarmament.

Mr Baaliouamer acknowledged that there are gaps in the ratification of the Pelindaba Treaty and the new Treaty on the Prohibition of Nuclear Weapons (TPNW). He encouraged all African Member states to participate in the TPNW meeting which is to be held in Vienna in 2022. Mr Baaliouamer said that AFCONE is working with the IAEA and the UN on safeguards in nuclear technology on the continent. Mr Baaliouamer foregrounded the prioritisation of fighting cancer.

He further addressed the issue of the lack of access to energy in Africa as a key hindrance to development. Furthermore, one-third of African countries have already expressed interest in working with the IAEA on implementing nuclear energy strategies. Mr Baaliouamer emphasised AFCONE’s goal to promote regional regulations and capacity building. AFCONE aims to create a specialised institute within the Pan-African university. This would act as a consolidation of the various regional initiatives on nuclear research that already exist on the continent.

Mr Baaliouamer highlighted AFCONE’s promotion of Women and Youth in the future of Nuclear in Africa. AFCONE calls for African states to share bios of their nuclear experts to be added to a continental database/roster. Mr Baaliouamer emphasised the need for partnership building with international partners and a specific desire to integrate the Pelindaba Treaty with structures of the AU. Mr Baaliouamer closed by noting that Africa has a pivotal role to play towards nuclear disarmament, non-proliferation and peaceful uses of nuclear energy.

Mr Kamen Velichkov joined virtually from Kazakhstan. Mr Kamen Velichkov noted that the use of nuclear technology must be aligned with the objectives that African leaders choose to pursue. Mr Velichkov emphasised the importance of the NPT and noted that Africa is the largest nuclear-weapons-free zone. Mr Velichkov noted that although Kazakhstan and South Africa willingly gave up their nuclear weapons capabilities, their actions have not received due praise. Mr Velichkov stated that with the rise in global energy demand, nuclear power will become more important, and safety must be insurable. Mr Velichkov noted that uranium has historically been seen as an export product rather than a tool for development on the continent. Mr Velichkov closed by foregrounding the role of Women and Youth, further noting the importance of regional approaches rather than segmented national approaches. In this regard, the ICST promotes transnational collaboration.

Ms Sidiropoulos agreed with Mr Velichkov that Africa's uranium deposits do provide significant potential for development on the continent. The floor was then opened for questions.

Mr Ali Ada joined virtually from Niger. Mr Ada began by noting the lack of knowledge and understanding of the peaceful use of nuclear science and technology, especially in sub-Saharan countries. He introduced AFRA (African regional cooperation agreement for research, development and training) which was established by African member states for nuclear research on socio-economic applications of nuclear technology. To date, 44 member states have adopted the agreement. The AFRA aims to maximise existing infrastructure to accelerate regional subsidiaries, and to deepen member state commitment for their own development. AFRA's vision is to be a leading organisation on the continent, promoting the culture of mutual benefit, in addition to nuclear safety. Mr Ada highlighted the cross-level engagement and understanding building (from state to citizen) that are still required. He highlighted the role of Women and Youth. Mr Ada closed by noting that training needs more attention, more communication, more involvement of civil society, in addition to the need to highlight the proof of peaceful applications of nuclear science and technology as a solution.

Ms Sidiropoulos opened the floor for further questions.

Session 2 focused on a place for civil society: women and youth in nuclear energy and was moderated by Professor Jo-Ansie Van Wyk from the University of South Africa (UNISA). The Panelists were Professor Soheir Korraa, the president of Women in Nuclear Africa (WiN Africa); Mr Gaopalelwe Santswere, the President of African Young Generation in Nuclear (AYGN); Ms Princess Mthombeni Leader and Ambassador at Africa4Nuclear; and Ms Pamella Kageliza Kilavi, the founder of Kenyan Young Generation in Nuclear.

To open the session, a pre-recorded address by Mr Stian Nordengen Christensen, Minister Counsellor, Royal Norwegian Embassy – Pretoria, South Africa, was presented. Mr. Christensen highlighted the timeliness of the conference. Mr Christensen highlighted that the peaceful uses of nuclear science and technology are not well known. He noted that the COVID-19 PCR test was originally a nuclear technique. Mr Christensen foregrounded the role of Women and Youth in nuclear applications. Mr Christensen closed by noting the importance of Africa both for the continent and globally.

A pre-recorded address by Mr Rafael Mariano Grossi, the Director General of the International Atomic Energy Agency (IAEA), was presented. Mr Grossi highlighted the leadership role that South Africa plays in nuclear technology on the continent. Mr Grossi expressed that the upcoming COP 27 conference is

a chance to promote nuclear energy on the continent. Mr Grossi provided examples of the use of nuclear isotopes to improve water use in the agricultural context as a key adaptation to climate change. Mr Grossi further noted that nuclear technology represents hope in addressing the cancer crisis, Africa has demonstrated strong leadership in this area.

Professor Soheir Korraa began by noting that women have been involved in nuclear science since its initiation. Professor Korraa provided insight into the education of girls on the continent and noted the various issues that limit the education of women. Professor Korraa highlighted that women are more radiosensitive thus, during pregnancy, women in nuclear science are unable to work. Professor Korraa acknowledged that the public fears the word "nuclear" but asserted that education and dialogue is a tool to dissuade this fear. Health awareness campaigns can also play a large role. Professor Korraa noted that women in nuclear power have equal rights to their male counterparts in Egypt. Professor Korraa closed by introducing WiN Africa, an NPO/NGO representing women in all nuclear related forums and providing mentorship.

Mr Gaopalelwe Santswere introduced the AYGN. The AYGN is an NPO affiliated with the International Youth Nuclear Congress. Mr Santswere noted with concern that the 'man on the street' is unaware of the importance of nuclear science. The AYGN's prime mission is to address the socio-economic issues of the continent through the promotion of peaceful uses of nuclear science and technology in Africa. The AYGN aims to demystify nuclear technology, offer a platform to share and exchange ideas, and create a network. He highlighted past successful events held by AYGN as well as the need to provide the public with knowledge of the various applications of nuclear science. Mr Santswere highlighted the need to replace retiring nuclear experts and asserted that Africa needs to start seeing science working for Africa.

Ms Princess Mthombeni introduced the Stand Up for Nuclear campaign. This is a pronuclear, international campaign that engages communities on a grassroots level. Ms Mthombeni noted the collaboration efforts between NGOs and other organisations that focus on nuclear science and technology. Ms Mthombeni emphasised the importance that Africa is not left behind in nuclear science benefits with specific reference to the issue of load shedding experienced by South Africans and how nuclear energy may present a viable solution. Ms Mthombeni closed by emphasising the passion of Stand Up for Nuclear, driven by the patriotism of its members and invited participants to engage with the campaign stating that Stand up for Nuclear envisions a better South Africa.

Ms Pamella Kageliza Kilavi introduced KYGN. KYGN is an NPO, founded in 2014, focussing on an array of peaceful applications of nuclear science. Ms Kilavi highlighted the need for the creation of awareness among the public, allowing youth to be active in nuclear science activities. Ms Kilavi noted with concern that youth are often left out of the conversation. Ms Kilavi noted the importance of involving secondary school learners. Ms Kilavi closed by highlighting the increased enrolment of master's students in a variety of nuclear related areas.

Professor Van Wyk opened the floor to questions.

Session 3 - our collective future beyond the pandemic. Mr Steven Gruzd, Head of the African Governance and Diplomacy Programme and the Russia-Africa Project at SAIIA, moderated this final session. The panellists were Dr Kelvin Kemm, the CEO of Stratek Business Strategy Consultants, Mr Marthinus Van Schalkwyk, the Director of Disarmament and Non-Proliferation at DIRCO, and Professor Jo-Ansie Van Wyk from the department of Political Sciences at the University of South Africa (UNISA).

Dr Kelvin Kemm opened by asserting that Africa does not need to follow Europe's example. Dr Kemm highlighted that electric trains need nuclear technology, wind and solar power are not sufficient. Dr Kemm noted that South Africa is the lead exporter of nuclear medicine globally, every three minutes someone in the world is injected with nuclear medicine originating in South Africa. Dr Kemm highlighted that "Nuclear medicine is not dangerous when treated with respect". Dr Kemm foregrounded the issue of dependency on external energy. He emphasised the immense power capacity of uranium in comparison to other forms of energy. Dr Kemm introduced the benefit of the HTMR 100 Pebble Bed Modular Reactor which does not require large bodies of water nearby for cooling, therefore can be located in landlocked areas like mining fields. Dr Kemm closed by emphasising the need for African solutions asserting that "Nuclear power is the future of Africa."

Mr. Marthinus Van Schalkwyk began by highlighting the importance of demystifying nuclear science. Mr. Van Schalkwyk noted that civil nuclear technology is an inalienable right pursuant to the Non-Proliferation Treaty. Due to this inalienable right, Mr Van Schalkwyk asserted that there ought to be no additional preconditions on the peaceful use of nuclear technology. Mr Van Schalkwyk noted that there are continuous roadblocks and resistance experienced by non-nuclear states who attempt to expand their peaceful use of nuclear technology; he therefore asserted that the government needs to start asking "is this treaty working for us?". Mr. Van Schalkwyk emphasised that there are institutional structures which monitor the safe use of nuclear technology, and that no African states have been

found to be out of compliance with these protocols. Mr. Van Schalkwyk alluded to the review of the NPT later this year, asserting that the treaty must be balanced and without prejudice.

Professor Jo Ansie Van Wyk began by outlining the five key issues which her presentation would address: (1) the current status of the NPT; (2) frustrations caused by the current model of the NPT; (3) the NPT for Africa and its future; (4) the complementarity of the NPT and other nuclear regulations; (5) what can be expected from the NPT? What is its shelf-life? Professor Van Wyk highlighted that the NPT is the most widely subscribed treaty with the most discriminatory language, clearly distinguishing between nuclear and non-nuclear states. Professor Van Wyk noted that the recent attack on the Ukrainian nuclear facilities brings to light the need for a review of the NPT. Equating the attack on one of the state's civil nuclear facilities and the state's inalienable right to the peaceful use of nuclear technology, Professor Van Wyk alluded to possible legal innovation in this area.

Professor Van Wyk highlighted that non-nuclear weapon states do not benefit from the right to share or transfer nuclear science and thus suggested the concept of nuclear justice: the proposition of compensation for compromise. For example, nuclear states who will not disarm, must invest heavily in the development of peaceful applications of nuclear technology. Professor Van Wyk highlighted that the reduction of nuclear arms is complemented by the increase in sophistication and that there is no timeline for disarmament in the NPT.

Professor Van Wyk highlighted the complementary nature of the Ban Treaty and the NPT. She asserted that Africa needs to talk with a louder voice. Professor Van Wyk closed her presentation by asserting that in her assessment, the NPT has a future but not a bright future.

Mr. Gruzd opened the floor for questions.

Ms. Neuma Grobbelaar, the director of research at SAIIA, closed the conference. Ms. Grobbelaar highlighted the ambitious agenda proposed by many of the panellists and that Africa ought to be proud of its efforts towards nuclear for good. She noted that a common theme which was raised throughout was of the nuclear solutions for African problems and, ultimately, for African development.