

UPLIFTING NUCLEAR SAFEGUARDS IN AFRICA – DESCRIPTION OF PROGRAMME OF SUPPORT TO AFCONE BY THE EUROPEAN COMMISSION, REPUBLIC OF FINLAND AND STUK.

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Abstract

The African Nuclear-Weapon-Free Zone (African NWFZ) Treaty (the Pelindaba Treaty) was opened for signature in Cairo, Egypt, on 11 April 1996, and entered into force on 15 July 2009. Under the Pelindaba Treaty, each State Party undertakes to conduct all activities for the peaceful use of nuclear energy under strict non-proliferation measures. The African Commission on Nuclear Energy (AFCONE) is the executive body of the African Nuclear-Weapon-Free-Zone Treaty. It is the specialized agency for nuclear activities on the African continent under the framework of the African Union and has its headquarters in Pretoria, South Africa.

The European Union, Finland and AFCONE have initiated a 5-year programme to strengthen International Nuclear Safeguards in Africa, build capacity in Pelindaba Treaty States Parties, and enable the States to fulfil their obligations in accordance with the Pelindaba Treaty, Comprehensive Safeguards Agreements and Additional Protocols. In practice, this programme will develop and expand capacity to support IAEA inspection activities, improve reporting under Comprehensive Safeguards Agreements, Additional Protocols, and the Treaty of Pelindaba.

AFCONE is a young organisation that established its Secretariat recently in 2018. The programme will also support AFCONE to leverage its wide mandate, and to stand as a strong regional organization, supporting its States Parties in effective IAEA safeguards implementation.

Programme preparation started in early 2022, and took into account experiences from previous capacity building activities carried out by other organisations. The first training event under the programme took place in Pelindaba, South Africa from 8 – 11 May 2023.

The programme is funded by the European Commission and Finland and managed by STUK, the Radiation and Nuclear Safety authority of Finland, based on the fact that Finland, which has a long tradition on non-proliferation and from STUK has long experience and expertise in implementing IAEA safeguards..

1. INTRODUCTION

The African Commission on Nuclear Energy (AFCONE) launched an ambitious five-year programme “Strengthening the Nuclear Material Control Systems in Africa” in 2023, that aims at collective uplifting of nuclear safeguards in Africa. This programme is being implemented with the expert support of the Radiation and Nuclear Safety Authority of Finland (STUK) and will be financed by the European Union and the Republic of Finland. The training facilities and infrastructure have been provided by three African countries: Algeria, Namibia and South Africa.

Pelindaba Treaty

Under the Pelindaba Treaty, each State Party undertakes to conduct all activities for the peaceful use of nuclear energy under strict non-proliferation measures to provide assurance of exclusively peaceful uses, to conclude a comprehensive safeguards agreement with the IAEA and not to export source or special fissionable material, or especially designed or prepared equipment or material, to Non-Nuclear Weapon States (NNWSs) unless subject to a comprehensive safeguards agreement.

Many African State parties to the Pelindaba Treaty State Parties with CSAs in force (most also with small quantities protocols (SQPs) and/or additional protocols (APs)) require assistance in establishing and improving their nuclear material accounting and control systems so that they can effectively fulfil their obligations in accordance with such CSAs.

African Commission on Nuclear Energy (AFCONE)

The African Commission on Nuclear Energy (AFCONE) is the main executive body of the African Nuclear-Weapon-Free-Zone Treaty. It is a Specialised Agency for nuclear activities on the African continent, under the auspices of the African Union, and has its headquarters in Pretoria (South Africa).

According to Article 12 of the Pelindaba Treaty, AFCONE is mandated to ensure compliance with the provisions of the Treaty, including the verification of peaceful uses of nuclear energy. Each Party undertakes:

- (a) To conduct all activities for the peaceful use of nuclear energy under strict non-proliferation measures to provide assurance of exclusively peaceful uses;
- (b) To conclude a comprehensive safeguards agreement with IAEA for the purpose of verifying compliance with the undertakings in subparagraph (a) of this article;
- (c) Not to provide source or special fissionable material, or equipment or material especially designed or prepared for the processing, use or production of special fissionable material for peaceful purposes to any non-nuclear-weapon State unless subject to a comprehensive safeguards agreement concluded with IAEA.

In order to build capacity among African State parties to the Treaty of Pelindaba to comply with the use of nuclear energy for peaceful purposes only, AFCONE is supported by safeguards Regional Collaboration Centres (RCCs). Established RCCs are in Pelindaba, South Africa and in Algiers, Algeria.

2. PROGRAMME PREPARATION

Programme preparation started in early 2022, and took into account experiences from previous capacity building activities carried out by other organisations. The preparatory work was very important, in order to understand expectations and the operational environment.

In August 2022, STUK and AFCONE carried out a fact-finding mission to Pretoria and visited the South African Nuclear Energy Corporation SOC Ltd (NECSA) campus that hosts the RCC in South Africa. This campus includes different types of nuclear and training facilities, including the SAFARI 1 research reactor that is currently used for medical isotopes production. This visit was very useful and helped to clarify roles, responsibilities and expectations in the cooperation between STUK, AFCONE, and the RCCs. In early 2023, a similar visit was carried out to Swakopmund in Namibia, and to Husab uranium mine where some of the capacity building activities under the programme will take place.

During the fact-finding missions in South Africa and Namibia, discussions also included experiences with similar trainings organised by other organisations, such as International Nuclear Safeguards Engagement Program (INSEP) of the National Nuclear Security Administration of the United States (NNSA).

In the meantime, STUK and AFCONE have held discussions with the IAEA and INSEP in order to avoid duplication of efforts and to identify synergies between the different the AFCONE/STUK training programme, and the training programmes provided by the IAEA and INSEP.

Experience has shown that safeguards improvements require sustained attention not only at the operational, but also at the governmental level in partner countries. The commitment and ownership of safeguards by National Regulatory Organizations (NROs) is essential for the success in achieving this programme's goals.

Based on the fact-finding missions to South Africa and Namibia, it was assessed that:

- STUK can provide added value particularly if it focuses on hands-on training and sharing practical experiences from regulatory control of nuclear materials.
- A programmatic approach to the training activities and focusing on a limited number of countries at a time as a way to ensure participants' commitment to the programme and maintaining the momentum.
- Continuous follow-up will be an essential part of the programme. In this way, training events will not stand alone, but rather contribute to a process of developing safeguards within the environment of individual regulators.

In November 2022, the Ministry for Foreign Affairs of Finland, AFCONE, the European Union and STUK together hosted a kick-off event for the programme in Vienna in the margins of the International Safeguards Symposium. This kick-off event was aimed at the African diplomatic missions and the safeguards community in Vienna, was attended by over 60 guests, and was successful in raising awareness about the upcoming programme among African governments and the international safeguards community.

On 19 February 2023, the African Union Commission, the Government of Namibia, AFCONE, the Ministry of Foreign Affairs of Finland, the European Commission and STUK hosted a high-level side event at the African Union Summit in Addis Ababa. The purpose of the side event was to further raise awareness about the programme among senior African government decision makers, contribute to leveraging nuclear energy for Africa's development, foster intra-African cooperation on nuclear energy and to garner political support for AFCONE.

In March 2023, an agreement between European Commission and Ministry of Foreign Affairs in Finland (MFA) was signed.

3. OVERALL OBJECTIVES OF THE PROGRAMME

The EU, Finland and AFCONE have initiated a 5-year programme to strengthen International Nuclear Safeguards in Africa, build capacity in Pelindaba Treaty States Parties, and enable the States to fulfil their obligations in accordance with the Pelindaba Treaty, Comprehensive Safeguards Agreements and Additional Protocols.

In practice, this programme will strengthen International Nuclear Safeguards in Africa and support Pelindaba Treaty State Parties to:

- Build capacity within their State Systems of Accounting for and Control of Nuclear Materials to implement IAEA safeguards.

- Improve reporting under and promote implementation of their Comprehensive Safeguards Agreements, Small Quantities Protocols and/or Additional Protocols, as applicable.
- Improve reporting under the safeguards provisions in the Pelindaba Treaty.
- Work with partners to address specific and other safeguards implementation challenges.
- Improve the ability of AFCONE, as a regional organization and knowledge hub, to support Pelindaba Treaty State Parties in safeguarding of nuclear materials and installations.
- Develop, test and deploy innovative safeguards technologies, tools, and approaches.

The African Commission on Nuclear Energy (AFCONE) will receive support to leverage its wide mandate, and to stand as a strong regional organization, supporting its States Parties in effective IAEA safeguards implementation.

The activities carried out during the programme would enable States to proceed in implementation and strengthening of IAEA Safeguards. At the end of the programme, the participating States would have established or improved their nuclear material accounting and control systems so that they can fulfil their obligations in accordance with the Pelindaba Treaty, Comprehensive Safeguards Agreements and/or Additional Protocols.

AFCONE will stand as a strong regional organization supporting its Member States in effective IAEA safeguards implementation.

4. RESPONSIBILITIES AND MAIN STAKEHOLDERS OF THE PROGRAMME

Main stakeholders of the programme, and their roles are described below:

European Commission (EC):

EC's Directorate General (DG) for International Partnerships (INTPA) in Brussels, Belgium, is responsible for overall management supervision of the programme implementation and final approval of all programme deliverables. The EC is also responsible for financial and contractual aspects related to the programme;

The Joint Research Centre (JRC) of the EC may provide scientific and technical support to the programme implementation.

Ministry for Foreign Affairs of Finland (MFA):

The Ministry for Foreign Affairs of Finland co-finances this programme and is a national Pillar Assessed Organisation eligible for INSC funding from the EC. The MFA is responsible for oversight of the use of programme funding and will submit reports and other information required on this programme to the EC. The MFA has assigned the implementation of the programme to STUK and provides strategic guidance, advice and steering to STUK in various aspects, relevant for the implementation and management of the programme.

STUK

STUK, the Radiation and Nuclear Safety Authority of Finland, acts as the programme manager and coordinator, responsibility for financial planning and control, as well as ensuring that all activities, agreements and procurements are in line with Finland's national law as well as EU legislation. Most importantly, STUK's safeguards experts will provide training, mentoring and hands-on exercises to build capacity of the programme beneficiaries. STUK will report to the funding organisations (European Commission and MFA).

AFCONE

AFCONE is the programme owner and one of the beneficiaries, whose task is to ensure that all activities in this programme are in line with the overall goal of building ownership for nuclear safeguards in Africa. AFCONE will participate in the organization, coordination and planning of all programme activities, as well as

providing lecturers/trainers for training events. It will ensure that programme activities do not overlap with any other existing bi-lateral or multi-donor training initiatives, such as those of IAEA and INSEP, and where functional, rather to ensure that these activities are mutually reinforcing. In this regard, the current information of STUK and AFCONE is that there are no overlapping activities. AFCONE has extensive networks in Africa, and it will continuously follow-up activities carried out in this programme and will use its networks to pursue overall goals of the programme.

Regional Collaboration Centres (RCCs) of AFCONE

RCCs of AFCONE will participate in the organisation of the training activities and provide training facilities and equipment for the programme. In AFCONE's vision, these training facilities will mentor, train and support national regulatory organizations in safeguards in the future. RCCs are also beneficiaries of the programme under the "training the trainers" concept.

National Regulatory Organizations (NROs)

NROs are the final beneficiaries of the programme, whose management, experts / staff are trained in this programme. Some programme activities are also aimed at providing information to decision/policy makers at national levels, to raise awareness about the roles and responsibilities of the State in safeguards implementation. Outreach activities designed for decision/policy makers in African countries will be undertaken in various locations, including national capitals, Vienna (IAEA) and Addis Ababa (AUC). Some NROs may also host specific training activities (for example, safeguards for Uranium mining), as required.

International partners)

International partners, that have been active in safeguards capacity building, such as EURATOM, IAEA, ESARDA and the INSEP programme of the NNSA, create an important network for this programme. Dialogue with all these organisations is important to ensure that international safeguards capacity building activities in Africa are coordinated and do not overlap. The IAEA is also benefitting from the programme as the programme ultimately aims at improving the implementation of IAEA safeguards in Africa. On the other hand, the IAEA has unique knowledge/information on the status of safeguards implementation in Africa, which is of great value for programme preparation and needs assessment of safeguards capacities of national regulatory organisations.

5. IMPLEMENTATION STRATEGY FOR 2023

The programme will be implemented in phases and the first year (2023) of implementation is referred to as the "pilot year", even though a full-scale training programme will also be implemented during the pilot year, comparable to the activities of the following years. The idea of the pilot year is to focus on needs and capacity assessment and learning by doing to identify practical implementation issues, priority areas and best practices to take into consideration when planning for the next two years (2024-2025).

Training activities of the pilot year are aimed at regulators of ten countries having activities in the Uranium supply chain: proven resources, mining, mineral processing or exports. The following States were invited to join the programme in 2023 upon commitment to complete a needs assessment and to participate in all programme activities: South Africa, Algeria, Namibia, Botswana, Morocco, Malawi, Niger, DR Congo, Zambia and Tanzania.

On 19 February 2023, a high-level side event was held at the AU Summit to further raise awareness about the programme among senior African government decision makers, including to highlight the importance of safeguards in fostering African development, through its role as the prerequisite for international trade and cooperation in the civil applications of nuclear science and technology.

Training activities during the pilot year 2023 will consist of safeguards trainings organised for national regulatory authorities at management and inspector levels, addressing country specific safeguards challenges, based on needs assessment. The first training event under the programme successfully took place in Pelindaba, South Africa from 8 – 11 May 2023. The first training event involved all participating (invited) countries, and focussed on the higher-level legal framework and State responsibilities and was designed for both management and expert levels.

The subsequent training events will be organised in small country groups as depicted in the map above, and will be designed to support inspectors in the practical implementation of the IAEA safeguards, including non-destructive assay (NDA) measurements and on-site inspections. Later, AFCONE and STUK will follow-up on the training activities and will be prepared to offer needs-based country specific follow-up support to NROs, which may include mentoring, hands-on training, drafting of legislation or guidance, or other types of expert support.

For the safeguards expert staff at AFCONE and its RCCs, STUK will organize a “train the trainers” event that will be carried out in Finland later in the year. This one-week training course will include theory and practice, including on-site inspection in Finland.

6. ANNUAL PLANNING AND ACTIVITIES FOR 2024-2027 AND BEYOND

The programme is planned to be implemented in phases: after the pilot year of 2023 planning will be done in two-year cycles (2024-2025 and 2026-2027).

Experiences of the pilot year will be taken into consideration in planning the activities for the following years. The idea is to maintain the programmatic approach and to offer the possibility for intensive hands-on training activities for a limited number of regulators at a time. At the same time, momentum will be maintained and sustainability ensured via outreach activities aimed at national decision makers; and follow-up engagements with previously trained participants/countries. For example, site specific safeguards challenges, which may come up during the programme may be addressed through site-specific trainings.

STUK and AFCONE also intend to take advantage of opportunities to continually raise awareness and garner support for the programme, such as participation in AU Summits, meetings of the Regional Economic Communities of Africa and other relevant international/multilateral events; as well as organization of discussion forums/webinars on topics such as regional legal frameworks and the future of safeguards in Africa, legislative reform needs and long-term targets. Towards the end of the programme, it will be important to prioritize activities that ensure that the process that is now emerging will continue, and the results will be sustainable.

Follow-up and monitoring of developments must continue, but in the end the level of interventions cannot remain the same for all countries all the time. Therefore, needs based prioritisation will be done.

7. CONCLUSION

In 2022, the European Union, Finland and AFCONE initiated a 5-year programme to provide support for the development of efficient and effective safeguards for nuclear material and installations as a key element of nuclear non-proliferation to State Parties of the African Nuclear-Weapon-Free Zone Treaty (Pelindaba Treaty) , and to support the African Commission on Nuclear Energy (AFCONE) in ramping up its role as the regional knowledge-hub and coordinator for safeguards activities.

Safeguards are a prerequisite for cooperation in the peaceful uses of nuclear energy. IAEA Safeguards are designed to ensure nuclear non-proliferation and therefore contribute to peace and security in the region, and globally. As effective safeguards also reduce certain risks and threats related to nuclear materials, they also improve security of the people, and their freedom to live without such risks. In this way this programme will also also contributes to the human rights-based development policy of Finland and the EU.

During the programme, various training activities and practical exercises will be organized and carried out by AFCONE and STUK. These training activities will enable AFCONE and national regulatory authorities of participating States to advance in the implementation and strengthening of IAEA Safeguards and the safeguards obligations under the Pelindaba Treaty. Training activities are organized in a way that takes into consideration the needs assessment of the States, the current legal frameworks (Comprehensive Safeguards Agreement, Small Quantities Protocol, Additional Protocol, the Pelindaba Treaty as applicable), as well as national aspirations for the development of nuclear energy. At the end of the programme, participating States would have established and improved their nuclear material accounting and control systems to the competency levels required to efficiently and effectively fulfil their obligations in accordance with the existing legal frameworks.

The programme is planned to be implemented in phases. The first year (2023) is referred to as the “pilot year”, even though a full-scale training programme will also be implemented during the pilot year, comparable to activities of the following years. The idea of the pilot year is to focus on needs and capacity assessment and learning by doing in order to identify practical implementation issues, priority areas and best practices to take into consideration when planning for the next two years (2024-2025) during the last quarter of 2023.

REFERENCES

- [1] Pelindaba Treaty
- [2] Nuclear non-proliferation Treaty (NPT)
- [3] Model Comprehensive Safeguards Agreement (INFCIRC/153), including SQP
- [4] Model Additional Protocol (INFCIRC/540)