

## Developing Practical Cooperation through Science

**Bosnia and Herzegovina has been actively engaged within the framework of the NATO Science for Peace and Security (SPS) Programme since 2007.**

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 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.

# BOSNIA AND HERZEGOVINA

Scientists and experts from Bosnia and Herzegovina are currently leading three ongoing activities with the SPS Programme. At present, the leading areas for cooperation include **Unexploded Ordnance (UXO) Detection and Disposal**, and **Advanced Technologies**. Below are some examples of ongoing and completed projects led by scientists and experts from Bosnia and Herzegovina under the framework of the NATO SPS Programme.

## Cooperative Activities

### ADVANCED REGIONAL CIVIL EMERGENCY COORDINATION PILOT

Large-scale disasters often call for an international emergency response involving thousands of first responders from various jurisdictions and agencies. Effective collaboration during emergency and disaster response translates into saving lives, reducing loss of property and resources, and protecting the environment. This flagship Multi-Year Project (MYP), launched in December 2016 and supported by the SPS Programme and the US Department of Homeland Security – Science & Technology Department, developed and implemented a system to facilitate coordination amongst responders and improve civil emergency management across the Western Balkans. The new technology allows responders to share all kinds of information about an incident, including GPS locations or images, via mobile devices. This maximises real-time situational awareness and helps to find coordinated and appropriate responses to natural or man-made disasters. *This was completed in 2021 and was led by experts from Bosnia and Herzegovina, the United States, Croatia, the Republic of North Macedonia and Montenegro.* [ref. G4968].



## OPTIMIZING FUEL CELL CATALYST STABILITY UPON INTEGRATION WITH REFORMING (OFICER)

Fuel cells can play a key role in reducing carbon dioxide (CO<sub>2</sub>) emissions while meeting power demands and other specific needs for a wide range of military and civil infrastructures. However, several limitations still prevent their full exploitation. This ongoing project will address problems of cost, durability, fuel storage, and diesel reformer in order to develop an integrated fuel cell prototype based on highly efficient platinum-based electro catalysts and non-platinum electro catalysts on graphene based supports. *This activity, launched in December 2019, is led by scientists from Bosnia and Herzegovina, Slovenia, and Serbia.* [ref. G5729].

## BIOLOGICAL METHODS FOR EXPLOSIVE DETECTION

This MYP developed a novel method to detect landmines using an innovative approach: employing honeybees. Honeybees are known for their ability to “sniff” a variety of compounds from drugs to pesticides to CBRN materials, and recent studies have proven that they can also detect explosives. By combining the search and collection of explosives by honeybees with imaging and sensing technologies, the results of the detection process are much more efficient. This new method reduces the time and the cost of detection and helps mine action centres release land for civilian use. The end-users of this project are governmental and demining organisations. *This project, launched in November 2017 and completed in October 2021, was led by scientists and experts from Bosnia and Herzegovina, Croatia and the United Kingdom.* [ref. G5355].



## VIRTUAL EVIDENCE CAPTURE TOOL FOR ORDNANCE RECOVERY (VECTOR)

The goal of this ongoing MYP is to fill a critical gap in current Explosive Ordnance Disposal and Law Enforcement Agency operations by enabling detailed, remote analysis and communications between off-site experts and units on the ground. The proposed solution will be developed by synthesising cutting-edge 3D photogrammetry, image recognition, and augmented and virtual reality technology. A Multimedia Capture Application will allow first-responders to capture images and video of potential threats with augmented reality, and securely transfer them to a digital Command and Control platform, where an automated image recognition process will identify and classify the severity and nature of the threat. First responders and ground teams will then be able to undertake the necessary security protocols to contain and counter the threat. *This project, launched in July 2020, is led by scientists and experts from Bosnia and Herzegovina, and the United Kingdom.* [ref. G5711].

## GENDER MAINSTREAMING IN COUNTER-TERRORISM EFFORTS

This ATC provided a forum for discussing and sharing best practices for the incorporation of gender approaches in counter-terrorism (CT) and Countering Violent Extremism (CVE), but also for the promotion of equality in the defense and security sectors in Western Balkans. The goal of this course was to discuss gender-related issues in the Western Balkans, to increase understanding about the valuable role of women in enhancing the CT and CVE efforts and to contribute to wider and more substantial responsibilities of women in these processes. *This activity took place virtually from 16 to 21 May 2021 and was led by experts from Bosnia and Herzegovina and North Macedonia.* [ref. G5824].



The NATO Science for Peace  
and Security Programme