NATO OTAN

The NATO Science for Peace and Security Programme

Country Flyer 2022

August

Developing Practical Cooperation through Science

Azerbaijan has been actively engaged within the framework of the NATO Science for Peace and Security (SPS) Programme since 1995.

The NATO SPS Programme enables close collaboration on issues of common interest to enhance the security of NATO and partner nations by facilitating international efforts to meet emerging security challenges, supporting NATO-led operations and missions, and advancing early warning and forecasting for the prevention of disasters and crises.

The current SPS Key Priorities include:

- *Counter-Terrorism;*
- *Energy Security;*
- *Cyber Defence;*
- *Defence against CBRN Agents;*
- *Environmental Security;*
- *Security-related Advanced Technology;*
- *Border and Port Security;*
- *Human and Social Aspects of Security*.

Additionally, the SPS Programme helps to promote *regional security* through scientific cooperation among partners. The Programme also helps to *prepare* interested eligible nations for NATO membership. SPS activities often have a high *public diplomacy* value.

AZERBAIJAN

In recent years, Azerbaijan has been involved in SPS Programme activities addressing the SPS Key Priorities of Counter-terrorism and Cyber Defence. Below are some examples of recent activities involving Azerbaijan implemented under the framework of the NATO SPS Programme.

Cooperative Activities

ADVANCED CYBER DEFENCE TRAINING COURSES FOR AZERBAIJAN

The SPS programme organised four Advanced Training Courses (ATCs) on cyber defence for Azerbaijani civil servants holding key roles in cyber security, building upon a successful cyber defence course for system administrators conducted in 2014 [ref. 984905]. The ATCs provided advanced training on operational cyber security and cyber security technology contents to ensure cyber resilience in Azerbaijan. They raised awareness of potential cyber threats to critical defence and security-relevant infrastructures and helped increase the levels of network and systems protection in Azerbaijan. These tailor-made courses imparted information on advanced cyber security concepts, best practices and experiences at the international level.

All lectures focused on Azerbaijan's cyber security and its needs, and were complemented by laboratory sessions. *These activities were led by experts from Azerbaijan and Türkiye. The four ATCs were held in December 2015, September 2018, December 2019 and June 2021. [ref. G5131, G5531, G5670, and G5813].*

PORTABLE SENSORS FOR UNMANNED EXPLOSIVE DETECTION

This MYP, launched in February 2018, developed portable sensors for explosives detection based on semiconductor nanowires and carbon nanotubes. These materials allow the development of sensitive, very compact and lightweight chemical sensors that can be carried by unmanned vehicles, i.e. Unmanned Aerial Vehicles (UAVs), and used to explore dangerous sites without direct human intervention. This technology could, for example, be applied in the surveillance of public environments for the detection of IEDs (Improvised Explosive Devices) using a wireless sensor network. The project developed a complete sensor weighing less than 500 grams, including a wireless communication system, suitable for transportation by a drone. *This project was led by experts from Azerbaijan and Italy and was completed in 2021.* [ref. G5423].

HAZARD AND RISK ASSESSMENT FOR SOUTHERN CAUCASUS-EASTERN TÜRKIYE ENERGY CORRIDORS

The Southern Caucasus-Eastern Türkiye energy corridors are formed by several critical pipelines carrying crude oil and natural gas from Azerbaijan, via Georgia, to Türkiye and world markets. The two most important pipelines are the Baku-Tbilisi-Ceyhan (BTC) Crude Oil Pipeline and the Baku-Tbilisi-Erzurum (BTE) Natural Gas Pipeline. Initiated in 2008, the objective of this MYP was to identify the segments of BTC Crude Oil Pipeline and the BTE Natural Gas Pipeline vulnerable to earthquakes, and to provide mitigation strategies by performing a comprehensive seismic hazard and risk study. Probabilistic seismic hazard maps of each participating country were important deliverables of this project. *Completed in 2015, this MYP was led by scientists and experts from Azerbaijan, Georgia, and Türkiye.* [ref. 983038].

ATTACK THE NETWORK: COUNTER-TERRORISM FOR OPERATIONAL PRACTITIONERS

This ATC was designed to introduce operational-level staff officers to the NATO Counter-Terrorism framework. It aimed to impart the knowledge required to plan and conduct Counter-Terrorism operations in support of NATO missions. The course focused on three topics:

1. The concept and practical operation of Attack the Network (AtN) doctrine and techniques,
2. Human Network Analysis and support to Targeting (HNAT),
3. The application of AtN in NATO and national Counter-Terrorism operations.

This SPS activity, led by experts from Azerbaijan and Türkiye, took place in Baku, Azerbaijan from 14 to 18 March 2016 [ref. G5178].

CYBERSECURITY OF INDUSTRIAL CONTROL SYSTEMS

Cyber-attacks of industrial control systems (and others) have a low threshold of execution and have been and will be part of current and future conflicts. Consequences of such attacks could be severe: entire industrial, logistics and transport sectors could be immobilized, having a substantial impact on national security; however, the awareness in Azerbaijan for this problem is low, while the research and education are insufficient. Therefore, to ensure the protection of systems from non-desirable intrusion, adaptive cyber defence capabilities must be developed and effectively implemented. The main goals of this Advanced Researched Workshop (ARW) was to address several relevant topics, such as vulnerability analysis, risk management, intrusion detection and prevention, forensics. In addition, a vulnerability testbed by young Polish researchers was demonstrated. The workshop also aimed to raise cybersecurity awareness and to stimulate cybersecurity education and training in Azerbaijan. *This ARW, led by experts from Azerbaijan and Poland, was held in October 2021. [ref. G5744].*