Independent Mid-Term Evaluation

UNOCT Global Programme on Autonomous and Remotely Operated Systems (AROS)

Location of intervention: Global, with national activities delivered in the Kyrgyz Republic, Malaysia, Niger, Senegal and Togo

Timeframe of intervention: 1 January 2021 to 31 December 2025 (Phase 1); 1 January 2026 to 31 December 2029 (Phase 2, TBC)

Funders: Germany, Qatar, Saudi Arabia, United Arab Emirates

Implementing partners: UNOCT/SPIB (lead), UNOCT/UNCCT, CTED, ICAO, UNGSC, Conflict Armament Research (CAR)

Scope of evaluation: January 2021 to December 2024

Date of evaluation: October 2024 to April 2025

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URL for evaluation report: https://www.un.org/counterterrorism/publications
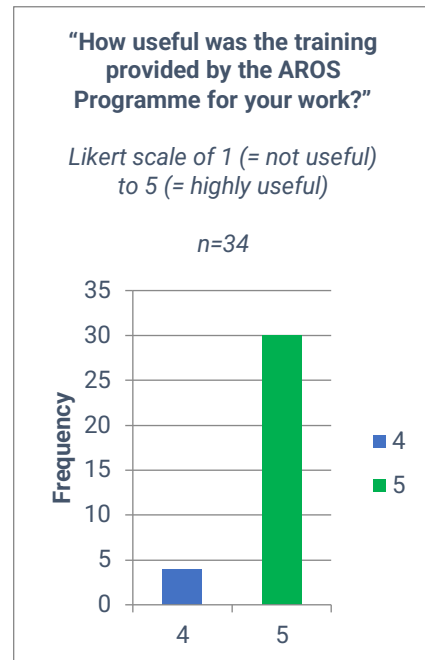
Background and Context

The subject of this evaluation is the Autonomous and Remotely Operated Systems (AROS) Programme, launched in 2021 by the United Nations Office of Counter-Terrorism (UNOCT), developed in response to the escalating threat posed by the misuse of innovation and technology such as Unmanned Aircraft Systems (UAS) and other autonomous and remotely operated systems for terrorism-related purposes. The Programme's core objectives are to enhance Member States' capabilities to prevent, mitigate, and counter these threats, and to ensure that such technologies are leveraged responsibly and in compliance with international human rights and humanitarian law.

Phase I of the AROS Programme (2021–2025) is led by UNOCT through its Special Projects and Innovation Branch (SPIB), in collaboration with the UN Counter-Terrorism Centre (UNCCT), which leads on digital forensics. Implementation also involves partnerships with the Counter-Terrorism Committee Executive Directorate (CTED), the UN Global Service Centre (UNGSC), the International Civil Aviation Organization (ICAO), and Conflict Armament Research (CAR). The Programme directly aligns with the United Nations Global Counter-Terrorism Strategy (GCTS), particularly Pillar II, and supports relevant Security Council Resolutions, including 2309, 2341, 2370, and 2396. Furthermore, it has played a critical role in the development and implementation of the Non-Binding Guiding Principles on Threats posed by misuse of UAS, including by terrorists and for terrorist purposes ("Abu Dhabi Guiding Principles"), adopted by the UN Security Council's Counter-Terrorism Committee in December 2023. The Programme also provided specialized operational training to 100 national officials and 14 trainers in five countries.

Key Findings

Relevance: The AROS Programme is highly relevant to Member States' needs and priorities and aligns closely with global counter-terrorism frameworks. Stakeholders consistently emphasized its ability to address pressing threats posed by and leverage the benefits of AROS technology. The Programme has been instrumental in shaping international policy, including through supporting the development of the Abu Dhabi Guiding Principles and the publication of the first-of-its kind baseline "Global Report on the Acquisition, Weaponization and Deployment of Unmanned Aircraft Systems by Non-State Armed Groups for Terrorism-related Purposes" (henceforth, "Global Report on UAS"). Both outputs reflect the Programme's ability to convene stakeholders and promote evidence-based strategies. Its relevance is further demonstrated by its alignment with national priorities in recipient countries. For example, Senegal's roadmap for UAS operations (under CTED's leadership) addresses key gaps in legislation and inter-agency coordination, while Malaysia is developing new Standard Operating Procedures (SOPs) for drone use based on AROS training curricula. The consultative and participatory approach taken by the Programme's ensured outputs are tailored to national contexts.

"How useful was the training provided by the AROS Programme for your work?"

Likert scale of 1 (= not useful) to 5 (= highly useful)

n=34

Effectiveness: The AROS Programme has made substantial progress in achieving its objectives. In terms of specialized capacity-building, the Programme delivered two-week UAS Operator Training courses to 100 officials in the Kyrgyz Republic, Malaysia, Niger, Senegal and Togo, equipping them with technical and operational skills. In Senegal and Malaysia, training-of-trainer (ToT) sessions certified 14 trainers among previously trained officials, who are now able to replicate training nationally. The programme also effectively supported the development of Senegal's roadmap for UAS, a comprehensive framework aligned with international standards, as well as of the Adu Dhabi Guiding Principles, illustrating its policy influence. The publication of the "Global Report on UAS" provides a baseline for understanding and mitigating terrorism-related threats posed by these systems, attesting to the Programme's role in generating crucial knowledge on the rapidly evolving topic of AROS. Operational outcomes include enhanced reconnaissance capabilities in Niger, as well as disaster response improvements and strengthened coordination in Malaysia and Senegal. However, the Programme's digital forensics component (Outcome 3, led by UNCCT) remains underdeveloped, primarily due to funding constraints.

Impact: The Programme's impact is evident across strategic, operational, and institutional levels. In Niger, drones have been used to deter armed groups and conduct safer reconnaissance missions. In Malaysia, AROS-trained personnel supported search-and-rescue operations and informed the development of mandatory SOPs for drone operations. Senegal's roadmap on UAS operations, developed in partnership with CTED, integrates international standards into national UAS governance, serving as a replicable model for other countries. ToT sessions in Senegal and Malaysia have enabled national trainers to sustain and expand the Programme's reach. In Niger, AROS trainees have independently trained an additional 20 operators, with plans to train 30 more. While these achievements are significant, the programme's current monitoring and evaluation framework limits the ability to measure long-term outcomes systematically, with stakeholders recommending its strengthening.

> *"Drones are tools to preserve human life, and the AROS Programme training strengthened our capacity to use them more efficiently. We improved the way in which we carry out reconnaissance missions today…Risky areas and passages are now surveyed by drones. This has significantly reduced the risks to our personnel."*
>
> *AROS Programme Trainee*

Sustainability: The Programme has embedded sustainability through its ToT approach and support for national frameworks. By equipping recipient authorities with training materials and (forthcoming) equipment, the Programme is facilitating local ownership and independent implementation. However, sustainability for the programme is hindered by (i) the reliance on a small pool of donors and limited financial reserves, which pose risks to long-term continuity; (ii) dependency on external partner, as training delivery remains dependent on the UNGSC, limiting UNOCT's ability to build internal capacity; and (iii) imperfect collaboration mechanisms within UNOCT and with external partners, which pose potential risks to programme efficiency and coherence.

Human Rights, Gender Equality, Disability Inclusion, and Leave No One Behind: The Programme has made efforts to integrate human rights and gender considerations into its design and activities. Training modules address privacy and ethical considerations, and Senegal's roadmap includes provisions for data protection. However, systemic barriers limit women's participation in technical training, and the Programme's emphasis on human rights remains mostly theoretical, warranting further assessment of related operational applications and influence. Additionally, the Programme's monitoring and evaluation mechanisms, while useful for tracking immediate outputs, would require further strengthening to systematically measure long-term accountability, operational impact, and the integration of human rights and gender considerations in practice.

Conclusion: The AROS Programme has demonstrated its ability to address a critical security challenge through targeted capacity-building, policy development, and international coordination. By refining its monitoring systems, enhancing sustainability efforts, and expanding its integration of cross-cutting themes, the Programme can further solidify its impact and strengthen its positioning as a leader in countering terrorism-related threats linked to AROS.

Key Lessons

1. **Demand-driven design enhances relevance**: tailoring interventions to Member States' priorities through inclusive multi-stakeholder consultative processes ensures alignment with operational gaps and national contexts.

2. **Policy integration amplifies impact**: combining capacity-building with policy development promotes institutional change and sustainability.

3. **Progressive training improves retention**: progressive models, such as training-of-trainers, enable participants to advance from trainees to trainers, fostering knowledge transfer.

4. **Rigorous M&E strengthens credibility**: longitudinal assessments and feedback mechanisms would enhance accountability, demonstrate impact more effectively and further strengthen continuous improvement.

5. **Regional hubs foster sustainability**: decentralized training centers can further expand reach and ensure continuity, ownership and uptake by recipient authorities.

6. **Agility and partnerships drive success:** flexibility and collaboration with non-traditional stakeholders (including industry leaders and academia) enhance relevance and innovation.

7. **Thematic human rights and gender integration strengthens practical application**: integrating human rights and gender considerations into technical training should be tailored to the specific theme and training scenarios (rather than remain at a broad conceptual level).

The AROS Programme has provided valuable lessons for future counter-terrorism and security-focused initiatives. By adopting demand-driven approaches, integrating policy influence with capacity-building, institutionalizing robust monitoring frameworks, strengthening sustainability strategies, and enhancing donor engagement, similar programmes can optimize their impact and ensure long-term effectiveness. As technology continues to evolve, the ability to adapt, collaborate, and institutionalize good practices will remain critical for countering emerging terrorist threats linked to AROS.

Recommendations

1. Results-based management and impact measurement

Recommendation 1: Develop and implement a comprehensive **Monitoring and Evaluation (M&E)** framework to systematically assess the long-term impact and operational effectiveness of the AROS Programme.

2. Financial sustainability and donor engagement

Recommendation 2: Develop a **resource mobilization** strategy to secure predictable and diversified funding, ensuring programme continuity and reducing dependency on a limited donor base.

3. Coordination

Recommendation 3: Leverage and strengthen **coordination mechanisms** to streamline operational efficiency, reduce potential duplication, and enhance strategic alignment.

4. Visibility, credibility and stakeholder engagement

Recommendation 4: Enhance **visibility** and credibility of the AROS Programme by systematically documenting operational successes and promoting them through advocacy, regional engagement, and donor outreach.

5. Human rights integration in UAS operations

Recommendation 5: Strengthen the **integration of human rights** considerations in UAS training and operations by expanding dedicated training modules, fostering partnerships with human rights experts, and embedding compliance assessments into monitoring frameworks.

6. Sustainability and regional ownership

Recommendation 6: Establish, strengthen and leverage partnership opportunities with **regional training entities** to ensure sustained capacity-building, institutional knowledge transfer, and stronger regional ownership of AROS-related counter-terrorism efforts.

7. Gender equality and diversity

Recommendation 7: Strengthen efforts to mainstream **gender considerations** and promote gender parity in AROS Programme activities by increasing women's participation in training and raising awareness of gendered dimensions of drone warfare.

Methodology

This evaluation was managed by the AROS Programme Team with the guidance and support of the Evaluation and Compliance Unit in the Office of the Under-Secretary-General (OUSG) of the United Nations Office of Counter-Terrorism (UNOCT). The evaluation process followed the standards and guidance provided in the UNOCT Evaluation Policy and Evaluation Handbook as well as United Nations Evaluation Group (UNEG) Norms & Standards. A mixed-methods approach was employed to ensure a comprehensive and reliable evaluation. Data was collected through 45 key informant interviews (KIIs) with donors (1), UNOCT staff (11), implementing partners (5), external stakeholders (5), and beneficiaries (23), as well as one focus group discussion (FGD) involving 24 Senegalese officials. A survey distributed to 55 beneficiaries received 34 responses from trained officials in Malaysia (9), Niger (9) and Senegal (16). Observations of activities in Senegal, including a consultation event and ToT session, further enriched the data collected. Secondary sources, such as programme documents and training materials, were reviewed for context. The evaluation also incorporated the Most Significant Change (MSC) methodology to capture unanticipated and high-level impacts.