

The Emerging Security Challenges Division



The NATO Science for Peace and Security (SPS) Programme



Annual Report 2016



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Foreword by Ambassador Sorin Ducaru



The implementation of the NATO Science for Peace and Security (SPS) Programme over the last year has been pursued in close alignment with NATO's strategic objectives and partnership priorities: SPS activities made concrete contributions to NATO's Defence and Related Security Capacity Building (DCB) Initiative for partners and helped to project stability towards the East and South of the Alliance. Responding to the Warsaw Summit guidance, the Programme also demonstrated its flexibility and versatility as a unique tool, quickly offering valuable training modules and practical cooperation through SPS projects to partner nations.

As a concrete example in this sense, the SPS Programme responded to political guidance from Allies and a request from our Iraqi partners by launching a flagship project to contribute to Improvised Explosive Devices (IED) Disposal and Search Capacity Building for Iraq. The SPS Programme is currently providing both equipment and expert training, assuming a train-the-trainer approach to harness a multiplier effect and ensure the sustainability of the training.

Other SPS projects related to defence capacity building and projecting stability with partner countries such as Jordan, Tunisia, Egypt, the Republic of Moldova, and Georgia were also successfully developed and implemented. SPS projects in the area of cyber defence and on the role of women in peace and security (UNSCR 1325) as well as a regional SPS flagship project in the Western Balkans were launched in 2016. The latter will implement a civil emergency coordination system that will enhance situational awareness and improve incident response across the region. About half of the SPS Programme budget was allocated to efforts related to projecting stability and defence capacity building in partner countries in 2016.

The SPS Programme also continued to implement important projects with Eastern partners, including Ukraine. In May, the impact of a number of key SPS flagship projects that contribute to building capacity in Ukraine was highlighted during a successful SPS Information Day in Kyiv. The State Emergency Service of Ukraine (SESU) received modern equipment as part of the SPS humanitarian demining project; the capabilities of the SPS project to remediate a fuel polluted military site in a residential area of Kyiv were deployed and demonstrated; and the next steps in the implementation of the SPS telemedicine project were set out.

Last but not least, the last year also saw the completion of several key SPS projects. This includes a regional project to monitor dumped munitions in the Baltic Sea and the inauguration of a national crisis management centre in Mauritania.

Looking ahead, new SPS flagship activities are already in the pipeline: the development of stand-off detection of explosives to fight terrorism, the completion of the SPS project to develop a multinational telemedicine project, efforts to clear unexploded ordnances in Serbia and Egypt, addressing key issues in the area of cyber defence, and engaging further with partners from the Middle East and North Africa region as well as the Gulf countries (Istanbul Cooperation Initiative) are just a few examples.

In 2017, the SPS Programme will continue to prioritize and amplify its focus on projects related to key policy guidelines, in particular those related to defence capacity building and projecting stability. At the same time, it will continue its managerial focus aimed at tangible, measurable outputs, efficiency, and effectiveness and will remain versatile and flexible in its approach to develop new flagship activities with partners that provide practical, political and public diplomacy value.



Ambassador Sorin Ducaru

Assistant Secretary General

NATO Emerging Security Challenges Division

Foreword by the Senior SPS & Partnership Cooperation Advisor

A unique partnership programme of NATO, the Science for Peace and Security (SPS) Programme provides practical support to NATO's political framework by developing and implementing concrete opportunities for cooperation with partner countries.

In 2016, the SPS Programme successfully implemented an increasing number of high-visibility flagship activities supporting the Defence and Related Security Capacity Building (DCB) Initiative. The Programme has clearly demonstrated its ability to effectively respond to Allied and partner countries' demands through practical cooperation in a timely manner by responding to a request from the Iraqi Prime Minister to provide training and advising for Iraqi security and military forces. Following a NATO Summit decision in Warsaw the SPS programme has undertaken the necessary preparation to move Iraqi security forces training to Iraq by January 2017.

Furthermore, the SPS Programme enhanced cooperation with partners on the Eastern and Southern flanks of the Alliance, benefiting from its flexibility and adaptability in a changing political and security landscape. New SPS activities in the fields of Cyber Defence and Women, Peace and Security have been launched to support capacity building, as in the framework of Moldova's DCB package.

A new flagship project in the Western Balkans will enhance early warning and improve emergency response as well as crisis management in the region by building an Advanced Civil Emergency Coordination Pilot. It was officially launched at NATO Headquarters in November 2016.

Concrete steps were taken to further the work on the development of a follow-on project to the successful STANDEX (Standoff Detection of Explosive Devices in real time in a mass transit environment) programme.

Furthermore, the SPS Programme has worked on building synergies with international organizations. Information days to inform the scientific community of partner countries have been organised in Ukraine, Serbia and Armenia. The SPS Programme closely coordinates its activities with other NATO stakeholders to ensure efficiency and sustainability.

This Annual Report presents you with a detailed overview of the work and main achievements of the SPS Programme in 2016. I hope you will enjoy reading it.

PROVIDING
PRACTICAL
COOPERATION
TO PROMOTE
NATO'S POLITICAL
AND SECURITY
OBJECTIVES



Dr. Deniz Beten

Senior SPS & Partnership Cooperation Advisor

Emerging Security Challenges Division



The SPS Team in 2016: (left to right) front row: Dr. Jamie Shea, Mr. Michael Gaul, Ambassador Sorin Ducaru, Dr. Deniz Beten, Dr. Eyup Turmus, Ms. Randi Gebert, Ms. Maša Mesic, Ms. Ewa Myszkowska; back row: Mrs. Jane Bradbrooke, Ms. Eva Hoxha, Ms. Jana Kotorova, Mr. Philippe Fougerolle, Dr. Loredana Enachescu, Mr. James Bombace, Ms. Aylin Keskinetepe, Mrs. Kalvdija Kaliop, Dr. Michael Switkes.

Executive Summary

An established brand for NATO, the Science for Peace and Security (SPS) Programme fosters practical cooperation and dialogue between NATO member states and partner nations. It offers funding, expert advice and support to tailor-made, security-related activities in the form of Advanced Research Workshops, Advanced Training Courses, Multi-year Projects and Advanced Study Institutes. The SPS Programme is guided by a set of key priorities that are aligned with NATO's strategic objectives. Accordingly, its activities address emerging security challenges of mutual concern such as counter-terrorism, energy security, cyber defence and defence against CBRN agents; they support NATO-led missions and operations as well as the development of security-related advanced technologies; and they address human and social aspects of security. SPS activities engage young scientists, produce concrete deliverables that benefit both NATO and partner nations and contribute to building capacity in the security domain.

The SPS Programme responds and adapts to the changing security context and NATO's political priorities. The SPS Work Programme 2016, meetings of NATO Foreign and Defence Ministers, guidance from the North Atlantic Council (NAC) and the decisions taken by Heads of State and Government at the **NATO Warsaw Summit** guided the implementation of the programme in 2016. SPS contributed to key Summit deliverables, notably through supporting the Defence and Related Security Capacity Building (DCB) Initiative, the Comprehensive Assistance Package (CAP) for Ukraine as well as the Alliance's efforts to project stability beyond its borders.

Support to the DCB packages for Iraq, Jordan and the Republic of Moldova: In 2016, the SPS Programme launched tailor-made activities for the implementation of the respective DCB packages. A flagship project was developed that will help Iraqi security forces to respond to incidents involving improvised explosive devices and properly utilize specialized equipment provided for explosive ordnance disposal. Furthermore, SPS supported an Advanced Training Course on cyber defence that responded to a key need and priority area of cooperation identified by Iraq. In the framework of the DCB package for Jordan, SPS continued to support the implementation of a national cyber security strategy. The project included advanced training and the provision of advanced technologies, and established a Computer Emergency Response Teams (CERT) for the Jordanian Armed Forces. With regard to the Republic of Moldova, SPS inaugurated a cyber defence laboratory in October 2016, which will serve as a research and training center primarily for civil servants of the state and governmental institutions. Also as part of the DCB package, a project to support the implementation of the UN Security Council Resolution 1325 on Women, Peace and Security in Moldova through the development of a National Action Plan was launched.

Implementation of the CAP for Ukraine: Through tailored capability and capacity building measures, the SPS Programme supported the CAP, endorsed at the Warsaw Summit. An SPS flagship project provided Ukraine with assistance in the area of humanitarian demining by enhancing the capacity of the State Emergency Service of Ukraine (SESU) in undertaking demining operations in Eastern parts of the country. Furthermore, the development of a modern 3D mine detector will ensure the sustainability of the activities. SPS is also building capacity in the sphere of telemedicine and paramedicine. During the NATO Euro-Atlantic Disaster Response Coordination Centre (EADRCC) field exercise "Crna Gora 2016" held in Montenegro, the telemedicine capabilities were successfully live-tested, allowing medical specialists to engage in disasters or incidents across national borders. The results and impact of these and other SPS activities with Ukraine were also highlighted at a high-level SPS Information Day that took place at the National Academy of Sciences of Ukraine in May 2016. The event provided an opportunity for the dissemination of

the tangible results achieved through practical cooperation and the implementation of SPS projects in Ukraine and received substantial coverage in Ukrainian mainstream media.

Projecting Stability in NATO's neighbourhood through practical cooperation: In line with the Alliance's efforts to project stability and strengthen security across NATO's partner countries, the SPS Programme helped to address challenges stemming from the East and the South of the Alliance. In this regard, SPS launched a new flagship project in November 2016 that will develop and implement a system to facilitate coordination among first responders and improve civil emergency management across the Western Balkans. In a tailor-made project, the Programme also provides Montenegro with assistance in the detection and destruction of unexploded ordnance (UXO) on land and under water, thereby contributing to safer, faster and more efficient clearance of UXO. In Egypt, SPS is enhancing the operational detection and clearance capability for Explosive Remnants of War (ERW). Through better detection and access to these dangerous targets, the project will contribute to the safety and security of the local population. Many more SPS activities with a broad range of partners brought about tangible results that contributed to these and other core goals of the Alliance.

Lasting impact of successfully completed projects: In 2016, a total of 13 SPS projects were concluded, of which many have left a lasting and tangible impact. SPS projects not only offer equipment for research, but also contribute to capacity building and provide training for young scientists while the project results and deliverables often find concrete application by end-users. Three projects that were completed in 2016 stand out in particular. Firstly, launched in 2013, Monitoring of Dumped Munitions (MODUM) established a cost-effective network to observe munition dumpsites, which pose a significant threat to marine life and shipping in the Baltic Sea. Another SPS Multi-year Project supported the remediation of a fuel polluted military site in Ukraine, which caused significant groundwater pollution and soil contamination in a residential area in Kyiv. Lastly, in November 2016, a SPS supported National Crisis Management Centre in Nouakchott, Mauritania, was inaugurated that will help authorities to respond to crises and coordinate an appropriate response.

SPS Programme implementation in 2016: Over the course of the year, the SPS Programme received a total of 134 applications. The Independent Scientific Evaluation Group (ISEG) reviewed 92 applications that had passed the SPS eligibility screening and Allies unanimously approved a total of 50 activities at ten meetings of the Partnership and Cooperative Security Committee (PCSC). The SPS Programme presented Allies with a substantial number of top-down proposals. In 2016, these proposals represented 28% of the activities approved by Allies. While SPS activities address a broad range of security areas, the most common domains of cooperation were counter-terrorism representing 20% of the newly approved activities, followed by CBRN defence with 18%, cyber defence with 16%, advanced technologies with 12% as well as human and social aspects of security with 10%. Both Multi-year Projects and Advanced Research Workshops were the most popular grant mechanisms in 2016, constituting more than three quarters of all SPS activities approved during that year. A total of 20 different partner nations played a leading role in these SPS activities. Partner countries from all NATO partnership frameworks were involved in SPS activities as co-directors, participants or speakers in 2016. Key activities have engaged partners from the Euro-Atlantic area – notably the Western Balkans, Ukraine, and the Caucasus -, the Mediterranean and the Gulf region, as well as other partners across the globe.

Innovative Energy Solutions for Military Applications (IESMA) 2016: This SPS-supported conference brought together over 400 experts and 36 companies from 30 NATO and partner countries in Vilnius in November 2016. IESMA has become a recognised platform for information exchange on Smart Energy. This was reflected by

the high level of key note speakers, including the Minister of Energy and the Minister of Defence of Lithuania.

Engaging key stakeholders in the development of projects: Coordination and cooperation with other NATO bodies, agencies, divisions and delegations is of vital importance for the successful implementation of the SPS Programme. In 2016, the SPS Programme continued to draw on the expertise of NATO-accredited Centres of Excellence (CoE) such as the Counter Improvised Explosive Devices (C-IED) CoE in Spain. SPS further cooperates with a range of external stakeholders such as academies of science, national ministries as well as research institutions. Together, the stakeholders' work is directed through NATO's political guidance, NATO's Strategic Objectives, and Individual Partnership Cooperation Programmes (IPCPs) as well as Individual Partnership Action Plans (IPAPs). The SPS Programme also reaches out to other international organisations (IOs) in order to foster dialogue and cooperation. In 2016, practical cooperation with the United Nations (UN), the Organization for Security and Cooperation in Europe (OSCE), and the European Union (EU) contributed to enhancing international security and complementarily of efforts.

Enhancing visibility through public diplomacy: The SPS Programme continued to successfully enhance its public diplomacy efforts in 2016 and made use of all available public diplomacy tools, including social media. SPS outreach initiatives have been closely coordinated with NATO's Public Diplomacy Division where appropriate. The Programme highlighted the benefits of NATO's partnership policy, the tangible results produced and SPS contributions to capacity-building. With its focus on non-military cooperation along the lines of civil science, technology, innovation and beyond, the SPS Programme also underlines the civilian role of the Alliance, balancing the image of NATO as a predominantly military organization. Public diplomacy highlights in 2016 included the SPS Information Day in Ukraine that attracted more than 200 interested scientists and experts; a press tour for international journalists which included a visit to Jordan to observe the SPS-funded Counter-IED training; and the launch of an interactive timeline, which highlights milestones in the evolution of the SPS Programme between 1956 and 2016. SPS also continued to make effective use of its Twitter account (@NATO_SPS) and its official website (www.nato.int/science) to disseminate information and updates about the Programme and key SPS activities. Moreover, a large number of SPS initiatives were covered in mainstream media in both NATO and partner countries. The SPS Programme also organised three SPS Information Days throughout 2016 and participated in conference and outreach events to raise the visibility of the SPS Programme.

Outlook to the work of the SPS Programme in 2017: The implementation of SPS activities will be guided by the SPS Work Programme 2017, which reflects NATO's political and strategic priorities, and by key outcomes and guidance resulting from high-level meetings such as Ministerials and Summits. The SPS Programme will continue to promote large-scale, strategic activities with a high political, practical and public diplomacy impact and respond to the Alliance's partnership priorities and initiatives. Most importantly, these include efforts to project stability in order to address challenges from the East and South of the Alliance; support the DCB Initiative through practical cooperation and flagship initiatives in priority areas of cooperation; and foster the implementation of the Comprehensive Assistance Package for Ukraine through the execution of key projects.



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List of Abbreviations

ACO	Allied Command Operations
ACT	Allied Command Transformation
ARW	Advanced Research Workshop
ASG	Assistant Secretary General
ASI	Advanced Studies Institute
ATC	Advanced Training Course
AU	African Union
AUV	Autonomous Underwater Vehicle
BRGM	Bureau de Recherches Géologiques et Minières
CAP	Comprehensive Assistance Package
CBRN	Chemical, Biological, Radiological, and Nuclear
CERT	Computer Emergency Response Team
C-IED	Counter-Improvised Explosive Devices
CIRT	Computer Incident Response Team
CMDR CoE	Crisis Management and Disaster Response Centre of Excellence
CMRE	Centre for Maritime Research and Experimentation
CPP	Cultural Property Protection
CoE	Centre of Excellence
CT	Counter Terrorism
DASG	Deputy Assistant Secretary General
DCB	Defence Capacity Building
DHS S&T	Department of Homeland Security, Science and Technology Directorate
DI	Defence Investment
DL	Distance Learning
DPP	Defence Policy Planning
EADRCC	Euro-Atlantic Disaster Response Coordination Centre
EAPC	Euro-Atlantic Partnership Council
EOD	Explosive Ordnance Disposal
EOP	Enhanced Opportunity Partner
ERW	Explosive Remnants of War



ESCD	Emerging Security Challenges Division
EU	European Union
GPR	Ground Penetrating Radar
GSMAC	General Staff of the Mongolian Armed Forces
HQ	Headquarters
ICI	Istanbul Cooperation Initiative
IED	Improvised Explosive Device
IESMA	Innovative Energy Solutions for Military Applications
IMS	International Military Staff
IO	International Organisation
IPAP	Individual Partnership Action Plan
IPCP	Individual Partnership Cooperation Programme
ISEG	Independent Scientific Evaluation Group
JCBRN CoE	Joint Chemical, Biological, Radiological, & Nuclear Defence Centre of Excellence
KASOTC	King Abdullah II Special Operations Training Centre
MAF	Moldovan Armed Forces
MD	Mediterranean Dialogue
METU	Middle East Technical University
MIT LL	Massachusetts Institute of Technology Lincoln Laboratory
MLO	Military Liaison Office
MoD	Ministry of Defence
MODUM	Monitoring of Dumped Munitions
MoI	Ministry of Interior
MPWAD	Multisensing Platform for Warfare Agent Detection
MYP	Multi-Year Project
NAC	North Atlantic Council
NAP	National Action Plan
NATO	North Atlantic Treaty Organisation
NCIA	NATO Communications and Information Agency

NICS	Next-Generation Incident Command System
NUC	NATO-Ukraine Commission
NSPA	NATO Support and Procurement Agency
OPCW	Organization for the Prohibition of Chemical Weapons
OPS	Operations Division
OSCE	Organization for Security and Co-operation in Europe
PaG	Partners across the Globe
PASP	Political Affairs and Security Policy Division
PCSC	Partnerships and Cooperative Security Committee
PDD	Public Diplomacy Division
ROV	Remotely Operated Underwater Vehicles
SAM	Surface to Air Missile
SAV	Staff Assessment Visit
SESU	State Emergency Service of Ukraine
SiC	Silicon carbide
SPS	Science for Peace and Security Programme
STANDEX	Stand-off Detection of Explosives
STO	NATO Science and Technology Organisation
UAV	Unmanned Aerial Vehicles
UN	United Nations
UNMAS	United Nations Mine Action Service
UNSCR	United Nations Security Council Resolution
UNWOMEN	United Nations Entity for Gender Equality and the Empowerment of Women
UXO	Unexploded Ordnance
WMD	Weapons of Mass Destruction



CHAPTER I

Introduction

Introduction to the SPS Programme

The NATO Science for Peace and Security (SPS) Programme is an established brand for NATO. SPS promotes NATO's political and security objectives with partner nations by providing concrete, practical opportunities for cooperation. It offers funding, expert advice and support to tailor-made, security-related activities in the form of Advanced Research Workshops (ARW), Advanced Training Courses (ATC), and Multi-year Projects (MYP). These activities are jointly developed by at least one NATO member state and partner country in order to enhance dialogue and practical cooperation. SPS activities produce concrete deliverables and capacity building for security challenges of mutual concern to NATO Allies and partners by providing scientific and technical advice through its network of experts.

The SPS Programme provides the Alliance with additional, non-military communication channels and brings together experts from NATO countries with those from partner countries, often in situations or regions where other forms of dialogue more directly focused on defence and security are difficult to establish. Accordingly, it enables NATO to become actively involved in such regions, often serving as the first concrete link between NATO and a new partner. Furthermore, the SPS Programme promotes dialogue and regional cooperation among partners, including those for whom direct engagement with NATO is difficult.

SPS is closely aligned with NATO's strategic objectives and supports the Alliance's political priorities as defined in the 2010 Strategic Concept and set out in the NATO Partnership Policy adopted in Berlin in 2011. Today, the Programme promotes collaboration and cooperative security based on these core dimensions that define its identity:

Science.

The SPS Programme helps to foster research, innovation, applied science and technology as well as knowledge exchange in an effort to address mutual security challenges. As a brand, SPS has a very wide network extending to hundreds of universities and institutions across the world.

Partnership.

The collaborative framework of the Programme brings together scientists, experts and policy makers from Allied and Partner countries to address today's security challenges together. Moreover, SPS provides the framework for project management in its key priority areas – proving that practical cooperation is achievable across political barriers through scientific exchange.

Security.

According to the scope of the SPS Programme and guidance, all projects developed under SPS must have a security dimension. This is also reflected in the SPS Key Priorities developed by Allies.

SPS Grant Mechanisms

The SPS Programme supports collaboration through four established grant mechanisms: Multi-year Projects (MYP), Advanced Research Workshops (ARW), Advanced Training Courses (ATC) and Advanced Study Institutes (ASI). Interested applicants must develop a collaborative activity that fits within one of these formats. Moreover, all activities funded within the framework of the SPS Programme must follow the rules and regulations outlined in the SPS Programme Management Handbooks.

Partnership frameworks

The SPS Programme supports collaboration between NATO and partner scientists and experts from countries that are associated with the Alliance through the Euro-Atlantic Partnership Council (EAPC), the Mediterranean Dialogue (MD), the NATO-Ukraine Commission (NUC), the Istanbul Cooperation Initiative (ICI) and Partners across the Globe (PaG). SPS activities take into account the priorities and preferences of partners, in particular those outlined in approved partnership documents including Individual Partnership Action Plans (IPAPs), Individual Partnership Cooperation Programmes (IPCPs) and Membership Action Plans (MAPs).

Focus & Key Priorities

The SPS Programme aims to link researchers, scientists and experts to NATO through activities that address a wide range of non-traditional risks and challenges faced by both the Alliance and the broader international community. These include terrorism, defence against chemical, biological, radiological, and nuclear (CBRN) agents, cyber security threats, energy security and environmental security concerns, as well as human and social aspects of security, in particular the implementation of the United Nations Security Council Resolution (UNSCR 1325) on Women in Peace and Security.

Researchers, academics and government officials all have an important role to play in helping the Alliance identify, understand and respond to these contemporary vulnerabilities and threats. Thus NATO aims to ensure that funding and support are available for collaborative activities that address NATO's security objectives while promoting cooperation and partnership.

All activities funded by the SPS Programme must address at least one of the SPS Key Priorities and have a clear link to security. The SPS Key Priorities are based on NATO's Strategic Concept agreed by Allies at the Lisbon Summit in November 2010, and the strategic objectives of NATO's partner relations agreed in Berlin in April, 2011. The current SPS Key Priorities are:

1. FACILITATE MUTUALLY BENEFICIAL COOPERATION ON ISSUES OF COMMON INTEREST, INCLUDING INTERNATIONAL EFFORTS TO MEET EMERGING SECURITY CHALLENGES

a. COUNTER-TERRORISM

- Methods for the protection of critical infrastructure, supplies and personnel;
 - Human factors in the defence against terrorism;
 - Detection technologies against the terrorist threat for explosive devices and other illicit activities;
 - Risk management, best practices and technologies in response to terrorism.
-

b. ENERGY SECURITY

- Innovative energy solutions for the military; battlefield energy solutions; renewable energy solutions with military applications;
 - Energy infrastructure security;
 - Maritime aspects of energy security;
 - Technological aspects of energy security.
-

c. CYBER DEFENCE

- Critical infrastructure protection, including sharing of best practices, capacity building and policies;
 - Support in developing cyber defence capabilities, including new technologies and support to the construction of information technology infrastructure;
 - Cyber defence situation awareness.
-

d. DEFENCE AGAINST CBRN AGENTS

- Methods and technology regarding the protection against, diagnosing effects, detection, decontamination, destruction, disposal and containment of CBRN agents;
 - Risk management and recovery strategies and technologies;
 - Medical countermeasures against CBRN agents.
-

e. ENVIRONMENTAL SECURITY

- Security issues arising from key environmental and resource constraints, including health risks, climate change, water scarcity and increasing energy needs, which have the potential to significantly affect NATO's planning and operations;
- Disaster forecast and prevention of natural catastrophes; Defence-related environmental issues.

2. ENHANCE SUPPORT FOR NATO-LED OPERATIONS AND MISSIONS

- Provision of civilian support through SPS Key Priorities;
- Provision of access to information through internet connectivity as in the SILK-Afghanistan Programme;
- Cultural and social aspects in military operations and missions;
- Enhancing cooperation with other international actors.

3. ENHANCE AWARENESS ON SECURITY DEVELOPMENTS INCLUDING THROUGH EARLY WARNING, WITH A VIEW TO PREVENTING CRISES

a. SECURITY-RELATED ADVANCED TECHNOLOGY

- Emerging technologies including nanotechnology, optical technology, micro satellites, metallurgy and the development of UAV platforms.
-

b. BORDER AND PORT SECURITY

- Border and port security technology;
 - Cross border communication systems and data fusion;
 - Expert advice and assessments of border security needs and best practice.
-

c. MINE AND UNEXPLODED ORDNANCE DETECTION AND CLEARANCE

- Development and provision of advanced technologies, methodologies and best practice;
 - Solutions to counter improvised explosive devices (IED).
-

d. HUMAN AND SOCIAL ASPECTS OF SECURITY RELATED TO NATO'S STRATEGIC OBJECTIVES

4. ANY PROJECT CLEARLY LINKED TO A THREAT TO SECURITY NOT OTHERWISE DEFINED IN THESE PRIORITIES MAY ALSO BE CONSIDERED FOR FUNDING UNDER THE SPS PROGRAMME. SUCH PROPOSALS WILL BE EXAMINED FOR LINKS TO NATO'S STRATEGIC OBJECTIVES.

CHAPTER II

2016 Highlights – Reflecting NATO’s Partnership Priorities

Reflecting NATO’s Partnership Priorities

The SPS Programme implementation in 2016 was guided by the SPS Work Programme 2016, the SPS Overarching Guidelines of 2013, and the political direction provided by Allies at the Warsaw Summit, Ministerial Meetings and by the North Atlantic Council (NAC). The Programme continued its increased focus on top-down, flagship SPS projects with a strong political, partnership and public diplomacy impact, addressing NATO’s partnership priorities. These projects are tailor-made, focusing on the needs of partners and take into account the expertise and added value of NATO experts.

The SPS Programme responded to the strategic goals laid out in the 2016 SPS Work Programme and NATO’s political priorities, notably through:

1. Supporting the Defence and Related Security Capacity Building (DCB) Initiative;
2. Enhancing cooperation with partners on NATO’s Eastern and Southern flanks, thus helping to project stability in the neighbourhood of the Alliance;
3. Contributing concrete deliverables to the Comprehensive Assistance Package (CAP) for Ukraine;
4. Furthering regional cooperation on security-related issues with a wide range of partners, including Partners across the Globe;
5. Enhancing cooperation with international organizations, such as the UN, EU and OSCE.

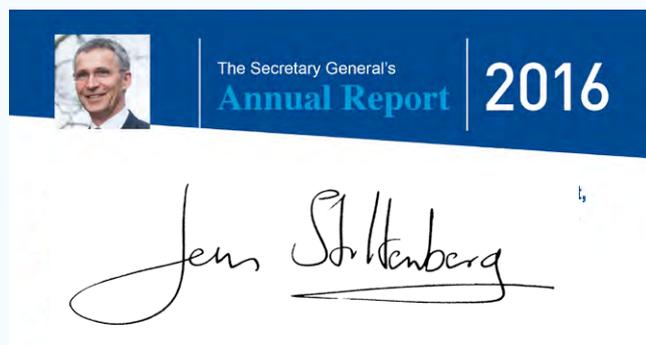
SPS delivered on the implementation of these strategic goals through several key activities. These include projects in support of Iraq’s DCB package, notably a flagship project to train and equip Iraqi security forces in Jordan as well as a cyber defence training course for Iraqi network administrators in Turkey. SPS activities in the field of cyber defence and UNSCR 1325 on Women, Peace and Security also addressed priorities identified in Moldova’s DCB package, thereby reinforcing the country’s defence sector.

Other key SPS activities aimed to build capacity and project stability in NATO’s partner countries. A flagship project to develop an Advanced Civil Emergency Coordination Pilot in the Western Balkans was officially launched at NATO headquarters in November 2016. It will enhance early warning and improve emergency response as well as crisis management in the region. Moreover, concrete steps were taken to further the work on the development of a follow-on project to the successful STANDEX (Standoff Detection of Explosive Devices in real time in a mass transit environment) programme.

The work and the substantial achievements of the SPS Programme were highlighted in a number of SPS Information Days that were organised in NATO nations and partner countries throughout the year. The Programme also enhanced its public diplomacy efforts through the SPS Twitter account, the SPS website and its cooperation with NATO’s Public Diplomacy Division (PDD) to enhance the visibility of its activities.

These achievements have also been recognized and highlighted across the Alliance. The NATO Secretary General’s Annual Report 2016 in particular reflects the accomplishments of SPS over the last year. A dedicated sub-chapter refers to key SPS activities, their link to NATO’s strategic objectives, and practical impact

on NATO's partnerships. SPS activities are also highlighted in various other places throughout the report, including in the chapter on NATO's support to Iraq and to Ukraine, engagement with partners in the Middle East and North Africa, and the implementation of UNSCR 1325 on women in peace and security. Moreover, several SPS activities in cooperation with the NATO Support and Procurement Agency (NSPA) have been highlighted on their website throughout 2016.



NATO Warsaw Summit Deliverables

The landmark Warsaw Summit on 8-9 July 2016, demonstrated the unity of the Alliance as NATO Heads of State and Government focused on defence, deterrence, and projecting stability beyond NATO's borders, ensuring that the Alliance meets the full spectrum of security challenges in the 21st century. As one of NATO's most important civilian partnership initiatives, the SPS Programme contributed to key Summit deliverables, notably through supporting the Defence and Related Security Capacity Building Initiative, the Comprehensive Assistance Package for Ukraine as well as the Alliance's efforts to project stability beyond its borders.



Family photo of Allied and Partner Heads of State and Government and Heads of International Organizations

Defence and Related Security Capacity Building Initiative

The Defence and Related Security Capacity Building (DCB) Initiative reinforces NATO's commitment to partners by providing support to nations requesting defence capacity assistance from the Alliance. In 2016, the SPS Programme launched tailor-made activities in support of the DCB packages for Iraq, Jordan and the Republic of Moldova.

Defence Capacity Building Package for Iraq

At the Warsaw Summit, Allies reiterated both their commitment to a long-term partnership with Iraq and their intention to assist the country through the DCB Initiative. Because of its significant expertise in the area of Countering IEDs, the SPS Programme is leading NATO's efforts in this domain, and in 2016, launched a

flagship project that will help Iraq deal with this critical capability gap. An SPS Advanced Training Course on cyber defence, further responded to a key need and priority area of cooperation identified by Iraq.

Iraqi security forces are faced with the unprecedented challenge of clearing improvised explosive devices (IED) left behind in areas recaptured from Daesh. Initiated in February 2016, this SPS flagship project is enhancing the Iraqi post-conflict capacity for IED clearance and is thereby responding to a critical capability gap. The project is part of NATO's Defence Capacity Building (DCB) package for Iraq, which identifies Counter-Improvised Explosive Devices (C-IED), as the most urgent priority area. By assisting Iraq in building more effective security forces, the project is also part of NATO's efforts to project stability beyond its borders and contribute to a more stable and secure neighborhood.

The SPS project assists stabilization efforts and humanitarian activities, supporting the return of displaced people. Through the provision of both expert training and specialist equipment, 70 Iraqi Explosives Ordnance Detection (EOD) personnel from the Ministry of Interior and the Ministry of Defence will be able to conduct the extremely hazardous task of IED clearance. The project's value will be sustained through a train-the-trainer approach. Ultimately, it will generate a cadre of experts and pyramid support structure of master trainers, instructors and operators to cascade training within Iraq. This is a niche area with significant added value for NATO and the SPS Programme.

Two training cycles were completed in 2016 at the King Abdullah II Special Operations Training Center (KASOTC) in Amman, Jordan, in cooperation with a number of internal and external stakeholders. The NATO Support and Procurement Agency (NSPA) is facilitating the overall project implementation while the NATO C-IED Centre of Excellence in Madrid, Spain, is supervising the training activities. During the second training cycle the instructor team was reinforced through Voluntary National Contributions from Spain, Iceland and Hungary. Additionally, two Iraqi experts who were trained in the first cycle of training returned to KASOTC to serve as trainers in the second cycle.

This SPS flagship project was also coordinated with the Counter ISIL-Coalition and other international organisations such as the European Union (EU), and the United Nations Mine Action Service (UNMAS) in order to ensure complementarity and avoid duplication of efforts.

Furthermore, an advanced level, hands-on cyber defence training course was tailor-made for Iraqi system/network administrators to directly respond to requirements of the Iraqi authorities. The main goal of the training was to enhance the knowledge of the trainees in the area of cyber defence and network security to strengthen the overall Iraqi resilience and capabilities to defend against current cyber threats. Overall, 16 civil servants from the new Iraqi Computer Incident Response Team (CIRT) were trained in November 2016 in Ankara, Turkey, at the Informatics Institute of the Middle East Technical University.



Iraqi security forces receiving training in clearing improvised explosive devices



NATO is projecting stability through training and capacity building in Iraq



Iraqi civil servants were trained in cyber defence and network security in Turkey

Defence Capacity Building Package for Jordan



The SPS Programme is supporting the implementation of the DCB package for Jordan in a variety of areas.

In Warsaw, NATO Allies underlined their commitment to strengthening NATO-Jordan relations through enhanced dialogue and practical cooperation in the framework of the DCB Initiative, among others. The SPS Programme has launched several tailor-made projects in support of Jordan's DCB package in several of its priority domains, notably cyber defence and C-IED.

The SPS is supporting the implementation of a cyber security strategy for Jordan. This successful project that is approaching its final phase in 2017, is the first example of practical cooperation with Jordan in the area of cyber defence. The project significantly enhanced Jordan's cyber defence posture and on a practical level established a Computer Emergency Response

Team (CERT) for the Jordanian Armed Forces, which represents a major milestone in Jordan's national cyber defence programme. Through training and professional development, the project contributed to the creation of a qualified and well-trained workforce. In addition, two conferences were organized as part of the project to create a network of cyber defence experts. The success of the project was underscored by the decree of the Jordanian Government, declaring the project to be a national activity. The CERT will be officially inaugurated in 2017. A follow-on SPS project, which will help to further strengthen Jordan's cyber defence capabilities is under preparation.

Following Allied political guidance, in 2016, the SPS Programme further worked on the development of a follow-on project in the area of C-IED. The initial project, implemented in 2015 and led by the C-IED CoE in Madrid, delivered specialized training courses to support the C-IED capabilities of the Jordanian Armed Forces and conducted a staff assessment visit (SAV) to identify urgent C-IED requirements.

Further SPS activities in support of the DCB package for Jordan, including on C-IED training and on border security are under development and foreseen for 2017.

Defence Capacity Building Package for the Republic of Moldova



The NATO SPS Programme is cooperating with Moldova on cyber defence.

At Warsaw, NATO Heads of State and Government reiterated their committed to furthering practical cooperation with the Republic of Moldova. Within the framework of the DCB Initiative, the capabilities of the Moldovan armed forces and the defence sector are strengthened. Responding to Allied political guidance, the SPS Programme launched projects to enhance Moldovan cyber defence capabilities and implement UNSCR 1325.

In October 2016, SPS inaugurated a cyber defence laboratory at the Technical University of Moldova which will serve as a research and training center for civil servants of Moldovan governmental institutions as well as for young scientists and students of the university.

Furthermore, the SPS Programme initiated a new Multi-year Project with the objective to establish a Cyber Incident Response Centre (CIRC) for the Moldovan Armed Forces (MAF). Pending Allied approval in 2017, this project will increase the MAF's human, technical and procedural cyber capabilities, in order for them to face sophisticated and emerging cyber threats. As a result of this project, the overall

cyber defence posture and capabilities of the MAF will be strengthened. Moreover, the Armed Forces will be better prepared to further international cooperation in this field and share critical information with the CIRCs of NATO countries.

A project to support the implementation of the UN Security Council Resolution 1325 in Moldova through the development of a National Action Plan was officially launched in Chisinau on 6 October 2016. The project will support the Moldovan government and civil society actors in creating a multi-agency national strategy to implement the UNSCR 1325. In order to facilitate these efforts several workshops will be organized throughout the course of the project. The Information and Documentation Centre on NATO will coordinate project activities in Moldova. They will also draw on regional exchange of best practices for implementing UNSCR 1325.

Comprehensive Assistance Package (CAP) for Ukraine

Since 2014, in the wake of the Russia-Ukraine conflict, cooperation between NATO and Ukraine has been intensified in many areas, including within the SPS Programme. At the 2016 NATO Warsaw Summit, the Heads of State and Government of the NATO-Ukraine Commission reaffirmed their commitment to a strong partnership with Ukraine and endorsed the CAP. The aim of the Package is to consolidate and enhance NATO's support to Ukraine through tailored capability and capacity building measures. This will enable Ukraine to become more resilient, to better provide for its own security and to carry out essential reforms, in particular in the security and defence sector. As part of the CAP, the SPS Programme implemented several activities in Ukraine's priority areas of cooperation. These include a project to support humanitarian demining in the East of the country, the development of a modern 3D mine detector as well as capacity building in the sphere of telemedicine and paramedicine.



Petro Poroshenko (President of Ukraine) and NATO Secretary General Jens Stoltenberg

The results and impact of these and other SPS activities with Ukraine were also highlighted at a high-level SPS Information Day that took place at the National Academy of Sciences of Ukraine in May 2016. The event provided an opportunity to enhance awareness of the SPS Programme in the country and to disseminate the achievements of practical cooperation between scientists from Ukraine and NATO countries.

Support to Humanitarian Demining in Ukraine

Multi-year Project G5024

SPS Key Priority	3.c. UXO
Country Directors	Luxemburg, Ukraine

This SPS flagship project provided Ukraine with assistance in the area of humanitarian demining by enhancing the capacity of the State Emergency Service of Ukraine (SESU) in undertaking demining operations in Eastern parts of the country. It is scheduled to be completed in early 2017.

The project significantly contributed to safeguarding the civilian population within areas affected by the conflict in Ukraine and allowed the return of displaced persons.



SESU personnel searching for mines with equipment provided by the SPS Programme



Ambassador Sorin Ducaru and Mr. Mykola Chechotkin at the demining hand-over ceremony in Ukraine.

In the framework of the project, the demining teams of the SESU were provided with specialist equipment for detection and clearance as well as training.

A high-level ceremony during the May 2016 SPS Information Day in Ukraine, attended by Ambassador Sorin Ducaru and Mr. Mykola Chechotkin, Head of the SESU, marked the successful hand-over of the demining equipment to the SESU.

In October 2016, 22 EOD personnel from the SESU received demining equipment and IED disposal training in Ukraine which included the investigation, detection, and reporting of explosive ordnance so that the SESU can cope with the additional challenges stemming from a high threat environment.

A Multinational Telemedicine System for Emergency Situations

Multi-year Project G4748

SPS Key Priority

2. Support for NATO-led Operations

Country Directors

Romania, Ukraine, United States, Finland and the Republic of Moldova



A paramedic train-the-trainer course for Ukrainian personnel was held in Romania.

This multi-year flagship project develops a telemedicine technology that enables medical specialists to engage in major disasters or incidents across national borders. Portable medical kits allow first responders at the scene to connect to the system to receive expert advice from medical specialists in case of an emergency, even in remote areas. Through the use of modern communications technologies, an international network of medical specialists will be able to assess patients, diagnose them and provide real-time recommendations. This will allow the right aid and care to reach those who need it most quickly, with the potential to save many in disasters.

As part of the project, a paramedic train-the-trainer course for Ukrainian personnel took place in Romania in November 2016. Participants underwent special training to become not just paramedics, but also instructors for other paramedics and rescue workers. A designated training center is foreseen to be established in Ukraine for civilian rescue workers and paramedics after they graduate.

The telemedicine system was live tested during the consequence management field exercise "Crna Gora 2016" held in Montenegro. NATO Deputy Secretary General Rose Gottemoeller attended the exercise and the demonstration of the telemedicine project. Once fully developed, the telemedicine technology will have a dual-use potential for both civilian and military applications.

In February 2017, project participants and high-level representatives from NATO will present key findings and discuss the future of the telemedicine system at a book talk and closing conference at NATO HQ. The book published under the NATO Science Series is available for purchase from IOS Press.

Development of Mine and IED Recognition System based on Ultrawideband Technology

Multi-year Project G5217

SPS Key Priority 3.c. UXO

Country Directors Norway, Ukraine

Detecting buried explosives is a vital security issue. The development of techniques that are safe and that enable rapid detection with a low number of false alarms is crucial. This project aims to develop a state-of-the-art digital ground penetrating radar system which will detect dangerous targets such as mines, improvised explosive devices and explosive remnants of war. The device will provide a visual 3D image and automatically recognize the type of the detected object in up to 3 meters depth. Ultimately, the technology will allow faster, cheaper, and safer clearance of former conflict zones and help to avoid victims among civilians and the military. The end-user of the project is the State Emergency Service of Ukraine, which is receiving support from the SPS project on humanitarian demining. This multi-year initiative will open new possibilities in humanitarian demining operations and help sustain the efforts in the long run.



Kick-off meeting of the Norwegian and Ukrainian project teams in September 2016.



With SPS support a state-of-the-art digital ground penetrating radar system will be developed.

Projecting Stability in NATO's Neighbourhood Through Practical Cooperation

At the Warsaw Summit, Allies emphasized that they seek to contribute more to the efforts of the international community in projecting stability and strengthening security outside NATO territory. Through dialogue and practical cooperation with its partner nations, the SPS Programme actively contributes to these efforts. It thereby assumes a balanced and flexible 360 degree approach to help address the challenges from the East and to the South.



Projecting Stability was one of the key initiatives at the NATO Warsaw Summit.

Development of a Civil Emergency Coordination Pilot System in the Western Balkans

Multi-Year Project G4968

SPS Key Priority

1.a. Risk management, best practices and technologies in response to terrorism

Country Directors

United States, Bosnia and Herzegovina, Croatia, Montenegro, the former Yugoslav Republic of Macedonia*



Through the NICS responders can share incident information via mobile devices and thereby enhance situational awareness.

This new flagship project, supported by the NATO SPS Programme and the US Department of Homeland Security Science & Technology Department (DHS S&T), will develop and implement a system to facilitate the coordination among responders and improve civil emergency management across the Western Balkans. Once in place, the new technology will allow responders to share all kinds of information about an incident, including the GPS location or images, via mobile devices. This will maximise real-time situational awareness and help find a coordinated, appropriate response to various emergencies.

Young scientists from the region will be involved in the project to customise and enhance the capabilities of the technology. The four-year effort will also feature

an annual demonstration in the Western Balkans to test the system and integrate standard operating policies with emergency response organisations.

Based on the 'New Incident Command System' (NICS) that was developed by the MIT Lincoln Laboratory (MIT LL) and DHS S&T the system to be implemented in this SPS flagship project will support capacity-building of emergency response and management in the Western Balkan region, enhance situational awareness and help coordinate a response to incidents.

The project was formally launched at NATO Headquarters on 28 November 2016. Dan Cotter, DHS S&T Director of First Responders Group, the Ambassadors of Bosnia and Herzegovina and the former Yugoslav Republic of Macedonia*, among others, attended the opening session.



The formal launch of the project at NATO Headquarters on 28 November 2016

* References in this publication to the former Yugoslav Republic of Macedonia are marked by an asterisk (*) referring to the following footnote: Turkey recognizes the Republic of Macedonia with its constitutional name.

Increasing the Clearance Capacity for Unexploded Ordnance in Montenegro

Multi-Year Project G4754

SPS Key Priority 3.c. UXO

Country Directors Netherlands, Montenegro

This SPS project provides Montenegro with assistance in the detection and destruction of unexploded ordnance (UXO) on land and under water. By enhancing the operational capability of the UXO clearance team under the Ministry of Interior (Mol) of Montenegro, it will significantly contribute to safer, faster and more efficient clearance of UXO in accordance with International Mine Action Standards.

Protection against UXO is important for Montenegro and the region because of the large quantities of UXO that still remain from past wars. With this SPS project, the UXO clearance team is introduced to and provided with modern technologies for the technical survey of suspected areas and the detection of UXO. The team received explosive ordnance disposal and equipment specific operator training to be equipped to execute the UXO clearance from survey to final disposal.

As an outcome of the project, the Mol Directorate for Emergency Management was recognized as the equivalent to a national Mine Action Centre and became member of the South-Eastern Europe Mine Action Co-ordination Council, allowing it to enhance collaboration with similar services in the region.



NATO Deputy Secretary General, Rose Gottemoeller attended a live demonstration of the project.



Large quantities of UXO still remain from past wars in Montenegro.

CBRN First Responders Live Agent Training

Advanced Training Course G5279

SPS Key Priority 1.d. CBRN defence

Country Directors Czech Republic, Tunisia

CBRN weapons and improvised explosive devices with highly toxic materials are among the most dangerous and deadly weapons used by terrorists. At present, however, many governments are not fully prepared to face the increased threat posed by such weapons. There is thus a real need to enhance the capabilities of national and international experts in this domain in order to prepare for such events and to cope with the consequences in case of an attack. The overarching goal of this live agent train-the-trainer course hosted by the Joint CBRN Defence Centre of Excellence (JCBRN CoE) in Vyškov, Czech Republic, was to enable 17 first responders from Egypt, Jordan and Tunisia to survey, monitor and manage the consequences of a CBRN incident. Experts from the Organization for the Prohibition of Chemical Weapons (OPCW) reinforced the JCBRN CoE and provided instructor support. The training was designed to assist nations to improve their civil emergency plans, complement national training systems and improve cooperation between first responders. The



The train-the-trainer course enhanced the capabilities of first responders to a CBRN incident.

course, held in November 2016, helped in the development of security standards that match overall requirements and improve interoperability and effectiveness in the CBRN defence domain.

Enhanced Explosive Remnants of War (ERW) Detection and Access Capability in Egypt

Multi-Year Project G4899

SPS Key Priority	3.c. UXO
Country Directors	Netherlands, Egypt



The SPS Programme is providing assistance to Egypt in enhancing its capabilities to detect and access ERWs.

This project is providing Egypt with an enhanced operational detection and clearance capability for Explosive Remnants of War (ERW) and is composed of two phases – detection and access. The first phase includes the use of enhanced Ground Penetrating Radar (GPR) detection systems capable of identifying anomalies buried at greater depths. In the second phase, the use of suitable excavation and associated equipment will enable safe access to the exposed ERWs. Provision of this capability will greatly enhance the safety of Egyptian deminers, reducing the number of casualties from ERW clearance, and improving their individual confidence and credibility. This will have an immediate effect on the safety and security of the local population, reducing the threat from ERW and releasing land for economic development.

In December 2016, Egyptian deminers took part in a GPR operator training as well as a software interpretation course in Pisa, Italy. GPR detection systems will enable the identification of anomalies buried in the ground and thereby accelerate the safe clearance of ERW. In support of the detection and clearance operations, state-of-the-art equipment was delivered to Egypt.

Benchmarking Telemedicine: Improving Health Security in the Balkans

Advanced Research Workshop G5183

SPS Key Priority	2. OPS
Country Directors	Bulgaria, the former Yugoslav Republic of Macedonia*, United States



The ARW allowed participants from different countries to exchange knowledge on telemedicine technologies.

The goal of this Advanced Research Workshop was to identify best practices and exchange practical information for the use of telemedicine technologies among NATO member states and partner nations in order to improve healthcare capabilities in the Balkans. The three-day workshop held in November 2016 was attended by international experts from Allied and partner nations, who discussed critical issues that affect the ability of the healthcare community to deliver the appropriate care with the best results. Telemedicine systems allow for the delivery of healthcare to patients regardless of their location. Using advanced information and communication technologies, first responders are able to connect to medical specialists who can then

assess patients, diagnose them and provide real-time recommendations. This will allow the right aid and care to reach those who need it most quickly, with the potential to save many lives on the battlefield as well as in disasters with civilian casualties.

Network Traffic Analysis Course

Advanced Training Course G5139

SPS Key Priority 1.c. Cyber Defence

Country Directors Germany, United States, Morocco

In 2016, the SPS Programme supported a tailor-made cyber defence course developed by the NATO School Oberammergau and the US Naval Postgraduate School in Monterrey for trainees from Morocco.

Between March and June 2016, a ten-week “Network Traffic Analysis Course” enabled 34 trainees from Morocco to develop an understanding of the methods and techniques used in the operation, use, investigation and trouble-shooting of cyber systems. Based on hands-on lab exercises, independently completed challenge problems, and Distance Learning (DL) analysis problems, trainees were able to systematically plan for data collection; learn how to capture traffic of interest and to demonstrate appropriate actions as a result of the analysis. Students also learned to employ expert systems in order to recognise anomalies and diagnose problem areas; to conduct general analysis, network trouble shooting, security analysis and application performance evaluations as well as to identify suspect traffic and precursors of a cyber attack and take preventive measures. The course was a follow-on initiative to the SPS-funded Network Risk Mitigation Course for Morocco that took place in 2015.



Under the SPS umbrella Germany and the United States are cooperating with Morocco on cyber defence.

Impact Assessment of Completed SPS Projects in 2016

By bringing together scientists, experts, government representatives and civil society on key issues of security, SPS Programme activities leave a significant positive impact on local populations, scientific communities, academia and national governments. This is particularly true for SPS Multi-year Projects which help to forge strong networks between the scientific communities in NATO and partner countries and often result in the development of innovative, cutting-edge technology, the creation of patents and scientific publications.

In 2016, a total of 13 SPS projects were completed, many of which have left a tangible and lasting impact. SPS projects not only offer equipment for research, but also contribute to capacity building and provide training for young scientists and experts who are the end-users. The implementation and impact of SPS projects is carefully monitored and evaluated. SPS project directors are required to submit progress reports on a regular basis which are reviewed by SPS staff and experts from the Independent Scientific Evaluation Group (ISEG). ISEG members also conduct site visits to selected SPS projects in their area of expertise to ensure that the work is on track. At the end of a SPS project, the co-directors are submitting a final report and are asked to complete a detailed questionnaire to assess the output and results of a project. The following three project presentations are drawn from the reports and completed questionnaires that SPS received from the project directors. These projects are selected examples of completed Multi-year Projects which have been approved by nations at least three years ago and hence include examples of regional, environmental security projects.

Towards the Monitoring of Dumped Munitions Threat (MODUM)

Multi-Year Project G4589

SPS Key Priority	1.d. CBRN defence
Country Directors	Poland, Russian Federation



The SPS Programme is providing funding to a project on MODUM in the Baltic Sea.

Chemical weapons and explosives left over from the Second World War are posing a significant threat to marine life in the Baltic Sea. Experts estimate that the spreading of only one sixth of the 50,000 tons of munitions can ruin the habitat in the Baltic Sea for an entire century.

An international team of scientists from eight Baltic countries helped to locate and understand this threat in the Baltic Sea through a Multi-year Project supported by the SPS Programme. Launched in 2013, Monitoring of Dumped Munitions (MODUM) aimed to establish a cost-effective monitoring network to observe munition dumpsites using Autonomous Underwater Vehicles (AUVs) and Remotely Operated Underwater Vehicles (ROVs), and utilising research vessels of partner

institutions as launching platforms.

The project gave 28 young scientists the opportunity to conduct research in their field of interest. It further resulted in two claimed patents, 11 research papers that were published in scientific journals and three Master's theses.

MODUM was successfully completed according to schedule. It was supported by the NATO Centre for Maritime Research and Experimentation (CMRE) in La Spezia, Italy. The CMRE shared its expertise with the use of unmanned systems and jointly organised a sea-trial with the MODUM project team. The data that was acquired

during the project will serve as a basis for a risk management tool for decision-makers to determine their responses in face of the dumped munition sites. Overall, the research will help the nations surrounding the Baltic Sea to form a long-term strategy to combat this threat.

MODUM was one of the last ongoing SPS projects with Russian participation. In line with the political decision by NATO Foreign Ministers in April 2014, the SPS Programme suspended all practical cooperation with the Russian Federation until further notice. While ongoing activities have been completed according to schedule, no new SPS activities with Russia have been launched since.

Remediation of a Fuel Polluted Military Site in Ukraine

Multi-Year Project G4585

SPS Key Priority 1.e. Environmental Security

Country Directors France, Ukraine

A military base established in 1975 serves as a fuel depot whose role is to supply fuel to other military bases in the vicinity. Nearly 12,000 tons of oil per year are provided by this base. However, located in a residential area of Kyiv, it causes significant groundwater pollution and soil contamination.

The main goal of this Multi-year Project was to research and develop more efficient technologies to eliminate the pollution. The measurement of the geological and hydrogeological context enabled the development of a remediation model and the design of appropriate devices. The results of this project enabled the Ukrainian team to acquire all the know-how and skills necessary to master these increasingly complex technologies and to expand these competences to other sites.

This capacity building project exemplifies the strong partnership relations between NATO and Ukraine. It is a joint cooperation between the Bureau de Recherches Géologiques et Minières (BRGM) in France, the Ukrainian Ministry of Defence and the Institute of the Géologic Sciences of Ukraine. The collaboration between these institutions enabled a generation of young scientists to develop expertise in a critical security domain. It will build the capabilities of future generations to better protect the environment and populations.

In an official ceremony in May 2016, Ambassador Sorin Ducaru, Assistant Secretary General for Emerging Security Challenges, and Ambassador Ihor Dolhov, Deputy Defence Minister of Ukraine for European Integration, marked the successful completion of this important SPS project and the hand-over of equipment to Ukraine.



Ambassador Ducaru and Ambassador Dolhov at the closing ceremony in May 2016



Sand and carbon filters for the remediation of a fuel polluted military site.

Mauritania Crisis Management Centre (Phase II)

Multi-Year Project G5009

SPS Key Priority

1.a. Counter-Terrorism

Country Directors

France, Mauritania



The new crisis management center in Mauritania is a model for the whole Sahel region.

In November 2016, an official ceremony marked the successful inauguration of the new National Crisis Management Centre in Nouakchott, Mauritania, supported by the SPS Programme. The event was attended by the US Ambassador Larry André from the NATO Contact Point Embassy in Nouakchott, and France's Ambassador to Mauritania. High-level officials such as the Ministers of National Defence, Health, and Environment and Sustainable Development of Mauritania also participated.

The Centre will help authorities quickly respond to crises and coordinate an appropriate response. The first phase of the project was completed in 2014 and allowed the implementation of the national crisis management centre and its connection to four regions. The second phase enabled the expansion of the territorial coverage by interlinking the remaining nine regions of the country. This will improve territorial coverage, reaching out to partially isolated areas liable to fall under the influence of terrorist or extremist organizations and to ensure the same level of protection and security to the entire population. On a national level, the new system ensures optimal operational watch and early warning of the population against threats and risks. It also supports emergency response by compiling and analysing information from various sources, using modern technology and simulations.



The official inauguration of the center took place in November 2016.

The crisis management centre is a model for the entire Sahel region, demonstrating the effective enhancement of operational capacity for civil protection. The centre

was financed in the framework of the NATO SPS Programme and also received substantial national contributions from France and Canada.

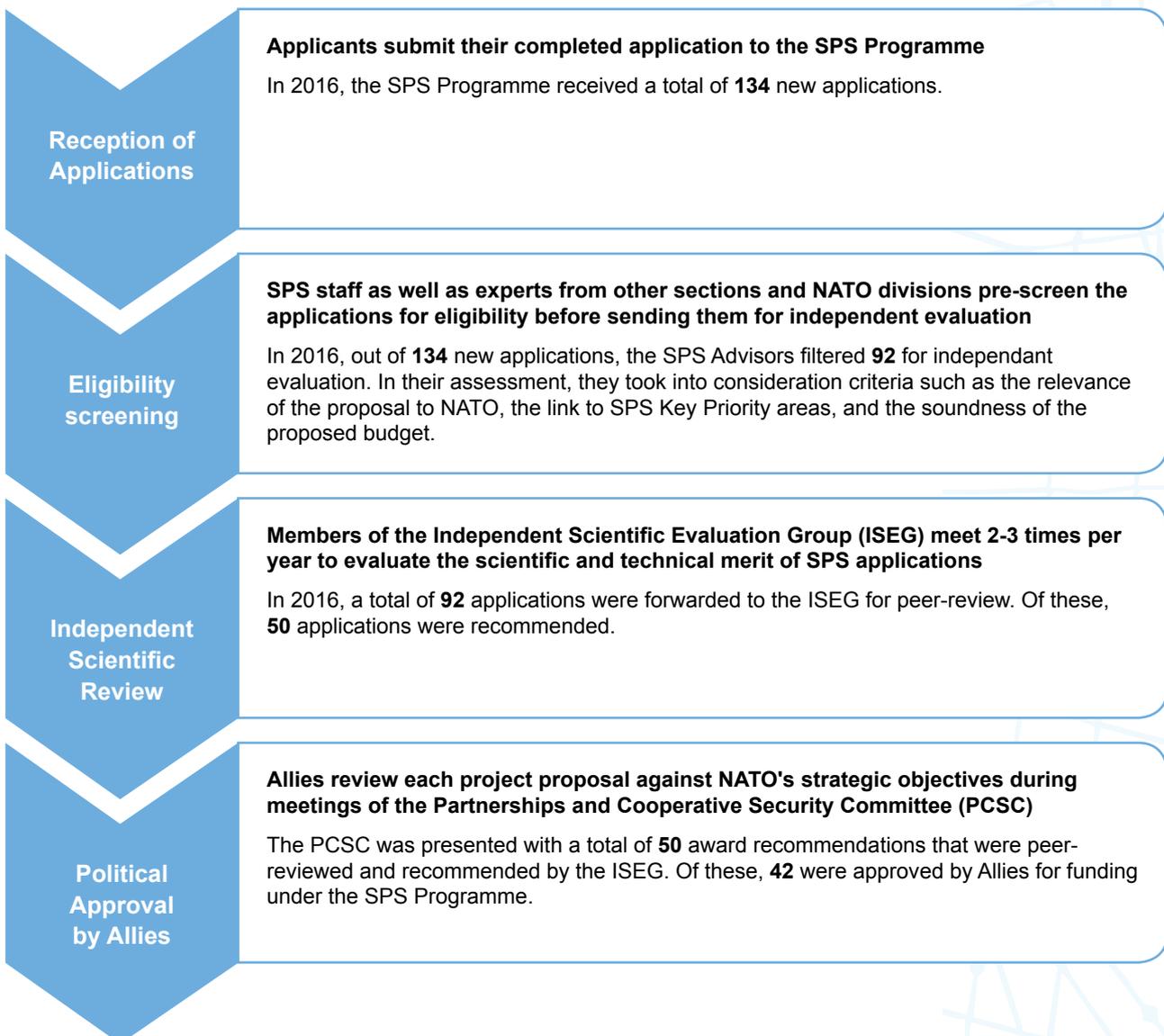
CHAPTER III

SPS Programme Implementation in 2016

In 2016, the SPS Programme approved a total of 42 new activities. This chapter provides a detailed overview of the SPS award cycle over the year, which includes the number of the new applications received by the SPS Programme, pre-screened by NATO experts, and finally reviewed and approved by Allies. The chapter also entails a detailed breakdown of the implementation of the Programme, including the distribution of new activities according to the key priority areas and partnership frameworks. Concrete examples of new SPS activities for each of the priority areas are provided, as well as an overview of SPS-related meetings held in 2016.

SPS Applications reviewed in 2016

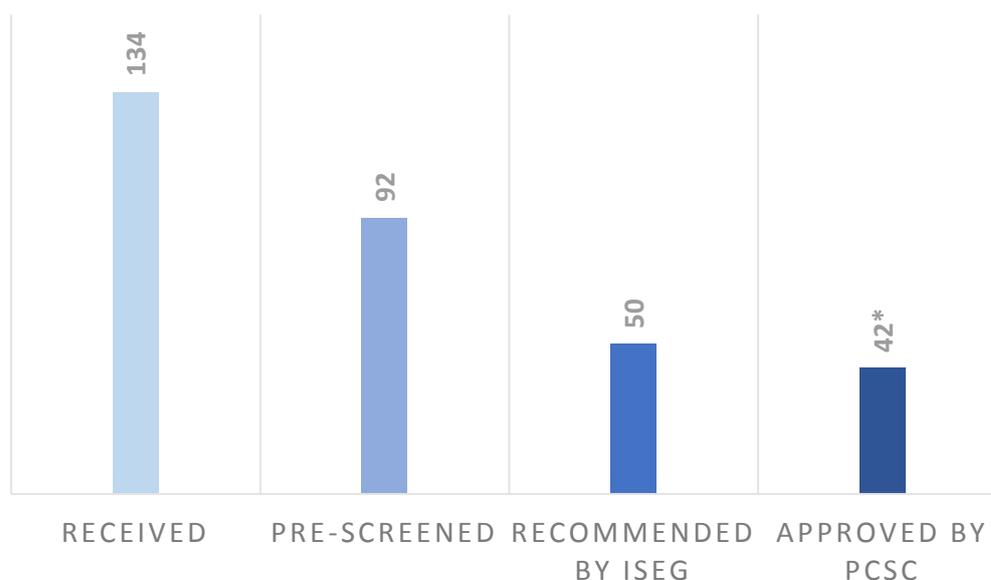
In 2016, the SPS programme received a total of 134 new applications, including 19 top-down and 115 bottom-up proposals. The award cycle covers applications received, pre-screened by SPS Science Advisors in collaboration with experts from other sections and divisions, peer-reviewed by the scientific experts of the Independent Scientific Evaluation Group and finally approved by Allies. The following chart provides an overview of the award cycle process as well as of the 2016 figures and trends.



The SPS Programme presented to Allies a large number of top-down proposals. In 2016, these proposals represented 28% of all activities approved by Allies. A top-down application is one that is initiated and developed by NATO International Staff – the SPS and ESCD staff along with support from other NATO Divisions and Bodies – with Allies and/or partner delegations. Bottom-up applications are submitted directly to the SPS Programme by scientists and experts. A more detailed breakdown can be found in the following charts:

SPS Applications received in 2016		Top-Down	Bottom-Up	Total
Eligibility Screening	Applications Received	19	115	134
	Application Not Recommended by SPS Staff	1	41	42
Independent Review	Reviewed by ISEG	18	74	92
	Recommended by ISEG	14	36	50
Political Review	Applications Not Approved by PCSC	0	2	2
	Applications Withdrawn by Applicants (after approval by Allies)	0	1	1

AWARD CYCLE OF APPLICATIONS RECEIVED IN 2016



* Six applications recommended by the ISEG in 2016 are pending review by the PCSC in 2017 and two applications recommended by ISEG in 2016 were rejected by the PCSC.

Activities Approved by the PCSC in 2016

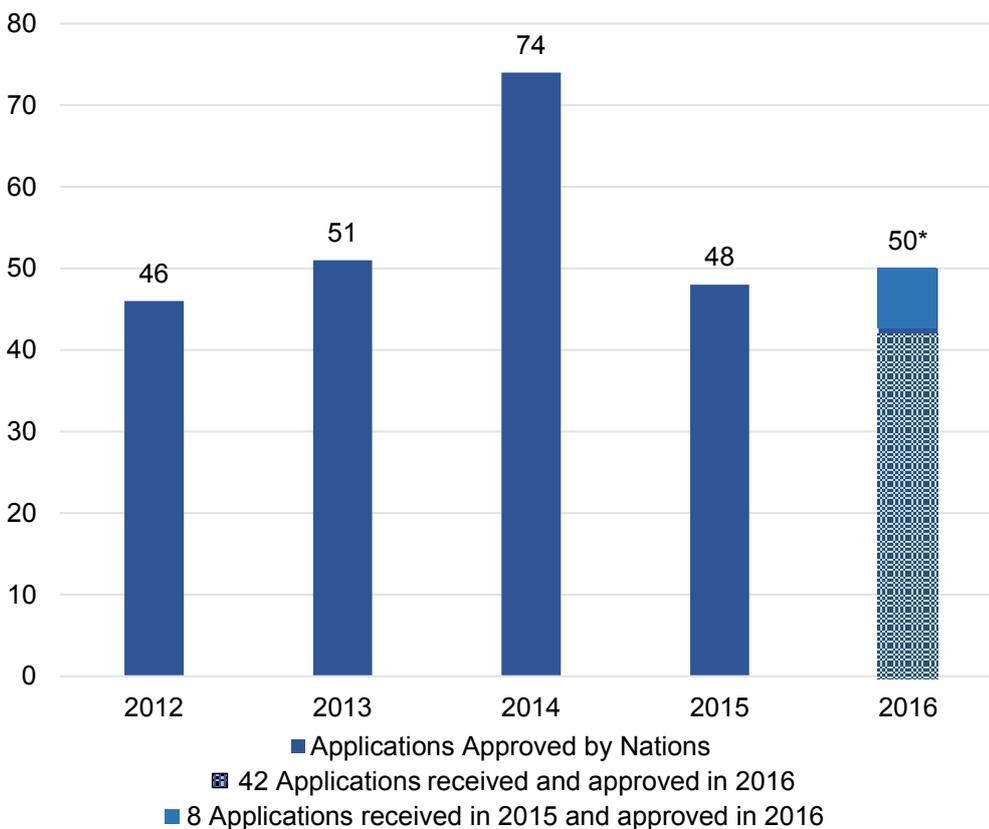
In 2016, Allies took a decision on a total of 52 SPS award recommendations. Of these, the PCSC **rejected 2 applications**, a Multi-year Project (MYP) and an Advanced Research Workshop (ARW), were rejected by Allies with the view that these activities do not fully correspond to NATO's strategic objectives. Allies **approved a total of 50 SPS award recommendations**. The approved activities comprise 42 applications recommended by the ISEG in 2016 and 8 applications recommended by ISEG in 2015.

The 50 activities approved by the PCSC in 2016 address a broad range of security areas and engage experts and scientists from 20 different partner countries. The following section provides a detailed breakdown of the SPS activities approved in 2016 by grant mechanism, key priority, partnership objective and grant mechanism.

Six applications recommended by ISEG in late 2016 are still to be considered by Allies in 2017.

The chart below provides an overview of the applications approved for funding over the last five years. In comparison to 2014, the total number of newly approved SPS activities was lower in 2015 and 2016, reflecting the Programme's increased focus on top-down, multi-year flagship projects that account for a larger proportion of the SPS budget. The aim of the SPS Programme is thereby to promote projects that have a bigger impact in both NATO and partner nations.

SPS ACTIVITIES APPROVED BY PCSC 2012-16



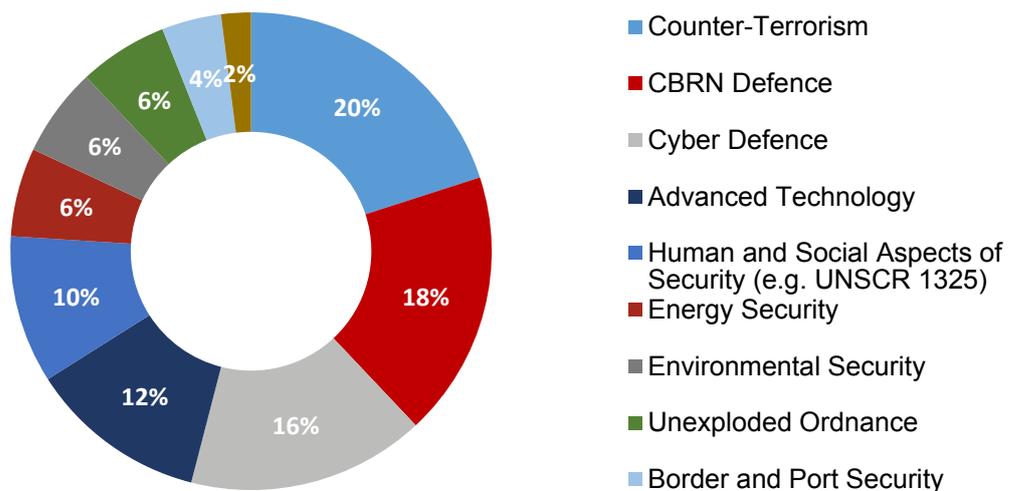
* In the course of 2016, the PCSC reviewed and approved 42 applications received during the 2016 round of applications and 8 applications received during the previous year.

New Activities by SPS Key Priority Area

The SPS Programme is embedded in the Emerging Security Challenges Division (ESCD). Established in 2010, the ESCD addresses a growing range of non-traditional security risks and challenges faced by NATO and its partners. Today, energy security, terrorism, cyber-attacks and threats of CBRN agents are major challenges to international peace and security. The SPS Key Priorities are closely aligned with the objectives of the Division to address these challenges.

In 2016, the SPS Programme initiated 50 new activities that are based on the SPS Key Priorities. The most common areas of cooperation were counter-terrorism representing 20% of the newly approved activities, followed by CBRN defence with 18% and cyber defence with 16%. At the same time, SPS activities in the domain of environmental security have decreased considerably over the last years, reflecting Allied priorities and guidance.

SPS Key Priority	Top-Down	Bottom-Up	Total
1a. Counter-Terrorism	1	9	10
1b. Energy Security	3	0	3
1c. Cyber Defence	4	4	8
1d. Defence against CBRN Agents	3	6	9
1e. Environmental Security	0	3	3
2. Support for NATO-led Operations	1	0	1
3a. Advanced Technology	0	6	6
3b. Border and Port Security	0	2	2
3c. Mine and Unexploded Ordnance Detection and Clearance	2	1	3
3d. Human and Social Aspects of Security	0	5	5
Total	14	36	50



New Activities by Grant Mechanism

The SPS Programme supports collaboration with partners through several established grant mechanisms, namely Multi-year Projects, Advanced Research Workshops and Advanced Training Courses as well as Advanced Study Institutes. This variety of funding schemes allows the SPS Programme to accommodate different objectives and needs. The chart below provides the breakdown of new activities over the course of 2016 by SPS grant mechanism.

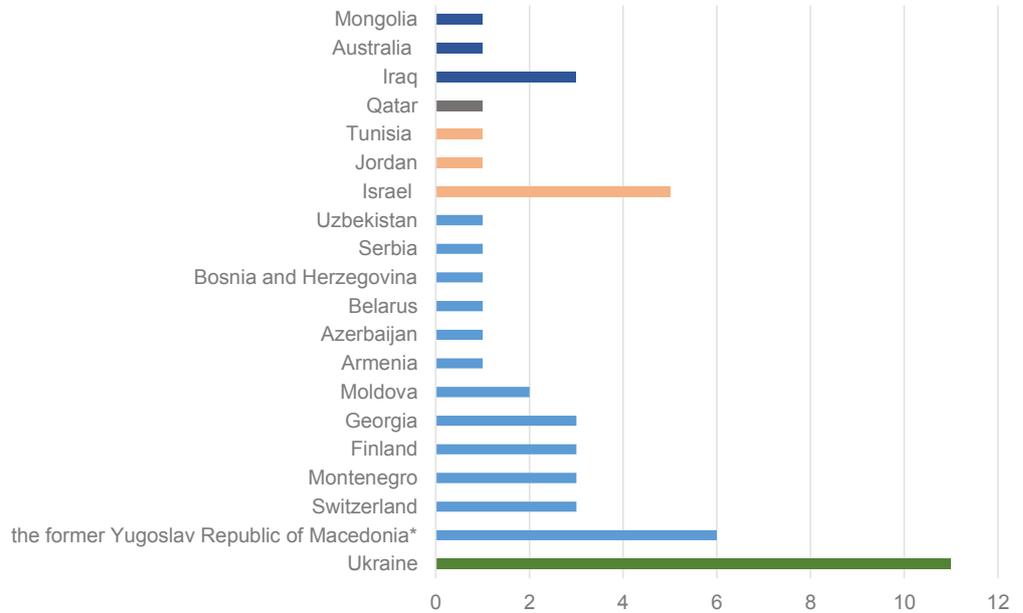
Mechanism		Top-Down	Bottom-Up	Total
MYP	Multi-Year Project	5	14	19
ARW	Advanced Research Workshop	4	15	19
ATC	Advanced Training Course	5	5	10
ASI	Advanced Study Institute	0	2	2
Total		14	36	50

New Activities by Partnership Framework

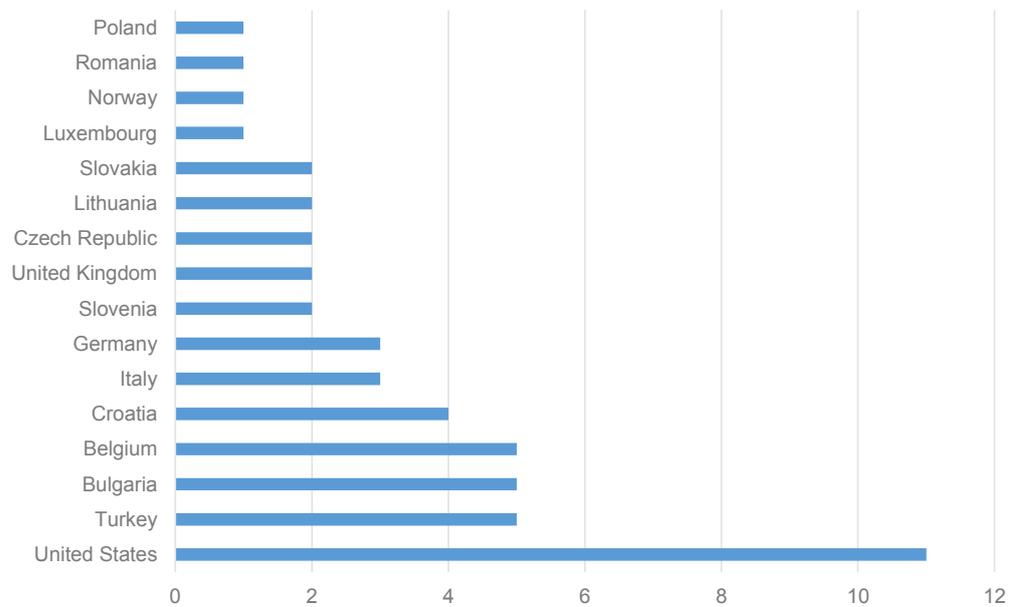
The SPS Programme promotes security-related practical cooperation with NATO's network of 41 partner countries and international organisations in the Euro-Atlantic area, the Mediterranean and the Gulf region, as well as with other partners across the globe. In 2016, the SPS Programme launched 50 new activities in which 20 different partner countries played a leading role. The chart below provides a breakdown of activities approved in 2016 by partnership framework.

Partnership Framework		Top-Down	Bottom-Up	Total
EAPC	Euro-Atlantic Partnership Council	7	19	26
NUC	NATO-Ukraine Commission	2	9	11
PaG	Partners across the Globe	4	1	5
MD	Mediterranean Dialogue	1	6	7
ICI	Istanbul Cooperation Initiative	0	1	1
Total		14	36	50

Number of New SPS Activities by Leading Partner Country in 2016



Number of New SPS Activities by Lead Ally in 2016



Addressing Key Priorities of the SPS Programme and the Emerging Security Challenges Division

SPS Key Priority: Counter-Terrorism

SPS supports NATO's counter-terrorism (CT) agenda in four distinct categories: human factors against terrorism – social science aspects of terrorism and CT; detection – development of detectors and detector systems for explosives, IEDs, and other threats; military aspects of CT; and response to terrorism – improving capacity, infrastructure, and technology to respond to crises and attacks.

Through these activities, SPS supports all three key areas set out in NATO's policy guidelines on counter-terrorism. Both human factors and military aspects generally focus on the pillar of 'Awareness', bringing together experts from NATO- and partner countries to improve our understanding of the terrorist threat and best practices for responding. Detection and response activities focus on the 'Capabilities' Key Area, providing technological solutions to assist in the fight against terrorism. Finally, because of the partnership element inherent in all SPS activities, all of these activities support the 'Engagement' pillar, ensuring that NATO remains connected with partner countries and other international actors in the fight against terrorism.

In 2016, 10 activities primarily related to CT were approved. These workshops mainly address human factors behind terrorist threats and ways to prevent and mitigate it in regions such as Central Asia and the Middle East and North Africa; protection of critical infrastructure; identification of potential terrorists; and the use of internet by terrorists.

As in previous years, work on detectors continued to be of interest and a newly initiated Multi-year Project focused on the detection of liquid explosives fabrication. A new effort was also undertaken in 2016 to launch the preparatory work for a follow-on project to build on the success of the Standoff Detection of Explosives (STANDEX) project, which ended in 2013. The overall goal of the STANDEX follow-on project will be to demonstrate a system of detection and response for suicide bombers with the potential to be effective in large crowds of people such as mass-transit, special events, and other sensitive sites.

Another area of interest has been Counter-IED with a newly launched Multi-year Project that focuses on advancing research in the field of microwave sources that could be used to neutralise IEDs.

In addition, SPS supported three training activities in counter-terrorism that included countries from the Caucasus, Central Asia and the Western Balkans.

SPS projects related to counter-terrorism

A total of 10 new SPS projects (1 top-down and 9 bottom-up) related to counter-terrorism were approved in 2016.

Newly approved activities involve experts from Azerbaijan, Finland, Israel, Jordan, the former Yugoslav Republic of Macedonia*, Moldova, Montenegro, Morocco, Serbia, Sweden, Ukraine and Uzbekistan.

Activities address themes such as human factors behind terrorist threats, prevention and mitigation of terrorism, detection of concealed weapons and explosives, terrorist recruitment, response to terrorism, etc.

Transitioning From Military Interventions To Long-Term Counter-Terrorism Policy

Multi-Year Project G4855

Country Directors

The Netherlands, Australia



The aim of this project was to assess how military interventions can best prepare the ground for an effective and long-term counter-terrorism policy. Three different cases were studied to develop relevant policy recommendations – Afghanistan (2001), Libya (2011), and Mali (2013). The objective of this research was to identify key success factors and best practices in order to transform a broad military intervention, whether using a counter insurgency or a more comprehensive approach, into a more limited counter-terrorism policy. The research also contributed to identifying elements for a long-term counter-terrorism policy that would focus on mitigating the threat of terrorist groups, reinforcing host nation capacity and address causes of radicalization and violent extremism.

In the current geo-political environment, military interventions are led by multi-state and multi-party coalitions, which inevitably influence the design of exit strategies. Coordination and common approaches towards long-term planning are vital for the stabilization of the affected areas. This research project investigated how counter-terrorism planning has been incorporated into exit strategies and how effective they have been.

The objective of this lessons learned initiative was to focus on several challenges that accompany any efforts to develop an effective counter-terrorism policy. The study identified elements that need particular attention when trying to alleviate the terrorist threat in a region and to reinforce the host nation's capability to address the threat of terrorism and violent extremism.

Defence against Terrorism Course for Uzbekistan

Advanced Training Course G5181

Country Directors

Turkey, Uzbekistan



Uzbekistan is facing the threat of terrorism.

This Advanced Training Course was led by the NATO-accredited Defence Against Terrorism Centre of Excellence. It was designed to cover a wide spectrum of factors leading to terrorist activity (origins, root causes, tools, motivations, etc.) and to develop an understanding of counter-terrorism in national (i.e. Uzbek), regional (i.e. Central Asia), and international contexts (NATO counter-terrorism policy guidelines, EU, OSCE and UN respective approaches to CT).

Participants applied the knowledge acquired to specific, relevant case studies during various working group sessions. The training course provided all participants with a broad understanding of terrorism and increased capabilities to participate in, plan, and execute counter-terrorism activities, including building a national counter-terrorism strategy.

The course brought together international scholars, academics and practitioners who shared their experience and know-how with partner countries in a NATO context and thus ensured a common understanding to the broader fight against terrorism.

Response to Female Migration to ISIS

Advanced Research Workshop G5044

Country Directors

United States and Morocco

Former Deputy Secretary General Alexander Vershbow spoke at a United Nations Security Council debate that marked the 15th anniversary of the Resolution 1325 on Women, Peace and Security at the UN headquarters in New York in 13 October 2015. At this meeting, Ambassador Vershbow pledged NATO's support to the financing of gender-sensitive research aimed at identifying radicalization and violent extremism and developing evidence-based responses, including the empowerment of women to safeguard communities.

The SPS Programme was the first to respond to this pledge by organizing a workshop to fight women's recruitment to terrorist organisations. First, it conducted an evidence-based review of the reasons why women consider joining, and eventually do (or do not) join ISIS, and their experiences along the way. Second, it focused on the best methods to fight the recruitment of women into ISIS or other similar groups, with the goal of deterring, dissuading, and defending women from doing so through the tools of diplomacy and international networks. The workshop focused on how to respond to the tactics used by ISIS in the recruitment of women and how to neutralize and counteract its messages. The workshop thereby also directly responded to two goals of the Wales Summit, namely "to enhance [...] cooperation in exchanging information on returning foreign fighters" and "ensuring women's full and active participation in the prevention, management, and resolution of conflict".



Conference participants at the workshop in Italy.

SPS Key Priority: Defence against CBRN Agents

The protection of populations and forces against chemical, biological, radiological and nuclear (CBRN) threats is high on NATO's political agenda. At the Warsaw Summit, Heads of State and Government reiterated that the Alliance will continuously improve its capabilities and technologies to counter a wide range of state and non-state CBRN threats. In 2016, the SPS Programme approved a total of 9 new activities in support of this objective, making it an integral part of its work.

Activities aimed at delivering high-quality scientific research, capacity building and training of young researchers while fostering practical cooperation with NATO partner nations. Developing detection technologies for the identification and monitoring of CBRN threats was the objective of several multi-year initiatives. Important work has also been ongoing in the field of biological defence. Two Advanced Research Workshops (ARW) fostered new research collaborations while taking forward the development of novel methodologies for prevention and control. Moreover, two activities further reinforced NATO's engagements towards the South. Experts from Iraq and the US identified methods towards mitigating recruitment threats of the scientific and engineering communities. A SPS-supported live agent training course enabled first responders from Tunisia, Morocco and Egypt to effectively respond to CBRN incidents.

SPS projects related to CBRN defence

A total of 9 new SPS projects (3 top-down and 6 bottom-up) related to defence against CBRN agents were approved in 2016.

Newly approved activities involve experts from Finland, Iraq, the former Yugoslav Republic of Macedonia*, Serbia, Australia, Japan, Armenia and Tunisia

Activities address themes such as novel methods for detection and biological defence.

CBRN Risk in Land and Maritime Container Transport

Advanced Research Workshop G4988

Country Directors

Italy, Egypt



Italy and Egypt are addressing the risk of illicit trafficking as well as CBRN threats.

In today's globalized world, containers are the basic unit for the carriage of international goods. The movement of containers has revolutionized the world of logistics and reduced the cost of transportation. However, there is a growing awareness of the risk of hazardous materials being shipped around the world. The aim of this workshop held in Rome on 25-27 May 2016 was to establish an expert platform to share best practices in the field of border and port security, in particular in the context of moving containers at seaports and logistic centers, where the risk of illicit trafficking as well as CBRN threats persist. Experts discussed ways to improve container security in particular to prevent the transportation of CBRN materials and weapons that could be used for terrorist attacks.

Engineering Silicon Carbide for Enhanced Border and Port Security (E-SiCure)

Multi-Year Project G5215

Country Directors

Croatia, Australia, Portugal, Japan, Slovenia



Researchers assembling at the kick-off meeting of the E-SiCure project

Developing swift and effective methods to detect the illicit trafficking of nuclear materials has become an issue of increasing importance for national and regional security. The main objective of this project is to enhance border and port security through state-of-the-art silicon carbide (SiC)-based radiation detectors. Due to the global shortage of helium-3 isotopes, which is the gas of choice for most existing neutron detection systems, SiC is singled out as the most promising semiconductor material for the new generation of detectors. SiC is a semiconductor that is non-toxic and non-hazardous and can be produced at low cost. The developed device will be able to detect special nuclear materials at ports of entry, along borders, for in-transit monitoring of cargo and crowds, for mounted and mobile surveillance tools as well as for personal and distributed detector networks. The project is also supporting and offering many opportunities for young researchers.

The Risk of Skilled Scientist Radicalization and Emerging Biological Warfare Threats

Advanced Research Workshop G5193

Country Directors United States, Iraq

Although experts and scholars are actively assessing the ability of terrorist organizations' to recruit in the West, there has not been a focused discussion on one population of critical concern: the scientific and engineering community. This concern is particularly linked with the risk of misuse of chemical and biological weapons and the expertise to purposely harm soft targets, including in NATO countries and partner nations. This workshop brought together experts from the academic, law enforcement, intelligence and nongovernmental sectors in Italy in November 2016. It provided an expert platform to assess the risk of scientist recruitment by extremists, share lessons learned and strategies for mitigating recruitment threats, and examine the latest research in this area.



Participants at the workshop in Italy in November 2016

SPS Key Priority: Cyber Defence

The increasing diversity and unpredictability of cyber threats requires NATO and partner countries to constantly adopt new approaches to effectively cope with challenges in this field. The importance of cyber defence was reaffirmed at the Warsaw Summit where Allies recognized cyberspace as a domain of operations, thus highlighting the need to further enhance national cyber defence capabilities.

The SPS Programme steadfastly contributes to this requirement through the implementation of Multi-year Projects, provision of training courses, and organization of conferences for high-level discussions in the field of cyber defence.

In 2016, the SPS Programme inaugurated a cyber defence laboratory at the Technical University of Moldova, which will serve as a research and training center for civil servants of Moldovan governmental institutions as well as for young scientists and students of the university. Furthermore, the SPS Programme launched a Multi-year Project in Mongolia which aims to establish a Computer Incident Response Team (CIRT) and provide related training. In 2016, the SPS Programme also continued implementing multi-year projects which were initiated in previous years, namely "Support for Implementing a Cyber Security Strategy for Jordan" and "Privacy Preserving Big Data Processing Using Cloud Computing".

In addition to the Advanced Training Course entitled "Building a Cyber Resilient Society in South-Eastern Europe", led by project directors from Croatia and Bosnia and Herzegovina, the SPS Programme supported training courses for the system/network administrators of the defence and security relevant institutions, organized by the Middle East Technical University in Ankara and the European Cyber Security Initiative in Tallinn. The trainees came from governmental agencies in Iraq, Ukraine, Azerbaijan, Bosnia and Herzegovina, and Montenegro. Allies also endorsed a training course which will allow experts from Ukrainian ministries, military and research institutions to enhance their cyber defence knowledge in the context of energy security.

In 2016, Allies also approved an Advanced Research Workshop entitled "New Generation CERTs: from Response to Readiness – Strategy and Guidelines". The

main goal of this activity is to develop guidelines for Computer Emergency Readiness Teams (CERTs) on how to improve their efficiency and efficacy.

SPS projects related to Cyber defence

A total of 8 new SPS projects (4 top-down and 4 bottom-up) related to cyber defence were approved in 2016.

Newly approved activities involve experts from Israel, Bosnia and Herzegovina, Ukraine, Mongolia, Iraq, and Switzerland

Activities provide cyber defence training and address themes such improved efficiency for CERTS.

Creation of Computer Incident Response Team and Securing the IT Infrastructure

Multi-Year Project G5281

SPS Key Priority 1.c. Cyber defence

Country Directors Belgium, Mongolia, Netherlands

Various critical government websites of Mongolia have been attacked in the last years. However, currently, there is no organization or department within the Mongolian Ministry of Defence (MoD) or the General Staff of the Mongolian Armed Forces (GSMAF) which handles cyber incidents or monitors for cyber attacks. To help Mongolia address these challenges, NATO Allies endorsed a new Multi-year Project which will improve the cyber security posture of the MoD and the GSMAF by establishing a new Cyber Security Centre. As part of this centre, a fully equipped Computer Incident Response Team will be established within the HQ of the GSMAF. Network administrators and cyber security specialists will be trained to protect and prevent the MoD/GSMAF from any internal and external computer-based attacks and to enhance Mongolian cyber defence capabilities. This two-year project commenced in December 2016 and is co-led by the NATO Communication and Information Agency (NCIA).

SPS Key Priority: Energy Security & Environmental Security

The main emphasis of SPS activities in the area of energy security is to contribute to strengthening Allies' and partners' capacity to protect critical energy infrastructure. Another major focus is to enhance energy efficiency in the military ("smart energy").

The Multi-year Project "Novel Methods for the Prevention of Pipelines Failures" kicked off in January 2016. This project, which is co-directed by experts from Italy and Ukraine, aims to develop a model for predicting whether a part of a pipeline needs repair. The co-directors have started to procure equipment and had a meeting with NATO experts on pipelines.

The "Advanced Net Zero Energy, Water and Waste Training Course" took place on 24-27 April 2016 at the U.S. Clay Barracks in Kaiserslautern, Germany. Keynote speakers included the Honorable Katherine Hammack (Assistant Secretary of Defense of the U.S. Army) and Ms. Alice Greyer-Wieniger (Director General, German Ministry of Defence).

The conference & exhibition "Innovative Energy Solutions for Military Applications" (IESMA) that took place in Vilnius on 16-18 November 2016 was the third of its kind. It brought together 422 participants from the public and private sectors and attracted 36 exhibitors. Keynote speakers included Mr. Juozas Olekas (Lithuanian

MoD), Ms. Amanda Simpson (U.S. Deputy Assistant Secretary of Defense for Operational Energy), LtGen Jean Volpi (Commander of Joint Fuel Services of the French Army) and Ambassador Sorin Ducaru (NATO ASG/ESCD). The conference was followed by a governmental session to discuss next steps for advancing energy efficiency, including making energy efficiency a Minimum Capability Requirement and developing a Smart Defence project.

SPS projects related to Energy Security

A total of 3 new SPS projects (all top-down) related to energy security were approved in 2016.

Newly approved activities involve experts from Georgia and Moldova.

Activities address themes such as critical infrastructure protection and smart energy.

Implications of Climate Change and Disasters on Military Activities: Building Resiliency and Mitigating Vulnerability in the Balkan Region

Advanced Research Workshop G5136

Country Directors Bulgaria, Serbia

The objective of this workshop was to examine the implications of climate change induced natural disasters on military activities in the Balkan region. Taking place in July 2016, scientists and experts from the region were offered lectures as well as practical exercises and demonstrations designed to identify both policy and technical approaches to build resiliency and mitigate the regional vulnerability to potential catastrophic disasters. Attendees presented and shared available and future capabilities for assessing the implications of climate change for civil-military asset readiness to support disaster forecasting and response.

The workshop was organized in cooperation with the Crisis Management and Disaster Response Centre of Excellence (CMDR CoE) in Bulgaria.



Bulgaria and Serbia are building Resiliency and Mitigating Vulnerability.

SPS Key Priority: Border Security

Recognizing that border security is related to many asymmetric security challenges that cannot be addressed by purely military means, Allies agreed to make border security a key priority within the SPS Programme. In 2016, the SPS Programme stepped up its activities in this area.

The Programme supported the organization of a series of workshops entitled “Border Security Challenges in Eastern Europe: Lessons for Allies and Partners”, which took place in Kyiv, Chisinau and Berlin, bringing together practitioners, think-tankers and high-level government officials to discuss defence-related border security issues in the breakaway regions. Additionally, a workshop “Addressing Security Risks at the Ukrainian Border through Best Practices on Good Governance – Sources and Countermeasures”, took place in February 2016, creating a forum for high-level talks on improving border management practices in Ukraine through greater transparency, accountability and good governance.

An SPS Advanced Training Course which will focus on the training of senior leaders responsible for developing and implementing appropriate policies on military and defence aspects of border security in South East Europe (SEE) was also approved in 2016.

SPS projects related to Border Security

A total of 2 new SPS projects (bottom-up) related to border security were approved in 2016.

Newly approved activities involve experts from the former Yugoslav Republic of Macedonia* and Ukraine.

Activities address themes such as contemporary border security challenges and improving border management practices & policies.

Addressing Security Risks at the Ukrainian Border through Best Practices on Good Governance – Sources and Countermeasures

Advanced Research Workshop G4985

Country Directors Poland, Ukraine

Against the background of Russia's illegitimate and aggressive behavior, Ukraine's territorial integrity has been violated and its borders are under threat. As the situation in the East remains tense, securing Ukraine's borders has become a priority. At the same time, Ukraine is facing a significant challenge in its efforts to strengthen its state structures and ensure the effective functioning of its institutions according to principles such as transparency and the rule of law. This is partly due to widespread corruption in the border management services. The SPS Programme supported a workshop with the objective to identify best practices in border management, raise awareness of corruption as a security risk and to promote integrity, transparency, accountability and good governance as a tool to enhance border security. The event was complementary to the efforts of NATO's Building Integrity Programme. As a result of the conclusions of the conference, the project directors scoped a new SPS Multi-year Project which will enhance capabilities of the Ukrainian Border Guard Service through the establishment of a new institutional structures within the Service.

Women, Peace and Security: Implementing UNSCR 1325

Since 2013, the SPS Programme has supported partnerships in areas beyond purely scientific cooperation, such as the Women in Peace and Security agenda. The implementation of the United Nations Security Council Resolution (UNSCR) 1325 and related Resolutions on Women, Peace and Security represent an important policy priority for NATO and partner countries. Together with the NATO Secretary General's Representative for Women - Peace and Security, the SPS Programme has made substantial strides and has developed concrete deliverables in cooperation with partner nations.

In 2016, efforts to address the Women, Peace and Security agenda and the implementation of UNSCR 1325 included three main areas:

- a) providing support to NATO community (Multi-year Projects: 'UNSCR 1325 Reload', 'Tailor-made Gender-Awareness Course for the NATO Community');
- b) providing support to NATO partner countries (Multi-year Project 'Moldova's National Plan to Implement UN Security Council Resolution 1325', four

Advanced Research Workshops: ‘National Action Plans (NAPs) on Women, Peace and Security’, ‘Implementation of Ukraine’s NAP on Women, Peace and Security’, ‘Women Building Peace: What they do, Why it Matters? Strengthening the Implementation of the Resolution 1325’ ‘Response to Female Migration to ISIS’);

- c) contributing to the DCB package (‘Moldova’s National Plan to Implement UN Security Council Resolution 1325’).

Based on this experience, the SPS Programme will continue to promote the UNSCR 1325 agenda within the NATO community and provide concrete measures in relation with partner countries.

SPS projects related to Women, Peace and Security

A total of 2 new SPS projects (bottom-up) related to Women, Peace and Security were approved in 2016.

Newly approved activities involve experts from Bulgaria, the United States, Montenegro and the Republic of Moldova.

Activities support the implementation of the UN Security Council Resolution 1325.

UNSCR 1325 Reload: An analysis of Annual National Reports to the NATO Committee on Gender Perspectives from 1999-2013

Multi-year Project G4942

Country Directors Spain, Australia

In October 2016, the final conference of this SPS-sponsored multi-year study took place in Madrid. The results of the research were presented to a broad audience, which included NATO International Staff, International Military Staff, a number of think tanks and international institutions. The final report will be published in 2017 and will provide data and analysis on the integration of women into NATO member armed forces with key findings on national legislation, recruitment and retention policies, gender in military operations, and on the prevention of sexual violence across all NATO member states.



Tailor-made Gender-Awareness Course for the NATO Community

Multi-year Project G5080

Country Directors Canada and Australia

This project started in April 2016 with the aim of teaching security and defence professionals how to integrate the gender perspective in their work practices. The aim is for all participants to obtain standardized competencies of: gender and gender-based concepts; core NATO documents and frameworks focused on gender; strategies and benefits for the incorporation of gender perspectives in daily work; and tools for both the identification and removal of barriers to gender equality. Finally, the course includes a module on a sexual harassment prevention strategy to discuss sexual violence and myths surrounding gender dynamics in the work place. A pilot training course took place at NATO HQ in December 2016, and a high visibility event in San Diego to present and discuss the initial lessons learned from this training is planned for the first half of 2017.

National Action Plans (NAPs) on Women, Peace and Security

Multi-year Project G5036

Country Directors

United Kingdom and Ireland



National Action Plans are contributing towards the implementation of UNSCR 1325.

This workshop took place in Dublin on 11-12 May 2016. It used a multidisciplinary approach to examine the role of National Action Plans in the implementation of the UN Security Council Resolutions in NATO member and partners countries. The workshop investigated the benefits and impact of NAPs on the implementation of UNSCR 1325 and other related resolutions on women, peace and security in the areas of women's participation in peace-building and conflict prevention, management and resolutions; the protection of women and girls' rights and the prevention of sexual violence in armed conflicts. It also discussed the role played by civil society in the development of NAPs and in monitoring their implementation.

SPS Key Priority: Mine and Unexploded Ordnance Detection and Clearance

Under the SPS Programme several tailor-made projects have been launched that further capability development in the area of explosives management. These include clearance of improvised explosive devices (C-IED), explosive ordnance disposal (EOD), unexploded ordnance (UXO) disposal and mine clearance. The aim of these SPS projects is to set a working model, often by providing an initial operational capability for explosives management which can be expanded through national and/or other resources. The train-the-trainer approach is a significant component of SPS activities, which provides expertise to security forces who can then develop and implement national training programmes in their home country.

NATO and the SPS Programme can draw on expertise in these domains through the network of NATO Centres of Excellence (CoE), including the C-IED CoE in Spain as well as the EOD CoE in the Slovak Republic. The SPS Programme has collaborated with these renowned institutions on several occasions.

In 2016, the SPS Programme launched a flagship project to support Iraqi security forces in countering IEDs, thereby enabling the return of displaced populations in areas previously affected by conflict. Another multi-year initiative led by Norway and Ukraine, is developing a state-of-the-art digital ground penetrating radar system which will detect mines and IEDs, provide a visual 3D image and automatically recognize the type of the detected object in up to three meters depth.

SPS projects related to Mine and UXO Clearance

A total of 3 new SPS projects (2 topdown and 1 bottom-up) related to mine and UXO clearance were approved in 2016.

Newly approved activities involve experts from Iraq, the former Yugoslav Republic of Macedonia*, Ukraine and Bosnia and Herzegovina.

Activities address themes such as capacity building in the domain of counter-IED and novel mine & IED detection methods.

Ground Penetrating Radar (GPR) Integrated to a Hexacopter for Automatic Mine Detection

Multi-year Project G5208

Country Directors Slovenia, the former Yugoslav Republic of Macedonia*, Bosnia and Herzegovina

Scattered across many countries, buried explosives are an ongoing reminder of past conflicts and pose a vital security threat. This project is developing a state-of-the-art ground penetrating radar integrated to a hexacopter to speed up land mine detection. A battery powered hexacopter is a particular type of Unmanned Aerial Vehicle (UAV) where multiple rotors are responsible for the aerodynamic flight of the UAV, allowing the platform to be highly maneuverable. Many landmines are buried within forest areas with dense vegetation, which are difficult to monitor with current technologies. Consequently, this project aims to develop a unique solution to this problem. It will be both very useful in environments which are difficult to access and very safe for the operator, as he can control the hexacopter at a large distance from the landmine field.

SPS Key Priority: Advanced Technologies

Advanced technologies encompass a wide range of defence and security-related research topics, those itemized in the SPS Key Priority areas (nanotechnology, optical technology, micro satellites, metallurgy, UAV platforms) along with closely related subjects, as well as early-stage scientific research with promise for future application in the defence and security domain.

In 2016, ongoing advanced technology activities covered this wide spectrum. Nanotechnology was studied at the applied level through practical research in new shock resisting ceramics through computer modelling, fabrication and testing, sensors development and the development of various detection technologies. The scientific and applied research done in these areas has significant potential to contribute to capability development and advance the knowledge and technologies in various defence and security areas as well as to provide potential uses in the civil domain.

Vehicle technology engineering was also addressed through a Multi-year Project to develop an innovative type of agile tyres for military vehicles.

Finally, unmanned aerial vehicles were the focus of a Multi-year Project which addresses the design of better and more versatile UAV engines.

SPS projects related to Advanced Technologies

A total of 4 new bottom-up SPS projects related to advanced technologies were approved in 2016.

Newly approved activities involve experts from Belarus, Israel and Ukraine.

Activities approved in 2016 involved research on the topics of nanotechnology, materials science, microwave detectors and unmanned aerial vehicles.

Protection of Underground Structures from Fuel Cloud Explosion

Multi-year Project G4595

Country Directors United States, Georgia

This project aims to design, fabricate, and demonstrate a prototype system to protect the entrances of bunkers, caves, and other underground critical infrastructure from the detonation of an explosive device. This system would also be applicable for the protection of critical infrastructure such as refineries or chemical plants from accidental explosions or deliberate sabotage. The proposed system uses a rapidly sprayed fine mist of water or other liquid to exclude the explosive fuel cloud from the critical entrance and thus reducing its capacity of detonation.

This project contributes in a novel way to the defence against an unaddressed threat to critical infrastructure.

An Inexpensive 3D Millimetre-Wave Imaging System

Multi-year Project G4775

Country Directors Turkey, Israel



Scientists and experts of the SPS project in the laboratory.

The goal of this project is to develop, construct and test a three-dimensional millimetre wave imaging system based on inexpensive detectors called 'Glow Discharge Detectors' along with the detection techniques, software, and algorithms necessary to make use of them. It will develop a new, widely applicable technology for inexpensive detection of covert threats on persons. Millimetre wave imaging is a commercial security technology used to image threats concealed on people. This system would allow the imaging of concealed threats on persons at stand-off ranges of up to 100 meters, even in the presence of fog or rain.

T-Whex – A Robust Monitoring Robot

Multi-year Project G4560

Country Directors Germany, Serbia

The project investigated an interesting while challenging technology development to build a robotic "T-Whex" mobile platform to be used for monitoring, prevention, detection and decontamination purposes in a rough terrain. A prototype design was developed and component testing was performed. The project provided good opportunities for studying modern robotics that could provide flexible, reliable and efficient systems to support immediate planning and reduce negative effects in case of crisis situations.

SPS Events in 2016

ISEG meetings

The Independent Scientific Evaluation Group (ISEG) is composed of 31 experts and scientists from NATO countries, the main role of the ISEG is to evaluate applications through peer-review. The involvement of the scientific community is indispensable for the integrity and maintenance of the high scientific standard of the SPS Programme. Two meetings of the ISEG were held in Brussels in March and in June 2016. A third round of ISEG reviews was based on an electronic evaluation of SPS proposals in autumn 2016. In 2016, a total of 92 SPS applications were reviewed by ISEG members.

During the meetings, SPS staff gave presentations on the management of SPS activities, updates on ongoing flagship projects, and an overview of public diplomacy activities. ISEG members also shared updates and summaries on the implementation of SPS projects and events that they had visited as an evaluator.



ISEG Meeting, Brussels, March 2016

PCSC and NAC Meetings

In 2016, the Partnership and Cooperative Security Committee (PCSC) met ten times under the Chairmanship of ASG ESCD Ambassador Sorin Ducaru and DASG ESCD Jamie Shea to discuss SPS award recommendations and related business. Moreover, on October 4th 2016, the North Atlantic Council (NAC) discussed the SPS Programme. During the meeting, Ambassador Ducaru briefed Allies on the implementation of the programme and SPS flagship projects in relation to NATO's partnership priorities such as projecting stability, and the Defence Capacity Building (DCB) Initiative. The NAC discussion also served to highlight the flexibility and adaptability of the SPS Programme to offer practical cooperation in NATO's relation with partners and to respond to the changing strategic priorities of the Alliance.

Big Tent Meeting

On 19 February 2016, a NATO PCSC meeting in "Big Tent" format with all NATO partners on the SPS Programme, took place. This meeting brought together representatives of all NATO and NATO partner countries to provide an overview of the implementation and achievements of the SPS Programme in 2015 and look ahead at the main priorities for the work of the programme in 2016. Allies and partners also received an update on the status of ongoing SPS activities and engaged in a discussion of potential future SPS cooperation on security-related civil science and technology issues. Prof. Adnane Abdelghani, the Tunisian Partner Country Director of the SPS project "Multisensing Platform for Warfare Agent Detection (MPWAD)" presented at the Big Tent Meeting. His intervention focused on his work as part of the SPSP project and the role the SPS grant has played in building capacity among the Tunisian scientific community. Prof. Abdelghani's project was approved in June 2013 and is led by scientists from Spain, Tunisia, and the Czech Republic. He was awarded the Prize for Best Scientific Researcher by the President of Tunisia in 2015 and in December 2016 received the Carthage University Award of Research.



Prof. Adnane Abdelghani, the Tunisian Partner Country Director of the SPS project MPWAD.

CHAPTER IV

Cooperation with other NATO Bodies and International Organisations

Cooperation & Coordination with NATO Bodies

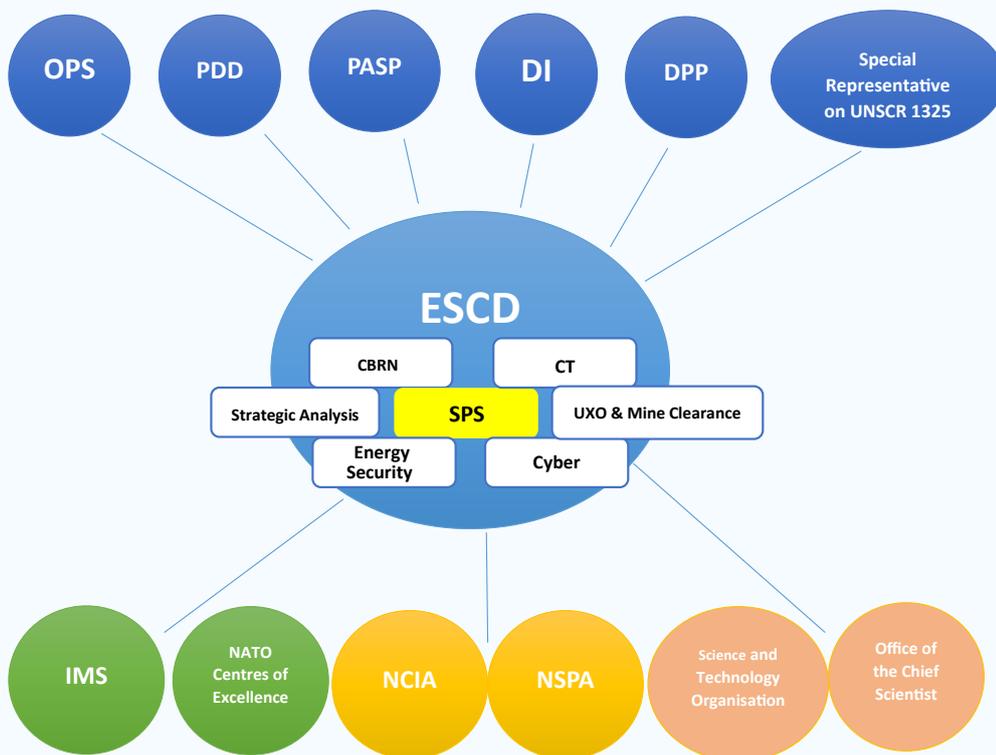
Coordination and cooperation with other NATO bodies, agencies, divisions and delegations is of vital importance for the successful implementation of the SPS Programme. SPS has also developed fruitful cooperation with the Science and Technology Organization (STO) and the Office of the Chief Scientist. This cooperation comprises programmatic coordination, such as the inclusion of two STO representatives in the ISEG, as well as, on a case by case basis, practical collaboration on concrete SPS activities.

The SPS Programme is also regularly consulting with other NATO Divisions and Offices (e.g. the office of the NATO Secretary General's Special Representative on Women, Peace and Security) in the development of new SPS top-down activities, making sure that they are aligned with NATO's strategic objectives and political priorities. The SPS Programme also greatly benefits from the expertise within the individual section of the ESC Division, including for example cyber defence, energy security, counter terrorism, and the WMD Centre.

Outside this formal setting, the SPS Programme regularly works together with NATO agencies such as the NATO Support and procurement Agency (NSPA) and the NATO Communication and Information Agency (NCIA), as well as with the NATO Centres of Excellence to develop high-quality (top-down) SPS projects.

In 2016, the SPS Programme continued to draw on the expertise of NATO-accredited Centres of Excellence (CoE) such as the Counter Improvised Explosive Devices (C-IED) CoE in Spain, the Explosive Ordnance Disposal CoE in the Slovak Republic or the Joint Chemical, Biological, Radiological and Nuclear (CBRN) Defence CoE in the Czech Republic. The SPS Programme has collaborated with these renowned institutions on several occasions.

The C-IED CoE is supervising the training activities within the framework of the project 'IED Disposal and Search Capacity Building for Iraq'. In the two training cycles that were successfully completed in 2016 at the King Abdullah II Special Operations Training Centre in (KASOTC) in Jordan, the CoE certified the training curriculum and provided instructor support. The Joint CBRN Defence CoE hosted a CBRN live agent training for 17 first responders from Egypt, Jordan and Tunisia to survey, monitor and manage the consequences of a CBRN incident. In July 2016, a SPS-funded workshop on implications of climate change and on military activities took place in cooperation with The Crisis Management and Disaster Response Centre of Excellence (CMDR COE).



The SPS Programme also cooperates with a range of external stakeholders such as experts through the Independent Scientific Evaluation Group (ISEG), academy of sciences, national ministries as well as research institutions and international organisation. Together, the stakeholders' work is directed through NATO's Political Guidance, NATO's Strategic Objectives, and partnership documents. Through this successful cooperation and coordination, the SPS Programme is able to develop and launch impactful, top-down flagship projects.

Cooperation with International Organisations

The SPS Programme reaches out to other international organisations (IOs) in order to foster dialogue and cooperation. In 2016, practical cooperation with the United Nations (UN), the Organization for Security and Cooperation in Europe (OSCE), and the European Union (EU) contributed to enhancing international security and complementarity of efforts. In regular staff-to-staff talks all IOs emphasized a need for continued coordination and discussions, and recognized the value of this exchange in order to enhance synergies and avoid duplication of work.

United Nations (UN)

Fruitful and constructive cooperation with the UN and related Agencies continued throughout 2016. UN experts were invited to participate in several SPS initiatives and staff from UN WOMEN attended an SPS workshop in Dublin in May 2016 to take stock and discuss the progress and challenges related to the implementation of the UN agenda on Women, Peace and Security.



Cooperation with the United Nations Mine Action Service (UNMAS) was also enhanced in 2016. In the SPS flagship project to train and equip Iraqi security forces in the area of Counter-Improvised Explosive Devices in Jordan, UNMAS was consulted and

provided its expertise. Furthermore, an ARW in September 2016, brought together experts from NATO member states and partner countries and representatives from UNMAS and OSCE to discuss leading sustained cooperation in fragile environments.

SPS activities are also reflected in UN Annual Reports, including for example the UN Secretary General's report on measures to prevent terrorists from acquiring weapons of mass destruction.

Cooperation with the United Nations Mine Action Service in Support of Libya – on hold



Libya has one of the largest unsecured caches of arms and ammunition in the world. The destabilizing effect on the region of unsecured weapons is an important consideration when it comes to ammunition management in Libya.

In November 2013, the SPS Programme received a proposal from the United Nations Mine Action Service (UNMAS) outlining a potential SPS Multi-year Project aimed at the destruction of ammunition in Libya. The destruction of Surface to Air Missiles (SAMs) was subsequently deemed viable, and would be carried out by the NATO Support and Procurement Agency (NSPA).

In July 2014, the UN withdrew its staff from Libya due to security concerns stemming from increased violence in Tripoli. As of 2016, it began to establish a small footprint in the country. However, as a result of the degraded political and security situation in Libya, the demilitarization project entitled 'Collaboration with UNMAS on the Destruction of Missiles in Libya' remains on hold. Nevertheless, all parties involved have

indicated their continued commitment to move forward with the proposal as soon as the situation on the ground stabilizes.

Organization for the Prohibition of Chemical Weapons (OPCW)

Within the framework of the SPS CBRN First Responders Live Agent Training in 2016, experts from the OPCW reinforced the Joint CBRN Defence Centre of Excellence in Vyškov, Czech Republic, in training first responders from Egypt, Jordan and Tunisia to survey, monitor and manage the consequences of a CBRN incident. The course helped in the development of security standards that match overall requirements and improve interoperability and effectiveness in the CBRN defence domain.



Organization for Security and Co-operation in Europe (OSCE)

In 2016 the SPS Programme engaged closely with the OSCE on several activities, particularly in the area of border security, and strengthened existing lines of communication.



The OSCE participated in an SPS workshop on 'Addressing Security Risks at the Ukrainian Border through best Practices on Good Governance – Sources and Counter Measures'. The event provided a platform for experts to cooperate and share best practices in order to attain a comprehensive understanding of the issue at stake. Ultimately, it helped to improve border management practices of custom and border guard agencies in Ukraine through greater transparency, accountability, integrity and good governance.

The series of Advanced Research Workshops ‘Border Security Challenges in Eastern Europe: Lessons for Allies and Partners’, provided another platform to enhance cooperation with the OSCE. Hosted in Kyiv, Ukraine, and Chisinau, Moldova, experts discussed and assessed crucial aspects and commonalities, comparing and contrasting ‘hot’ conflict scenarios often executed with hybrid tactics in the Donbas region and a ‘frozen’ conflict in Transnistria that could ignite. Increased cooperation, sharing best practices and fostering expert discourse on border security are essential for reshaping our approach and strategies in the present security environment.



Experts from IOs, think-tanks and government officials gathered in October 2016 to discuss defence-related border security issues in the breakaway regions during a conference in Chisinau, Moldova

European Union (EU)



NATO-EU cooperation continued in the framework of the SPS Programme in 2016. The Advanced Research Workshop ‘Addressing Emerging Security Risks for Energy Flows over South Caucasus’ brought together experts from NATO, the EU, representatives from scientific, governmental and security relevant sectors of energy producing, transit and consuming countries, to discuss the emerging security threats to vital energy

networks and the ways of addressing them. The focus of the workshop that was hosted in Tbilisi, Georgia, was on the South Caucasus and the Black Sea regions.

Cultural Property Protection in NATO-Led Military Operations

A good example of successful cooperation with various international stakeholders is the series of SPS Advanced Research Workshops on the current and future role of cultural property protection in NATO-led military operations brought together subject matter experts from NATO member and partner countries as well as specialists in the field from the UN, UNESCO, INTERPOL and the International Criminal Court. Members from the Allied Command Operations (ACO) in Mons, Belgium, and Allied Command Transformation (ACT), Norfolk, USA, were also represented.

Pooling the expertise and competencies of the IOs facilitated the establishment of a NATO doctrine on cultural property protection and comprehensive guidelines, the establishment of a protocol for ensuring that deployed NATO forces have accurate maps and information including cultural property geo-spatial data layers as well as the outline of cultural property training programmes.



NATO established a doctrine on cultural property protection.

CHAPTER V

Public Diplomacy Activities



SPS Information Days provide an opportunity to engage with the scientific community and explore opportunities for future cooperation.

By demonstrating NATO's commitment to cooperative security through practical cooperation with partners, the SPS Programme holds considerable public diplomacy value. It illustrates the benefits of NATO's partnership policy by producing tangible results and helping to build capacity in partner nations. With its focus on non-military cooperation along the lines of civil science, technology, and innovation, the SPS Programme also underlines the civilian role of the Alliance, balancing the image of NATO as a predominantly political-military organization. Throughout 2016, the SPS Programme continued to make use of all available public diplomacy tools and coordinated many of its outreach initiatives closely with the NATO Public Diplomacy Division.

Public Diplomacy highlights for the SPS Programme in 2016 included:

The SPS Information Day in Kyiv and accompanying high visibility events of SPS flagship projects with Ukraine that received wide coverage in Ukrainian mainstream media

A press tour to Jordan to demonstrate the SPS-funded C-IED training for Iraqi officials;

The development of a new, interactive public diplomacy tool to explore the history of the SPS Programme.

The SPS website continues to be a central platform to disseminate information and updates related to SPS Programme activities to the interested public. Applicants and grantees also receive detailed information about the selection procedure of SPS activities, current application deadlines and further administrative information related to grant management from the SPS website.

Continuing the trend of the previous year, in 2016, the SPS Programme has been able to further manifest its social media efforts, including through a more strategic and stronger presence on Twitter. To maximize impact, outreach efforts have been coordinated with the NATO Public Diplomacy Division and Allied Delegations. Cooperation with NATO Channel produced several videos about SPS flagship projects.

SPS activities also received growing coverage in mainstream media in both NATO and partner countries.

The SPS Programme further continued to organize SPS Information Days in NATO and partner countries throughout 2016 and participated in other outreach events to raise awareness of the SPS Programme among key stakeholders and the achievements of SPS activities.

Public Diplomacy Highlights

In 2016, the SPS Programme actively promoted its activities through various channels. The following three initiatives stand out in particular for their strong public diplomacy impact.

SPS Information Day in Kyiv & Ceremonies of Flagship Projects

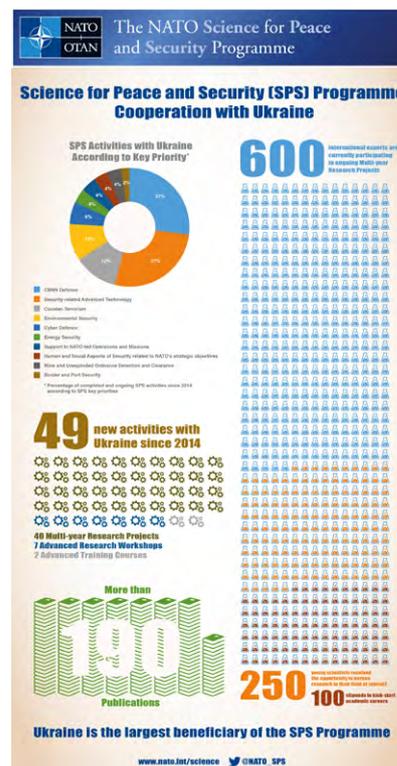
Given the active involvement of many Ukrainian scientists in a large number of SPS activities, including many top-down flagship projects, 2016 provided an opportunity to highlight the results and practical impact of SPS cooperation with Ukraine. Against this background, an SPS Information Day in Kyiv as well as accompanying publicity events to promote key milestones and achievements of SPS flagship projects with Ukraine took place in May 2016.

The organization and implementation of these activities was supported by the NATO Liaison Office and the NATO Information and Communications Centre in Kyiv. The latter also assisted with the conceptualization of a media and outreach strategy.



The SPS Information Day gave project directors and young scientists the opportunity to present their research.

- SPS Information Day:** This event was organised jointly with the Ministry of Science and Education of Ukraine, the National Academy of Sciences of Ukraine and the Mission of Ukraine to NATO. The event attracted more than 200 interested scientists and experts. Moreover, project directors and young scientists from 18 SPS-funded projects with Ukraine got the opportunity to present their research.
- Support to Humanitarian Demining:** Initiated in 2015, this SPS flagship with a budget of approximately Euro 1 million enhances the capacity of the SESU in conducting demining operations in eastern Ukraine. In May 2016, a high-level ceremony attended by Ambassador Sorin Ducaru and Mr Mykola Chechotkin, Head of the SESU, marked the successful hand-over of valuable demining equipment to the SESU.
- Remediation of a Fuel-Polluted Military Site:** In an official ceremony, Ambassador Sorin Ducaru, Assistant Secretary General for Emerging Security Challenges, and Ambassador Ihor Dolhov, Deputy Defence Minister of Ukraine for European Integration, marked the successful completion of this important SPS project and the official hand-over of equipment to Ukraine.
- Development of a Multinational Telemedicine System:** A round-table discussion at the Ukrainian Parliament in Kyiv on 27 May 2016 served to discuss the next steps in the implementation of this SPS top-down project. The high-level event was hosted by Dr Olga Bogomolets, Chairman of the Committee of the Ukrainian Parliament on Healthcare, and Advisor to the President of Ukraine on Humanitarian Issues and was broadcast live on Ukrainian national TV.



* as of July 2016



The SPS Information Day in Ukraine attracted high media attention.

All these events were met with strong interest from Ukrainian media outlets, including broadcasters, radio, print and online media. Interfax-Ukraine reported on the hand-over of SPS demining equipment to the State Emergency Service of Ukraine; newspapers, TV channel 1+1 as well as Radio Liberty covered the SPS project on the remediation of a polluted military site. The SPS Information Day was addressed by TV Channel 5, UA/TV, and a number of newspapers. Moreover, the Ukrainian news agency UNIAN published an exclusive interview with NATO ASG/ESCD Ambassador Sorin Ducaru about SPS cooperation with Ukraine ahead of his visit to Kyiv.

The events were also actively promoted on social media. An infographic visualizing facts and figures about SPS cooperation with Ukraine was developed specifically for the SPS Info Day and posted on the SPS Twitter account. Coordinating the publication of this infographic with NATO PDD/Social Media made this one of the most successful tweets of 2016.



Improved Explosive Devices Disposal and Search Capacity Building for Iraq



Press Tour for Iraq DCB Project

In September 2016, the U.S. Mission to NATO and the NATO Public Diplomacy Division organized a press tour for international journalists to highlight the Alliance's defence capacity building efforts for Iraq. The SPS Programme which has the lead in the domain of Counter-IED, was an integral part of this press tour. Starting in Brussels, Belgium, the journalists were briefed on the SPS flagship project that is providing C-IED training to Iraqi security forces at the King Abdullah II Special Operations Training Center (KASOTC) in Amman, Jordan. KASOTC was also the next step of the press tour, where journalists observed the ongoing training activities and met with Iraqi officers and KASOTC commanders. Overall, the press tour resulted in high publicity for NATO's work to help build defence capacities in Iraq and the contributions of the SPS Programme in this regard.

Highlighting the History of the SPS Programme

In 2016, the SPS Programme launched several new public diplomacy tools to highlight the history and evolution of the Programme since the 1950s.

First of all, an interactive timeline was developed in cooperation with NATO PDD and with the input of the NATO Archive's Committee. This new tool highlights 28 milestones between 1956 and 2016 that had an impact on the development of the SPS Programme. It contains short, informative text boxes accompanied by visual material such as photos and videos, and provides links to websites with additional, in-depth information.



The interactive timeline highlights key milestone in the development of the SPS Programme.

In December 2016, NATO commemorated the 60th anniversary of the Report of the Three Wise Men: On 13 December 1956, the North Atlantic Council endorsed a report to enhance non-military cooperation and coordination within NATO that was drafted by the Foreign Ministers of Canada (Lester B. Pearson), Italy (Gaetano Martino), and Norway (Halvard M. Lange). Known as the Report of the Three Wise Men, it proposed concrete activities to enhance cooperation in the areas of politics, economics and science. One of the direct results of the Report was the creation of the NATO Science Programme, the predecessor of today's Science for Peace and Security Programme.



NATO Secretary General Jens Stoltenberg at the Commemoration of 60th Anniversary of the Three Wise Men Report.

The NATO Archives Committee and PDD organised an exhibition at NATO HQ at the occasion of the 60th anniversary, and the SPS Programme published a feature story on its website to highlight the profound impact of the Report of the Three Wise Men on the foundation and development of the Programme.

Moreover a video from 1989 was made publically available on the SPS website, showing the importance of NATO's 'Third Dimension', i.e. scientific cooperation, at the time.

NATO SPS Website

The website of the SPS Programme remains key for the dissemination of updates and recent information about the SPS Programme, its grant mechanisms and opportunities for collaboration. News stories, videos, and various publications are published on a regular basis to keep stakeholders informed about the work and achievements of the Programme. Several news stories about key SPS projects were also featured on the NATO main homepage.

Above all, the SPS website is a focal point for scientists and experts wishing to explore the SPS Programme and submit bottom-up applications. It provides in-depth information about the application and selection procedure of SPS activities, including the necessary application and reporting forms.

Through regular updates of the website and the frequent publication of news stories visitors of the SPS website are kept abreast of the latest activities of the Programme. In 2016, a total of 23 news stories were published on the SPS website (see Annex 4 for a complete overview).

NATO Channel

The SPS Programme worked together with NATO TV throughout 2016 to produce a number of videos that highlight the impact and achievements of key SPS flagship activities.

This included a clip about the SPS C-IED Training in Iraq that was filmed at the KASOTC in Jordan. Another video highlighted several SPS key initiatives with Ukraine and was filmed during the visit to Kyiv at the occasion of the SPS Information Day in May 2016.

During the EADRCC Exercise in Montenegro the capabilities of the SPS project building capacity of Montenegrin EOD teams to detect and clear unexploded ordnances were also demonstrated. A subsequent video showed the achievements of the project in Montenegro.

Other videos highlighted a SPS project in Georgia developing a system to protect against underground explosions, a regional initiative to monitor dumped munitions in the Baltic Sea, and a SPS-funded CBRN Live Agent Training involving participants from Jordan, Tunisia and Egypt at the CBRN Centre of Excellence in Viskov, Czech Republic.

A video from the late 1980s “NATO, the Third Dimension” was also digitalized and made available on the SPS website. It gives a glimpse into the outlook and activities of the NATO Science Programme almost three decades ago.

See Annex 4 for an overview of SPS videos.

Mainstream Media Coverage

THE JORDAN TIMES

A number of SPS activities, including major top-down projects received public attention in 2016 through mainstream coverage by national and international print, online and television outlets. The SPS Programme was for example presented in the Materials Research Society Bulletin (Cambridge University Press). Mainstream news outlets such as Radio Canada International or the Daily Star also picked up on SPS projects.

SPS activities have also been highlighted by mainstream media in various NATO partner countries. As highlighted above, various TV Channels picked up on the SPS Information Day in Ukraine. In Mauritania, the inauguration of the SPS-supported national crisis management centre was extensively covered in the news on national television. A workshop “Human Factors in the Defence against Terrorism: The Case of Jordan” was reported upon in the Jordan Times. The SPS Information Day in Serbia was also accompanied by an in-depth story about a SPS project between Serbia and Germany that was published in the Telegraf.



SPS grantees also promoted their activities on the homepages of their research institutes, universities, and national ministries. For instance, the press release about the launch of the SPS project to develop and implement an incident command system in the Western Balkans was featured on the main homepage of the website of the Department of Homeland Security, Science and Technology Directorate.

Please see Annex 5 for a non-exhaustive overview of SPS-related mainstream media coverage.

The SPS Programme on Social Media

In 2016, the SPS Programme continued to strengthen its social media efforts, notably through a more strategic use of its Twitter account @NATO_SPS. Throughout the year, the SPS Twitter account registered a marked increase in followers as the number more than doubled. As in previous years, the main audience comprised scientists, subject matter experts, think tankers, interested individuals and Delegations of NATO and partner countries.



The Twitter presence of the SPS Programme serves to update stakeholders on recent, SPS-related developments, the implementation of SPS-funded activities and helps to promote the work of the SPS Programme to a wider public. 2016 saw a stronger and more strategic use of the SPS Twitter Account: Tweets were planned in line with key events and SPS Programme milestones. The SPS Programme

sought to coordinate key tweets with the NATO PDD/Social Media team and other stakeholders and multipliers, including NATO Delegations and Missions. This approach proved to be successful and allowed the SPS Programme to reinforce the messaging on its Twitter account.

Throughout 2016, the official NATO Twitter Account shared SPS-related content on several occasions, including a video promoting the SPS project to clear unexploded ordnance in Montenegro.

Videos about SPS flagship project were also shared on the official Facebook page of NATO.

Building on these successes, in 2017, the SPS Programme intends to continue making best use of its Social Media presence, including through cooperation with NATO's PDD and NATO Delegations. The Programme will also continue to align its messaging with key SPS-related events and milestones.



2016 also saw more active engagements of SPS grantees on social media who used Twitter and Facebook accounts to update their stakeholders regularly about SPS-funded activities.

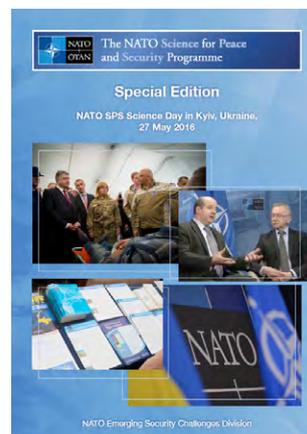
Participants and co-directors of ARWs in particular tweeted photos, quotes and thoughts about SPS-funded events. This is also reflected in the more than fivefold increase of mentions of the @NATO_SPS Twitter handle over the last year.

Several SPS Co-directors also used Facebook to promote their events. They shared updates, presentations, and articles related to their activities.

Science Publications, Country Flyers & Leaflets

The SPS Programme continues to produce and update information material such as brochures, flyers, and roll-ups. For instance, a booklet providing a comprehensive overview of SPS projects with Ukraine was developed in 2016 at the occasion of the SPS Information Day in Kyiv. In the run-up to several high visibility events related to SPS flagship projects informative pamphlets and brochures were distributed to participants and journalists. These included flyers about:

- the SPS project establishing a crisis management centre in Mauritania for the inauguration of the centre;
- the C-IED capacity building project for Iraq as information material for the press tour that was organized in cooperation with PDD and the U.S. Mission to NATO in September 2016;
- information about the UXO clearance project ahead of the involvement of this flagship activity in the NATO EADRCC Exercise in Montenegro in November 2016;
- the SPS project “Regional Civil Emergency Coordination Pilot in the Western Balkans” at the occasion of the project kick-off in November 2016.



Moreover, all country flyers presenting SPS activities with individual partner countries were updated throughout 2016 and presented on the SPS website.

As in previous years, many directors of SPS events have published their findings in the NATO Science Series. A total of 11 publications were made in 2016; a full list can be found at Annex 6.

SPS Information Days

SPS Information Days are an excellent opportunity to raise awareness of the SPS Programme and develop potential new activities by engaging with government representatives, scientists, and experts in NATO and partner countries. The SPS Programme continued to organize SPS Information Days in NATO and partner countries throughout 2016 and participated in other outreach events to raise awareness of the SPS Programme among key stakeholders and the achievements of SPS activities.

Serbia

Over the last years, Serbia has become increasingly active within the framework of the NATO Science for Peace and Security (SPS) Programme and identified many areas for practical cooperation with NATO. An Information Day in Belgrade, Serbia on 30 June 2016 provided the opportunity to take stock of the successful SPS cooperation, to explore new areas of cooperation and to raise awareness about the



Serbia expressed its desire to deepen practical cooperation with the SPS Programme.

Programme. Hosted by the NATO Military Liaison Office (MLO) in Serbia and the Serbian Ministry of Defence, the Information Day underscored the interest and importance of joint cooperation between NATO and Serbia on joint activities such as this. Serbian government representatives and experts presented their priority areas of cooperation and used the opportunity to exchange ideas for potential new SPS activities.

The event attracted around 50 participants from military academies, the scientific sector and government. High-level participants included Brigadier General Cesare Marinelli, Chief of the MLO as well as Colonel Katarina Štrbac, Director of the Directorate for European Integration and Project Management in the Ministry of Defence of Serbia. Both expressed a desire to deepen practical cooperation in developing new SPS initiatives with Serbia. The Information Day was also attended by the NATO Chief Scientist, Major General Albert Husniaux from the Science and Technology Organization (STO), which alongside the SPS Programme, is interested in collaborating with Serbia.

Ukraine

Scientists, experts and policy makers from Ukraine, the region and NATO member states gathered for the Science for Peace and Security (SPS) Programme Information Day 2016 in Kyiv, Ukraine on 27 May. The event provided an opportunity for the dissemination of the tangible results achieved through practical cooperation and the implementation of SPS projects in Ukraine.

The SPS Information Day, organised jointly with the Ministry of Science and Education of Ukraine, the National Academy of Sciences of Ukraine and the Mission of Ukraine to NATO, allowed participants to learn more about the work of the SPS Programme, to develop new initiatives for practical cooperation, and to create networks of experts to address security-related civil science and technology issues.

The event attracted more than 200 interested scientists and experts who shared their experience of the SPS Programme and talked about their projects that address mainly the defence against chemical, biological, radiological and nuclear (CBRN) weapons and security-related advanced technologies.



The SPS Information Day in Ukraine attracted more than 200 scientist and experts.

Armenia

As part of the NATO Week in Armenia, the SPS Information Day took place on November 17, 2016 at the National Academy of Sciences in Yerevan. The conference was opened by Deputy Assistant Secretary General for Emerging Security Challenges Dr. Jamie Shea, and the Deputy Minister of Foreign Affairs of the Republic of Armenia, Mr. Ashot Hovakimian, followed by remarks by the Head of the NATO Contact Point Embassy in Armenia, H.E. Ambassador Matthias Kiesler. The Information Day attracted more than 80 scientists, researchers, policy makers and practitioners from various governmental institutions and from private sector. The main topics of discussions were cyber defence, environmental security, security related advanced technologies, and defence against CBRN agents.

The Republic of Armenia has a long history of cooperation with NATO, including through the SPS Programme. Overall, 38 SPS activities were led by project directors from Armenian institutions. At the moment, there are two ongoing Multi-year Projects with the country in the area of environmental security. The Information Day offered an opportunity to engage in further discussions on the mutual security challenges, resulting in recognizing new areas of joint security interest. Subsequently, multiple potential activities were identified and will be developed in collaboration with experts from Armenia and NATO countries under the SPS Programme framework.

Special SPS Public Diplomacy Events

The SPS Programme organized and participated in various events throughout 2016 to raise awareness of the programme among partners and other stakeholders. This included the organization of a book talk on a SPS publication, the participation in the Future Security Conference in Berlin and in the NATO Counter-Terrorism Information Day, as well as the participation in a conference organized by the European Research Council.

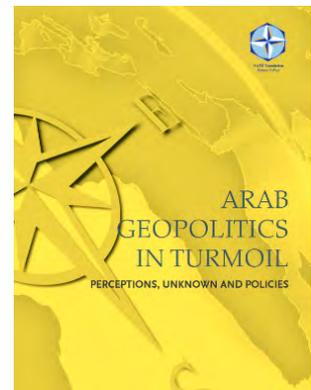
Book Talk: Arab Geopolitics in Turmoil



The book talk was a result of an SPS workshop in cooperation with the NATO Defense College Foundation and the Gulf Research Center Foundation as well as the University of Jordan.

Ahead of the NATO Warsaw Summit, the Science for Peace and Security Programme hosted a timely book discussion on Arab geopolitics on 28 June 2016. The publication presented at the event resulted from an SPS Advanced Research Workshop (ARW) that was organised in cooperation with the NATO Defense College Foundation and the Gulf Research Center Foundation as well as the University of Jordan. Key experts and political decision-makers attended the SPS workshop that took place in February 2016 in Rome. Both the SPS workshop and the subsequent book discussion at NATO HQ

contributed to developing common understandings and perceptions of shared challenges, threats and risks in the sphere of defence and security, which is increasingly relevant as NATO responds to its immediate geographic environment.



Participation in the Future Security Conference Berlin

On 13 September 2016, the SPS Programme participated in the Future Security Conference in Berlin, organized by the Fraunhofer Institute. The event brought together leading experts and researchers from Germany and a wide range of NATO and partner countries who focus on civil, security-related research and new technologies and discuss the current state of security research. The SPS Programme organized an information stand as part of the conference with the aim of informing about and raising awareness of the Programme among key stakeholders. The event proved to be an excellent opportunity to reach out to scientists, to disseminate information about the SPS Programme, and to build new networks.



Attendance of the Conference “Science Diplomacy” by the European Research Council

The SPS Programme also attended selected sessions of a conference on science diplomacy organized by the European Research Council in Brussels on 25-26 October 2016. The event served to exchange views on the current state and benefits of science diplomacy. It also helped the SPS Programme to reach out to and establish contacts with stakeholders from other International Organizations.



Participation in the NATO Counter-Terrorism Information Day

Among the activities with high public diplomacy impact that SPS supported was NATO’s Counter-Terrorism Information Day 2016, on 15 November. The event was held at NATO HQ and brought together the majority of NATO’s 41 partners and various international organizations, such as the UN, EU, OSCE, INTERPOL and the African Union (AU). Recognizing the contribution SPS CT projects bring to supporting the implementation of NATO’s CT Policy Guidelines and delivering tangible results, SPS was presented as a programmatic effort supporting tailored cooperation with partners. Various requests for information were addressed at the SPS stand.



The Counter-Terrorism Information Day attracted a high-level audience from more than 40 nations.

CHAPTER VII

Outlook – The SPS Programme in 2017

In 2017, the SPS Programme will continue to address the Alliance's key priorities and guidance, taking into consideration the strategic outcomes of the 2016 Warsaw Summit, especially in relation to partnerships. The implementation of SPS activities will be carried out in line with the 2017 SPS Work Programme which is taking into account the political and strategic priorities of NATO and the guidance received by Allies at the October 2016 North Atlantic Council (NAC) meeting on the SPS Programme.

Supporting NATO's Strategic Objectives

In 2017, the SPS Programme will maintain a focus on large scale, strategic activities with a high political, practical and public diplomacy impact, keeping in mind that both top-down and bottom-up projects are having a role to play. Moreover, an increased portion of the overall 2017 budget is intended to be allocated to strategic, high visibility, Multi-year Projects, which will require the provision of contract authority. In particular, the SPS Programme will be guided by the following key NATO partnership initiatives and SPS priority areas.

Projecting Stability. SPS will assume a balanced and flexible 360 degree approach to help address challenges to the East and to the South and will reflect Allied guidance in this regard. This will include the development of new activities as well as the provision of training and equipment and will contribute to capacity building in partner nations, in accordance with their individual partnership and cooperation programmes.

Defence Capacity Building. The SPS Programme will continue to support, as a part of its overall objectives, the DCB packages for Iraq, Jordan, the Republic of Moldova and Georgia through practical cooperation and flagship initiatives in priority areas of cooperation.

- A SPS project on IED Disposal and Search Capacity Building for Iraq is ongoing since 2016 with two cycles of training successfully completed at the King Abdullah II Special Operations Training Centre (KASOTC) in Amman and a third cycle taking place in Iraq in January 2017 in cooperation with the OPS Division and the C-IED CoE.
- The support in the area of cyber defence for Moldova will be continued through a SPS project to establish a Computer Emergency Response Team (CERT) within the Moldovan Ministry of Defence. Furthermore, the SPS Programme will support the Moldovan government and civil society throughout 2017 to develop a fully operational national action plan to implement UNSCR 1325 on Women in Peace and Security.
- A SPS activity to address Jordan's urgent need for a unified national C-IED policy and to develop further training courses to support Jordan's C-IED capabilities is foreseen for 2017.

Comprehensive Assistance Package (CAP) for Ukraine. The SPS Programme will continue to implement the flagship projects included in the Warsaw Summit deliverables. These comprise the project to develop a multinational telemedicine system, efforts to support humanitarian demining in Ukraine, and the development of a 3D mine detector.

In the development of new activities, the SPS Programme will seek to foster **regional cooperation** on security related issues by encouraging cooperation among partners and engaging with Enhanced Opportunity Partners (EOP).

Cooperation with International Organizations like the United Nations, European Union, Organization for Security and Cooperation in Europe, and The Organization for the Prohibition of Chemical Weapons will continue in 2017. By forging networks with and drawing on the expertise of other IOs, the impact of SPS activities addressing international security issues will be further amplified.

The SPS Programme will continue to make use of all the **public diplomacy tools** at its disposal, including social media, and will work together with PDD in order to raise the visibility of SPS activities in NATO and partner countries. **SPS Information Days** are excellent opportunities to promote the SPS Programme as well as to explore potential new SPS initiatives by bringing together scientists, experts, civil society and government representatives. A number of NATO and partner countries have already shown interest in hosting a SPS information Day in 2017, and events are planned in the Netherlands, Bosnia and Herzegovina, and Norway. The SPS Programme will also continue to promote these and other activities through its website and Twitter account.



Annex 1: New SPS Activities Approved by PCSC in 2016

Security Area	Key Priority	SPS Reference	Top-Down	Grant Mechanism	Title	NATO Country	Partner Country	Other Countries	Partnership Framework
CT	1.a.	G5123		ARW	Critical Infrastructure Protection (CIP) against the Hybrid Warfare related-Challenges	BEL	SWE		EAPC
CT	1.a.	G5147		MYP	Ultra-Sensitive opto-electrochemical detection liquid explosives fabrication	USA	FIN		EAPC
CT	1.a.	G5178		ATC	Attack the Network: Counter-Terrorism for Operational Practitioners	TUR	AZE	USA	EAPC
CT	1.a.	G5181		ATC	Defence against Terrorism Course for Uzbekistan	TUR	UZB		EAPC
CT	1.a.	G5257		ATC	Countering ISIS Radicalisation Activities through the Cyberspace in the Region of South-East Europe (CIRACRESEE)	BGR	FYR*		EAPC
CT	1.a.	G5150		ARW	Human Factors in the Defence against Terrorism: the Case of Jordan	BEL	JOR		MD
CT	1.a.	G5159		ARW	Identification of Potential Terrorists and Adversary Planning Emerging Technologies and New Counter-Terror Strategies	USA	ISR		MD
CT	1.a.	G5160		ARW	Countering Terrorism at the Borders: Identifying Common Challenges and Solutions	USA	ISR		MD
CT	1.a.	G5218		ARW	Spotting Suicide Terrorists in Case Traditional Measures Fail ¹	TUR	QAT		ICI
CT	1.a.	G5195		MYP	Advanced Microwave Sources	USA	UKR	TUR ITA	NUC
ES	1.b.	G5112	X	ARW	Addressing Emerging Security Risks for Energy Flows over South Caucasus	LTU	GEO		EAPC
ES	1.b.	G5144	X	MYP	Enhancing Resilience against Emergency and Early Warning in Energy Sector	ROU	MDA		EAPC
ES	1.b.	G5184	X	ARW	Innovative Energy Solutions for Military Application (IESMA 2016)	LTU	GEO	LTU DEU	EAPC
CYBER	1.c.	G5194		ATC	Building a Cyber Resilient Society in South-Eastern Europe	HRV	BIH		EAPC
CYBER	1.c.	G5278	X	ATC	Network Security & Network Vulnerability Assessment and Risk Mitigation Course	DEU	MNE		EAPC
CYBER	1.c.	G5285		ARW	New Generation CERTs: from Response to Readiness – Strategy and Guidelines	ITA	SWI		EAPC
CYBER	1.c.	G5109		ASI	Development of Secure and Dependable Systems (Summer School Marktoberdorf 2016)	DEU	ISR		MD

Security Area	Key Priority	SPS Reference	Top-Down	Grant Mechanism	Title	NATO Country	Partner Country	Other Countries	Partnership Framework
CYBER	1.c.	G5213	X	ATC	Advanced Cyber Defense Training Course for System Administrators of Ukraine	TUR	UKR		NUC
CYBER	1.c.	G5277		ATC	Cyber Defence in the Context of Energy Security	DEU	UKR		NUC
CYBER	1.c.	G5281	X	MYP	Creation of Computer Incident Response Team and Securing the IT Infrastructure	BEL	MNG	NLD	PaG
CYBER	1.c.	G5283	X	ATC	Advanced Cyber Defense Training Course for System Administrators of Iraq	TUR	IRQ		PaG
CBRN	1.d.	G5077		ARW	Nano Scale Materials for Warfare Agent Detection: Nanoscience for Security	BEL	FIN		EAPC
CBRN	1.d.	G5180		MYP	Nano Smart Gloves Based on Hybrid CNT/Graphene Films for Chemical & Bio Threats	GBR	FYR*	ITA	EAPC
CBRN	1.d.	G5219	X	ARW	Defence Against Bioterrorism: Methods for Prevention and Control	HRV	SRB		EAPC
CBRN	1.d.	G5250		MYP	Portable low-cost Raman Probe for chemical contaminant Identification (RaPID)	ITA	FIN	ESP	EAPC
CBRN	1.d.	G5255		ARW	BRITE (Biomarkers of Radiation In the Environment): Robust tools for risk assessment	GBR	ARM		EAPC
CBRN	1.d.	G5266		MYP	A Field Detector for Genotoxicity from CBRN and Explosive Devices	BGR	FYR*	TUR USA	EAPC
CBRN	1.d.	G5279	X	ATC	CBRN First Responders Live Agent Training	CZE	TUN		MD
CBRN	1.d.	G5215	X	MYP	Engineering Silicon Carbide for Enhanced Borders and Ports Security (E-SiCure)	HRV	AUS	PRT JPN SVN	PaG
CBRN	1.d.	G5193		ARW	The Risk of Skilled Scientist Radicalization and Emerging Biological Warfare Threats	USA	IRQ		PaG
ENV	1.e.	G5265		ARW	Resilient Critical Infrastructure	HRV	ISR		MD
ENV	1.e.	G5148		MYP	Development of New Cathodes for Stable and Safer Lithium-Sulfur Batteries	SVK	UKR		NUC
ENV	1.e.	G4687		MYP	New Phytotechnology for Cleaning Contaminated Military Sites	CZE	UKR	USA SVK BLR KAZ	NUC
OPS	2.	G5183	X	ARW	Benchmarking Telemedicine: Improving Health Security in the Balkans	BGR	FYR*	USA	EAPC

Security Area	Key Priority	SPS Reference	Top-Down	Grant Mechanism	Title	NATO Country	Partner Country	Other Countries	Partnership Framework
ADV	3.a.	G5187		ASI	Quantum Nano-Photonics	USA	BLR		EAPC
ADV	3.a.	G5202		MYP	Versatile Unmanned Aerial Vehicle (UAV) Engine Development	USA	ISR	TUR	MD
ADV	3.a.	G5070		MYP	New Shock-Resisting Ceramics: Computer Modelling, Fabrication, Testing	USA	UKR		NUC
ADV	3.a.	G5140		MYP	Advanced Nanotechnologies for Multivariate Sensor Fabrication	ITA	UKR		NUC
ADV	3.a.	G5176		MYP	Vehicle Technology-Agile Tire Mobility for Severe Terrain	USA	UKR		NUC
ADV	3.a.	G5212		ARW	Detection of CBRN – Nanostructured Materials	SVN	UKR		NUC
Border & Port Security	3.b.	G5158		ATC	Senior Leadership ATC on SE European Border Security: Challenges & Opportunities	USA	FYR*		EAPC
Border & Port Security	3.b.	G5282		MYP	Enhancement of Institutional Structures of the State Border Guard Service of Ukraine	POL	UKR		NUC
UXO	3.c.	G5208		MYP	Ground Penetrating Radar (GPR) Integrated to a Hexacopter for Automatic Mine Detection	SVN	FYR*	BIH	EAPC
UXO	3.c.	G5217	×	MYP	Development of Mine and IED Recognition System based on Ultrawideband Technology	NOR	UKR		NUC
UXO	3.c.	G5185	×	MYP	IED Disposal and Search Capacity Building for Iraq	LUX	IRQ		PaG
HUM	3.d.	G5084		ARW	"Women Building Peace: What They Do, Why it Matters" Strengthening the implementation of the Resolution 1325	BGR	MNE		EAPC
HUM	3.d.	G5125		ARW	Countries Countering Information War - Lessons Learned from NATO and Partner Countries	SVK	GEO		EAPC
HUM	3.d.	G5166		ARW	Geopolitical Challenges in the East – Implications for Security in the Balkans	BGR	MNE		EAPC
HUM	3.d.	G5200		ARW	Leading Sustained Cooperation in Fragile Environments: Steps towards Long-term Security & Defence	BEL	SWI	DK	EAPC
HUM	3.d.	G5221		MYP	Moldova's National Plan to Implement UN Security Council Resolution 1325	USA	MDA		EAPC

Annex 2: SPS Events – ARW, ASI, ATC – Hosted in 2016

Top-Down	SPS Reference	Grant Mechanism	Title	NATO Country	Partner Country	Location	Dates
X	G4960	ATC	Improvements in Radiation Protection Procedures: Implementation of Best Practices	PRT	MAR	Lisbon, Portugal	25-29 January 2016
X	G5131	ATC	Advanced Cyber Defense Training Course for System Administrators of Azerbaijan	TUR	AZE	Ankara, Turkey	1-12 February 2016
	G5130	ATC	Specialized Cyber Defence Trainings for Civil Servants of Montenegro	EST	MNE	Podgorica, Montenegro / Tallinn, Estonia	08-12 February 2016 15-19 February 2016
	G5050	ATC	Countering the South-East European Terrorist Threat	USA	FYR*	Ohrid, the former Yugoslav Republic of Macedonia*	14-19 February 2016
	G4985	ARW	Addressing Security Risks at the Ukrainian Border through Best Practices and Good Governance - Sources and Counter Measures	POL	UKR	Kyiv, Ukraine	25-26 February 2016
X	G5071	ARW	Arab Geopolitics in Turmoil: Perceptions, Unknowns and Policies	ITA	SWI, JOR	Rome, Italy	25-26 February 2016
	G4915	ASI	Molecular Technologies for Detection of Chemical and Biological Agents	CAN	MAR	Calabria, Italy	09-16 April 2016
	G4886	ARW	A Framework for a Military Cyber Defence Strategy	TUR	UKR	Norfolk, Virginia, USA	11-13 April 2016
X	G5093	ATC	Advanced Net Zero Energy Water and Waste Training	DEU	SWE	Wiesbaden, Germany	25-29 April 2016
	G5044	ARW	Responses to Female Migration to ISIS	USA	MAR	Venice, Italy	26-30 April 2016
	G5126	ATC	Specialized Cyber Defence Trainings for the Civil Servants of Bosnia and Herzegovina	EST	BIH	Sarajevo, Bosnia and Herzegovina / Tallinn, Estonia	09-13 May 2016 16-20 May 2016
	G5036	ARW	National Action Plans (NAPs) on Women, Peace and Security	GBR	IRL	Dublin, Ireland	11-12 May 2016
	G5122	ARW	Not Only Syria? Foreign Fighters: A Threat to NATO Allies and Their Neighbours	POL	MDA	Chisinau, Moldova	18-20 May 2016
	G5123	ARW	Critical Infrastructure Protection Against Hybrid Warfare Security-Related Challenges	BEL	SWE	Stockholm, SWE	18-20 May 2016
X	G4988	ARW	CBRN Risks in Land and Maritime Container Transport	ITA	EGY	Rome, Italy	25-27 May 2016
	G5021	ASI	High-Pressure Crystallography: Status Artis and Emerging Opportunities in CBRN Defence	USA	SWE	Erice, Italy	27 May - 05 June 2016

Top-Down	SPS Reference	Grant Mechanism	Title	NATO Country	Partner Country	Location	Dates
X	G5139	ATC	Network Traffic Analysis Course	DEU	MAR	Rabat, Morocco	28 May – 03 June 2016
X	G5015	ARW	Border Security Challenges in Eastern Europe: Lessons for Allies and Partners	POL	MDA, UKR	Kyiv, Ukraine / Chisinau, Moldova	09-10 June 2016 03-04 October 2016
	G4986	ARW	Resilience-based approaches to physical and cyber infrastructure safeguarding	USA	SRB	Ponta Del Gada, POR	26-29 June 2016
	G5086	ARW	Terrorists' Use of the Internet: Assessment and Response	GBR	IRL	Dublin, Ireland	27-29 June 2016
X	G5136	ARW	Implications of Climate Change and Disasters on Military Activities: Building Resiliency and Mitigating Vulnerability in the Balkan Region	BGR	SRB	Sofia, Bulgaria	05-07 July 2016
	G5159	ARW	Identification of Potential Terrorists and Adversary Planning - Emerging Technologies and New Counter-Terror Strategies	USA	ISR	Washington, USA	25-27 July 2016
	G5109	ASI	Development of Secure and Dependable Systems (Summer School Marktoberdorf 2016)	DEU	ISR	Marktoberdorf, Germany	03-12 August 2016
X	G5213	ATC	Advanced Cyber Defense Training Course for System Administrators of Ukraine	TUR	UKR	Ankara, Turkey	22 August – 02 September 2016
	G5200	ARW	Leading Sustained Cooperation in Fragile Environments: Steps towards Long-term Security & Defense	BEL	SWI DNK	Geneva, Switzerland	14-16 September 2016
	G5125	ARW	Countering Information War - Lessons Learned from NATO and Partner Countries	SVK	GEO	Tbilisi, Georgia / Bratislava, Slovakia	27-28 September 2016 28-29 November 2016
	G5194	ATC	Building a Cyber Resilient Society in South-Eastern Europe	HRV	BIH	Zagreb, Croatia	16-21 October 2016
X	G5181	ATC	Defence against Terrorism Course for Uzbekistan	TUR	UZB	Tashkent, Uzbekistan	24-28 October 2016
X	G5279	ATC	CBRN First Responders Live Agent Training	CZE	TUN	Vyskov, CZE	24-28 October 2016
	G5178	ATC	Attack the Network: Counter-Terrorism for Operational Practitioners	TUR	AZE, USA	Baku, Azerbaijan	31 October – 04 November 2016
X	G5183	ARW	Benchmarking Telemedicine: Improving Health Security in the Balkans	BGR	FYR*	Skopje, the former Yugoslav Republic of Macedonia*	15-17 November 2016
	G5150	ARW	Human Factors in the Defence against Terrorism: the Case of Jordan	BEL	JOR	Amman, Jordan	23-25 November 2016
	G5193	ARW	The Risk of Skilled Scientist Radicalization and Emerging Biological Warfare Threats	USA	IRQ	Como, Italy	29 November – 02 December 2016

Top-Down	SPS Reference	Grant Mechanism	Title	NATO Country	Partner Country	Location	Dates
X	G5112	ARW	Addressing Emerging Security Risks for Energy Flows over South Caucasus	LTU	GEO	Tbilisi, Georgia	05-06 December 2016
	G5257	ATC	Countering ISIS Radicalisation Activities through the Cyberspace in the Region of South-East Europe (CIRACRESEE)	BGR	FYR*	Ohrid, the former Yugoslav Republic of Macedonia*	12-16 December 2016
	G5084	ARW	"Women Building Peace: What They Do, Why it Matters" Strengthening the implementation of the Resolution 1325	BGR	MNE	Podgorica, Montenegro	13-15 December 2016
	G5166	ARW	Geopolitical Challenges in the East – Implications for Security in the Balkans	BGR	MNE	Sofia, Bulgaria	14-18 December 2016

Annex 3: SPS Projects Completed in 2016

	Top-Down	Key Priority	Partnership Framework	SPS Reference	Title	NATO Country	Partner Country	Other Countries
1		CT	EAPC	G4068	THz QCL-Based Spectrometer for Rapid Detection of Chemical Agents and Explosives	GBR	RUS	
2		CBRN	EAPC	G4208	A Multi-Task Investigation on the Human Immune Response to Anthrax aimed at Developing more Efficient Vaccines	GBR	GEO	TUR
3		ADV	EAPC	G4399	Novel Sensor based on Laser Ablated Graphene	ESP	FYR*	CZE
4		CBRN	EAPC	G4403	Technical Advances to Detect and Remove Contaminants in Water for Safety and Security	USA	MDA	ARM, GRC, SVK
5		CYBER	MD	G4520	Secure Implementation of Post-Quantum Cryptography	SVK	ISR	
6		CYBER	MD	G4425	Cyber Security Assurance Using Cloud-Based Security Measurement System	USA	MAR	
7		CT	NUKR	G4544	Uncooled THz Arrays for Imaging Explosives	ESP	UKR	
8	x	ENV	NUKR	G4585	Remediation of Hydrocarbon Polluted Military Site in Ukraine	FRA	UKR	
9	x	CBRN	EAPC	G4589	Towards the Monitoring of Dumped Munitions Threat (MODUM)	POL	RUS	
10		ADV	MD	G4662	Radiation Resistant High-Speed Transistors for Security	USA	ISR	
11		CT	EAPC	G4855	Transitioning from Military Interventions to Long-Term Counter-Terrorism Policy	NLD	AUS	
12	x	CT	MD	G5009	National System of Crisis Management Coordination in Mauritania	FRA	MRT	
13	x	ADV	NUKR	G7982	Development of an Advanced X-Ray Generator Based on Compton Back-Scattering	NLD	UKR	GER

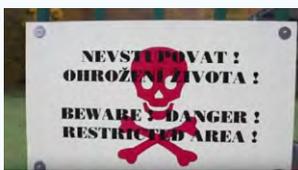
Annex 4: SPS Media Visibility in 2016 – Videos & SPS Web Stories

Videos about SPS Programme Activities in 2016



25 November 2016 - NATO helps Montenegro find and destroy buried explosives

In Montenegro, on average, 10 tonnes of unexploded ordnance (UXO) left over from past wars is found each year. The NATO Science for Peace and Security (SPS) Programme is training and equipping Montenegrin UXO clearers to deal with this problem.



04 November 2016 - Preparing to deal with the threat from chemical, biological and nuclear weapons

Not all wars are fought with bombs and bullets. As the threat from chemical, biological and nuclear weapons rises, NATO has stepped up its efforts in providing specialised training to partner countries who are most at threat.



11 October 2016 - Bomb hunters of the Baltic Sea

An international team of scientists working on the multi-year research project 'Towards the Monitoring of Dumped Munitions Threat' (MODUM), supported by NATO's Science for Peace and Security (SPS) Programme have been mapping the ocean floor, locating and monitoring munition dump sites in the Baltic Sea. The variety of chemical weapons and explosives left over from the Second World War is thought to pose a significant threat to marine life in the region.



09 September 2016 - NATO support for the Iraqi Armed Forces

At a training facility in Jordan, NATO experts are teaching the Iraqi Armed Forces the skills they need to clear their towns and cities of IEDs. The course is part of NATO's Defence Capacity Building Package for Iraq and funded by the Science for Peace and Security (SPS) Programme.



13 July 2016 - Science for Peace and Security in Ukraine

With almost 40 ongoing projects, workshops & training courses, Ukraine is the largest beneficiary of the NATO Science for Peace and Security (SPS) Programme, a programme that offers opportunities for practical cooperation to NATO's partners.



26 May 2016 - Georgian and US scientists develop system to limit damage caused by explosions in confined spaces

In an initiative sponsored by NATO's Science for Peace and Security Programme, Georgian and US scientists are developing a system to limit the damage caused by explosions in confined spaces. At the Mining Institute of Georgia, in an underground experimental base, the scientists demonstrate the new system where very high-speed sensors trigger the ejection of a high-pressure water absorber to suppress the blast from the explosion.



15 December 2016 - Emerging security risks for energy flows across South Caucasus

Energy security is high on the political agendas of both NATO member states and partner countries. At the NATO Summit in Warsaw in July 2016, Allied leaders highlighted that energy developments can have significant political and security implications. Stable and reliable energy supplies, the diversification of import routes, suppliers and energy resources, and the interconnectivity of energy networks are of critical importance and increase resilience against political and economic pressure.



13 December 2016 - The Three Wise Men Report and the origins of the NATO Science for Peace and Security Programme

On 13 December 1956, the North Atlantic Council endorsed a report to enhance non-military cooperation and coordination within NATO. Known as the Report of the Three Wise Men, it proposed concrete activities to enhance cooperation in the areas of politics, economics and science. One of the direct results of the Report was the creation of the NATO Science Programme. Sixty years later, the legacy of the Report lives on in the NATO Science for Peace and Security Programme.



09 December 2016 - NATO trains Iraqi experts in cyber defence

Iraqi experts were trained on cyber defence at the Middle East Technical University (METU) in Ankara, Turkey to improve their expertise and technical knowledge and to contribute to the strengthening of Iraqi national cyber defence capabilities. This course was supported by the Science for Peace and security (SPS) Programme and took place from 21 November to 2 December 2016.



28 November 2016 - Enhancing civil emergency response in the Western Balkans

Countries in the Western Balkans have often been affected by major natural disasters, including flooding and landslides. A new project, supported by the NATO Science for Peace and Security (SPS) Programme and the US Department of Homeland Security, will develop and implement a system to facilitate the coordination among responders and improve civil emergency management across the region.



17 November 2016 - Armenia and NATO discuss new areas of scientific cooperation

Scientists, experts, policy makers and practitioners from Armenia discussed emerging security issues of mutual interest at the Science for Peace and Security (SPS) Information Day held at the National Academy of Sciences in Yerevan on 17 November 2016. The event was part of the NATO Week in Armenia.



15 November 2016 - Mauritania opens new national crisis management centre

Mauritania is facing growing threats from terrorism and is affected by droughts and other climate change disasters. A national crisis management centre, supported by NATO's Science for Peace and Security (SPS) Programme, has been inaugurated in Nouakchott to help authorities quickly respond to crises and coordinate an appropriate response.



04 November 2016 - NATO tests Science for Peace and Security projects in Montenegro

NATO successfully live-tested two Science for Peace and Security (SPS) projects as part of the consequence-management field exercise held in Montenegro in November 2016. Under the SPS Programme, NATO is supporting the clearance of unexploded ordnance in Montenegro and developing a multinational telemedicine system for emergency situations.



21 October 2016 - Monitoring dumped munitions in the Baltic Sea

A variety of chemical weapons and explosives left over from the Second World War is posing a significant threat to marine life and the population in the Baltic Sea. An international team of scientists helped to locate and understand this threat in the Baltic Sea through a multi-year research project supported by NATO's Science for Peace and Security (SPS) Programme.



19 October 2016 - Concrete steps to boost Moldova's defence capacities

Three projects aiming to build Moldova's defence capacities were launched on 6 October 2016. Two projects concern cyber defence and the third seeks to promote the role of women. Developed within the NATO Science for Peace and Security Programme, the projects support implementation of the Defence and Related Security Capacity Building Initiative for Moldova.



06 October 2016 - NATO and Moldova strengthen scientific cooperation

NATO's Science for Peace and Security (SPS) Programme launched three projects in support of Moldova's defence capabilities on Thursday (6 October 2016) in Chişinău. Through the SPS Programme, the Alliance is engaging Moldovan scientists and experts in practical cooperation, forging research networks and supporting capacity building in the country.



04 October 2016 - NATO and partners discuss border security in Eastern Europe

Practitioners, think-tankers and high-level government officials gathered on 3 and 4 October 2016 to discuss defence-related border security issues in the breakaway regions during a conference in Chisinau, Moldova. The workshop – the second in the series – offered the opportunity to identify shared experiences and lessons learned. It also allowed to create a community that addresses issues beyond the event itself and promotes practical attempts towards long-term solutions in the field of border security.



30 July 2016 - NATO and Serbia foster security-related scientific cooperation

Over the last years, Serbia has become increasingly active within the framework of the NATO Science for Peace and Security (SPS) Programme and identified many areas for practical cooperation with NATO. An Information Day in Belgrade, Serbia on 30 June 2016 provided the opportunity to take stock of the successful SPS cooperation, to explore new areas of cooperation and to raise awareness about the Programme.



13 July 2016 - Border security in Eastern Europe: lessons for NATO and its partners

Experts and officials from across the public sector and international institutions gathered to discuss issues related to border security and resolving conflicts in Southern and Eastern Europe at a workshop in Kyiv, Ukraine, from 9 to 10 June 2016.



28 June 2016 - Arab Geopolitics in Turmoil – Perceptions, Unknowns and Policies

Ahead of the Warsaw Summit, in which NATO's strategy towards the South will be a key topic of the agenda, the Science for Peace and Security (SPS) Programme hosted a timely book discussion on Arab geopolitics. The publication resulted from an SPS Advanced Research Workshop (ARW) in cooperation with the NATO Defense College Foundation and the Gulf Research Center Foundation as well as the University of Jordan.



01 June 2016 - NATO and Ukraine take stock of successful scientific cooperation

Scientists, experts and policy makers from Ukraine, the region and NATO member states gathered for the Science for Peace and Security (SPS) Programme Information Day 2016 in Kyiv, Ukraine on 27 May. The event provided an opportunity for the dissemination of the tangible results achieved through practical cooperation and the implementation of SPS projects in Ukraine.



27 May 2016 - Remediating a fuel polluted military site in Ukraine

A military base in Ukraine established in 1975 serves as a fuel deposit, which supplies fuel to other military bases in its vicinity. This military base, located in the residential areas of Kyiv, has caused significant groundwater pollution and soil contamination. To help remedy this situation, an SPS flagship project-- The Remediation of Hydrocarbon Polluted Military Site in Ukraine – was launched in 2012, as a joint cooperative activity between experts from France and Ukraine. Modern equipment has been provided by NATO to help Ukraine remediate the pollution caused by this facility.



27 May 2016 - NATO supports humanitarian demining in Ukraine

Explosive remnants of war pose a significant threat to local populations in eastern Ukraine, and the authorities are making a great effort to defuse them. To help counter this growing threat, on behalf of the NATO Science for Peace and Security (SPS) Programme and in close cooperation with the NATO Support and Procurement Agency (NSPA), Ambassador Sorin Ducaru, NATO Assistant Secretary General for Emerging Security Challenges, transferred valuable equipment to the State Emergency Service of Ukraine (SESU).



27 May 2016 - Building a multinational telemedicine system

The NATO Science for Peace and Security (SPS) Programme project “A Multinational Telemedicine System for Emergency Situations” was a key topic of a round-table discussion at the Ukrainian Parliament in Kyiv on 27 May 2016, that was broadcast live on Ukrainian national TV. The high-level event was hosted by Dr Olga Bogomolets, Chairman of the Committee of the Ukrainian Parliament on Healthcare, and Advisor to the President of Ukraine on Humanitarian Issues.



26 May 2016 - NATO assists Ukraine in removal of obsolete weapons in Donetsk and Luhansk regions

KYIV, Ukraine, 26 May 2016 – Today, the State Emergency Service of Ukraine (SESU) received equipment from NATO for the removal and destruction of Explosive Remnants of War (ERW), including landmines, artillery, munitions and booby traps in the Donetsk and Luhansk regions. The equipment was provided through a partnership and cooperation programme between NATO and Ukraine developed within the framework of the NATO Science for Peace and Security (SPS) Programme, in close cooperation with the NATO Support and Procurement Agency (NSPA).



25 May 2016 - NATO trains Iraqi officers in countering Improvised Explosive Devices

NATO is helping Iraqi officers learn how to find and defuse Improvised Explosive Devices (IED). Between 1 May and 6 June 2016, two dozen officers are undertaking courses at the King Abdullah II Special Operations Training Centre in Amman, Jordan. NATO is also providing “train the trainer” instruction, enabling the officers to build the professionalism of the Iraqi forces by sharing their new skills with colleagues with the support of the NATO Counter Improvised Explosive Devices Centre of Excellence.



24 May 2016 - Taking action nationally on the Women, Peace and Security agenda

National action plans on Women, Peace and Security (WPS) are today the most common strategy used by 63 nations globally to show their commitment to the United Nations’ WPS agenda. While in the last few years there has been a proliferation of national action plans, implementation remains problematic.



18 April 2016 - Stressing the importance of NATO’s cooperation with the Asia-Pacific region based on academic research

Experts presented their final results and analyses of an academic Science for Peace and Security research project aimed at tracing NATO external images among the Alliance’s Global Partners in the Asia-Pacific. The event took place on 8 March 2016 at the Canberra-based Australian National University. Participants at the conference came up with a number of proposals and recommended that, in order to be highly effective, NATO’s strategy in communication with its Global Partners in Asia-Pacific should feature a distinct degree of differentiation.



26 February 2016 - Tackling border security challenges in Ukraine

Border security is a pressing issue for Ukraine, given the current security crisis in the country. Promoting good governance in the State Border Guard Services is one aspect of the problem that needs to be addressed. Experts from public institutions, international organisations, academia and non-governmental organisations gathered to discuss emerging border security challenges at a NATO-sponsored workshop in Kyiv on 25-26 February 2016.

Annex 5: Examples of Mainstream Media Coverage of SPS Activities in 2016

Activity	SPS Activity	Title of the Article	Date	Outlet/ Magazine	URL
G4985	G4985 - ARW Corruption at the Border: Fighting Corruption within Border Agencies in Ukraine	Nowe wyzwania dla bezpieczeństwa granic w 2016 roku. Eksperci alarmują	3 January 2016	Gazeta Przawa	http://www.gazetaprawna.pl/artykuly/915631.nowe-wyzwania-dla-bezpieczenstwa-granic-w-2016-roku-eksperci-alarmuja.html
G5122	G5122 - ARW Not Only Syria? Foreign Fighters: A Threat To NATO Allies And Their Neighbours. Energy Security	PISM is administering a NATO grant from the Science for Peace and Security Programme (SPS) NATO: Renewable Energy Can Save Soldiers' Lives	20 January 2016 1 February 2016	website The Polish Institute of International Affairs EcoWatch	https://www.pism.pl/About-us/Research/Projects/Ongoing-projects/PISM-is-administering-a-NATO-grant-from-the-Science-for-Peace-and-Security-Programme-SPS http://ecowatch.com/2016/02/01/nato-renewables-save-lives/
G4902	G4902 - ARW NATO Global Perceptions – Views from Asia-Pacific region	NATO Global Perceptions. Views from Asia-Pacific region	1 February 2016	website Tallinn University of Technology	http://www.ttu.ee/nato-global-perceptions
G4829	G4829 - MYP Multidisciplinary Metrics for Soldier Resilience Prediction and Training	Hrvatska, Izraeli i SAD razvijaju stres-test za izbor najboljin ratnika	20 February 2016	Jutarnji Vijesti	http://www.jutarnji.hr/vijesti/
G4895	G4895 - MYP Support for Implementing a Cyber Security Strategy for Jordan	Intellium joins NATO SPS project to help Jordan on Cyber Defense	26 February 2016	website Intellium	http://www.intelliumgroup.com/news/item/122-jordan2016
G4985	G4985 - ARW Corruption at the Border: Fighting Corruption within Border Agencies in Ukraine	The Ukrainian and international experts have discussed the main issues of effective opposition to the new threats on the border	27 February 2016	website State Border Service of Ukraine	http://dpsu.gov.ua/en/about/news/news_10889.htm
G4985	G4985 - ARW Corruption at the Border: Fighting Corruption within Border Agencies in Ukraine Energy Security	Bezpieczeństwo granic Ukrainy kluczowe z punktu widzenia wschodniej flanki NATO Secure energy supply for NATO armed forces	29 February 2016 1 March 2016	Defence 24 The European Security and Defence Union	http://www.defence24.pl/317141.bezpieczenstwo-granic-ukrainy-kluczowe-z-punktu-widzenia-wschodniej-flanki-nato http://www.magazine-the-european.com/cc/magazine/nav/4aa/4aa-f1f9-d331-dfa6-dff607b988f2.htm
	SPS Programme -Advanced Study Institutes (ASI)	NATO's science program funds materials research	1 March 2016	MRS Bulletin	https://www.cambridge.org/core/journals/mrs-bulletin

Activity	SPS Activity	Title of the Article	Date	Outlet/ Magazine	URL
G4919	G4919 - MYP Privacy Preserving Big Data Processing Using Cloud Computing	NATO taps UH professor to keep big data secure on the cloud	23 March 2016	EurekAlert	http://www.eurekalert.org/pub_releases/2016/03/uoh-ntu032316.php
G5093	G5093 - ATC Advanced Net Zero Energy Water and Waste Training	Advanced Net Zero Energy Water and Waste Training	1 April 2016	website ATC	http://training-course.de/
G4866	G - ARW Cultural Property Protection in Turin (ITA)	THE NATO SP COE PARTICIPATED IN THE DISTINGUISHED SCIENCE FOR PEACE ADVANCED RESEARCH WORKSHOP ON CULTURAL PROPERTY PROTECTION IN TURIN (ITA) APR. 12-15	18 April 2016	website NATO SP COE	http://www.nspcoe.org/info/news/2016/04/18/the-nato-sp-coe-participated-in-the-distinguished-science-for-peace-advanced-research-workshop-on-cultural-property-protection-in-turin-(ita)-apr.-12-15
G5044	G5044 - ARW Responses to Female Migration to ISIS	Remarks by David M. Luna 'Convergence: Human Trafficking and Criminal Exploitation by Da'esh of Women and Vulnerable Youth'	28 April 2016	website U.S. Department of State, Bureau of International Narcotics and Law Enforcement Affairs	http://www.state.gov/j/inl/iris/rm/2016/2566682.htm
G5093	G5093 - ATC Advanced Net Zero Energy Water and Waste Training	tremco ilbruck as sponsor at the NATO Advanced Training Course	2 May 2016	website Tremco ilbruck	http://www.tremco-ilbruck.com/en_INT/news/news/detail/tremco-ilbruck-as-sponsor-at-the-nato-advanced-training-course/
G-5093	G-5093 - ATC Advanced Net Zero Energy Water and Waste Training	Wiesbaden hosts NATO Net Zero forum	10 May 2016	website U.S. Army	https://www.army.mil/article/167608/wiesbaden_hosts_nato_net_zero_forum
G5123	G5123 - ARW Critical Infrastructure Protection Against Hybrid Warfare Security Related Challenges	NATO ARW – Critical Infrastructure Protection Against Hybrid Warfare	19 May 2016	website Horizon Intelligence	http://www.hozint.com/2016/05/nato-arw-critical-infrastructure-protection-against-hybrid-warfare/
G4589	G4589 - MYP Towards the Monitoring of Dumped Munition Threats	The silent killers on the ocean floor	25 May 2016	Radio Canada International	http://www.rcinet.ca/en/2016/05/25/the-silent-killers-on-the-ocean-floor/
	The Science for Peace Information Day - Ukraine	NATO Assistant Secretary General: "NATO and Ukraine share a common interest in discussing lessons learned from hybrid warfare"	25 May 2016	Website UNIAN Information Agency and Video on the national TV channel Kanal	http://www.unian.info/politics/1355953-nato-assistant-secretary-general-nato-and-ukraine-share-a-common-interest-in-discussing-lessons-learned-from-hybrid-warfare.html https://www.youtube.com/watch?v=UYN-jdTxN-8

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G5024	G5024 – MYP Support to Humanitarian Demining in Ukraine	Ukraine receives NATO equipment for demining in Donbas	26 May 2016	Website Interfax	http://ua.interfax.com.ua/news/general/346031.html http://7dniv.info/events/76090-ukraiinsk-protehnik-i-otrimali-obladnannia-dlia-rozmnuvannia-vid-nato.html
G5024	G5024 – MYP Support to Humanitarian Demining in Ukraine	Pyrotechnics from SESU received modern equipment from NATO	26 May 2016	Website of SESU and the Cabinet of the Ministers	http://www.kmu.gov.ua/control/publish/article?art_id=249063266 http://photo.ukrinform.ua/ukr/current/photo.php?id=771450
G4687	G4687 – MYP New Phytotechnology for Cleaning Contaminated Military Sites	Cabinet of Ministers: Assistant Secretary General of NATO and Deputy Defence Minister of Ukraine open environmental renovation project under NATO program	27 May 2016	Website of the Ukrainian Government and Video on Radio Liberty	http://www.kmu.gov.ua/control/en/publish/article?art_id=249066317&cat_id=244314975 https://www.youtube.com/watch?v=1fzGDRxNTHM http://www.radiosvoboda.org/content/news/27759713.html
G4748	G4748 – MYP Developing a Multinational Telemedicine System for Emergency Situations	NATO and Ukraine plan to create a training centre for the paramedics	27 May 2016	Website Lb.ua	http://world.lb.ua/news/2016/05/27/336231_ukraina_nato_planiuyut_sozdat.html?utm_source=local&utm_medium=cpm&utm_campaign=lenta
G4748	G4748 – MYP Developing a Multinational Telemedicine System for Emergency Situations	NATO countries spent over 100m dollars on medical treatment of Ukrainian military	27 May 2016	Website Lb.ua	http://en.lb.ua/news/2016/05/27/961_nato_countries_spent_over_100m.html?utm_source=local&utm_medium=cpm&utm_campaign=lenta
G5086	G5086 - ARW Terrorist Use of the Internet: Assessment and Response	Advanced Research Workshop supported by the NATO Science for Peace and Security Programme, Dublin 2016	1 June 2016	website The cyberterrorism project	http://www.cyberterrorism-project.org/aw/nato-workshop-dublin-2016
G5015	G5015 - ARW Border Security Challenges in Eastern Europe: Lessons for Allies and Partners	Border Security in Eastern Europe: Lessons for NATO and Partners	9 June 2016	Website The German Marshall Fund of the United States	http://www.gmfus.org/events/border-security-eastern-europe-lessons-nato-and-partners
G4585	G4585 - MYP Remediation of Hydrocarbon Polluted Military Site in Ukraine	Le BRGM coopère avec l'Ukraine pour la dépollution d'un site militaire	15 June 2016	website Bureau de Recherches Geologiques et Minieres Francais	http://www.brgm.fr/actualite/brgm-coopere-avec-ukraine-depollution-site-militaire?pk_campaign=twitter&pk_kwd=2016-06_ukraine

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G4560	G4560 - T-Whex: A Robust Monitoring Robot with Tuneable Compliant Actuators	SRBIJA I NATO PRAVE ROBOTAI! Ime mu je T-WHEX, a evo šta je sve u stanju da uradi!	1 July 2016	Telegraf Sport	http://www.telegraf.rs/vesti/2226067-srbija-i-nato-prave-robotaine-mu-je-t-whex-a-evo-sta-je-sve-u-stanju-da-uradi
G5159	G5159 - ARW Identification of Potential Terrorists and Adversary Planning — Emerging Technologies and New Counter-Terror Strategies	Azerbaijan's Embassy to US hosts reception for participants of NATO's conference	26 July 2016	Azertag	http://azertag.az/en/xerber/Azerbaijans_Embassy_to_US_hosts_reception_for_participants_of_NATOs_conference-976165
G5109	G5109 - ASI Development of Secure and Dependable Systems (Summer School Marktoberdorf 2016)	Schweizer Teilnehmer der Sommerschule Marktoberdorf entwickeln Werkzeug für Software-Uerprüfung	4 August 2016	Allgaeuer Zeitung	-
G4589	G4589 - MYP Towards the Monitoring of Dumped Munition Threats	The Baltic Sea and World War II Munitions: Focusing on a Cleanup	11 August 2016	Second Line of Defense	http://www.sidinfo.com/the-baltic-sea-and-world-war-ii-munitions-focusing-on-a-cleanup/
G4589	G4589 - MYP Towards the Monitoring of Dumped Munition Threats	Student's Post, on NATO Science for Peace and Security (SPS) Summer School on Sea Dumped Chemical Weapons, Canada	14 September 2016	Linkedin	https://www.linkedin.com/pulse/students-post-nato-science-peace-security-sps-summer-school-p-long
G4807	G4807 - MYP MORUS - Unmanned System for Maritime Security and Environmental Monitoring	Međunarodna konferencija podvodne robotike u Biogradu	26 September 2016	Zadarski List	http://www.zadarskiliblist.hr/clanci/26092016/međunarodna-konferencija-podvodne-robotike-u-biogradu
G5185	G5185 - MYP IED Disposal and Search Capacity Building for Iraq	Cum antreneaza NATO militarii irakieni care se lupta cu Statul Islamic sa-si elibereze tara	5 October 2016	Hot News	http://www.hotnews.ro/stiri-international-21332626-foto-video-reportaj-cum-antreneaza-nato-militarii-irakieni-care-lupta-statul-islamic-elibereze-tara.htm
G5083	G5083 - MYP Cyber Defence Laboratory and Training at the Technical University of Moldova	Republica Moldova își fortifică infrastructura privind asigurarea securității cibernetice	6 October 2016	website MDA Gouvernment	http://cancelaria.gov.md/ro/content/republica-moldova-isi-fortifica-infrastructura-privind-asigurarea-securitatii-cibernetice
G5221	G5221 - MYP Moldova's National Plan to Implement UN Security Council Resolution 1325	Trei proiecte în domeniul Securității Cibernetice au fost lansate la Chișinău	6 October 2016	Moldpres	http://www.moldpres.md/news/2016/10/06/16007946
G5024	G5024 - MYP Support to Humanitarian Demining in Ukraine	NSPA supports EOD teams in Ukraine	25 October 2016	website NSPA	http://www.nspa.nato.int/en/news/news-20161025-0.htm

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G5009	G5009 - MYP National system of crisis management coordination in Mauritania	Inauguration d'un centre de vigilance, d'alerte et de gestion des crises	9 November 2016	Horizon	-
G5086	G5086 - ARW Terrorist Use of the Internet: Assessment and Response	NATO Science for Peace and Security-funded Advanced Research Workshop on 'Terrorist Use of the Internet: Assessment and Response'	10 November 2016	Vox Pol	http://www.voxpol.eu/nato-science-peace-security-funded-advanced-research-workshop-terrorist-use-internet-assessment-response/
G4589	G4589 - MYP Towards the Monitoring of Dumped Munition Threats	Weapons buried at sea are a major threat to marine life: Study	14 November 2016	Digital Journal	http://www.digitaljournal.com/news/environment/weapons-buried-at-sea-is-a-major-threat-to-marine-life-study/article/479547#ixzz4W2JXY1an
G4589	G4589 - MYP Towards the Monitoring of Dumped Munition Threats	New NATO threat as WW2 weapons buried at sea set to poison world's oceans	15 November 2016	Daily Star	http://www.dailystar.co.uk/news/latest-news/562239/ww2-weapon-sea-ocean-contamination-chemical-risk-nato
	SPS Information Day in Armenia	Armenia attaches importance to NATO's Science for Peace and Security Programme	17 November 2016	Armen Press	http://armenpress.am/eng/news/868257/armenia-attaches-importance-to-nato%E2%80%99s-%E2%80%9Cscience-for-peace-and-security%E2%80%9D-program.html__
	NATO WEEK in Armenia	"NATO Week" ends in Yerevan	18 November 2016	Media Max	http://www.mediamax.am/en/news/society/20645/
G5150	G5150 - ARW Human Factors in the Defence against Terrorism: The Case of Jordan	Anti-extremism efforts must include promoting active citizenship, inclusive development — former PM	23 November 2016	Jordan Times	http://www.jordantimes.com/news/local/anti-extremism-efforts-must-include-promoting-active-citizenship-inclusive-development-%E2%80%94-former-pm
G4968	G4968 - MYP Advanced Regional Civil Emergency Coordination Pilot in the Western Balkans	NATO Adapts NICS for First Responders	28 November 2016	News Wise	http://www.newswise.com/articles/nato-adapts-nics-for-first-responders#.WFEcaQ2WVWVnpC.twitter
G4968	G4968 - MYP Advanced Regional Civil Emergency Coordination Pilot in the Western Balkans	NATO Adapts NICS, a Communications Platform for First Responders	28 November 2016	website Homeland Security	https://www.dhs.gov/science-and-technology/news/2016/11/28/news-release-nato-adapts-nics-first-responders
G4968	G4968 - MYP Advanced Regional Civil Emergency Coordination Pilot in the Western Balkans	Four NATO Members Adopt DHS Responder System	28 November 2016	MeriTalk	https://www.meritalk.com/articles/four-nato-members-adopt-dhs-responder-system/
G4968	G4968 - MYP Advanced Regional Civil Emergency Coordination Pilot in the Western Balkans	Enhancing Situational Awareness in Emergency	4 December 2016	iHLS	http://i-hls.com/2016/12/enhancing-situational-awareness-emergency/

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G4968	G4968 - MYP Advanced Regional Civil Emergency Coordination Pilot in the Western Balkans	UNAPREDENJE ODGOVORA NA PRIRODNE ILI DRUGE NESREĆE U ZEMLJAMA ZAPADNOG BALKANA	8 December 2016	website Ministarstvo sigurnosti Bosne i Hercegovine	http://msb.gov.ba/vijesti/najave/default.aspx?id=14778&langTag=bs-BA
G4968	G4968 - MYP Advanced Regional Civil Emergency Coordination Pilot in the Western Balkans	Započeo projekt "Napredna regionalna koordinacija u izvanrednim situacijama u zemljama jugoistočne Europe	9 December 2016	Dužs	http://duzs.hr/news.aspx?newsID=24119&pageID=203

Annex 6: List of Books Published Under the NATO Science for Peace and Security Series 2016

SPS Reference	Title	Editors	Series	Publisher	Volume
G4596	<u>Nuclear Radiation Nanosensors and Nanosensory Systems</u>	Kervalishvili, Paata J., Yannakopoulos, Panayotis H.	Series B: Physics and Biophysics	Springer	N/A
G4713	<u>Non-Proliferation, Safety and Nuclear Security</u>	Gerlini, M., Chetaine, A.	Series E: Human and Societal Dynamics	IOS Press	126
G4776	<u>Fundamental and Applied Nano-Electromagnetics</u>	Antonio Maffucci, Sergey A. Maksimenko	Series B: Physics and Biophysics	Springer	N/A
G4789	<u>Meeting Security Challenges through Data Analytics and Decision Support</u>	Shahbazian, E., Rogova, G.	Series D: Information and Communication Security	IOS Press	47
G4858	<u>Countering Terrorist Recruitment in the Context of Armed Counter-Terrorism Operations</u>	Ekici, S., Akdoğan, H., Ragab, E., Ekici, A., Warnes, R.	Series E: Human and Societal Dynamics	IOS Press	125
G4909	<u>Dependable Software Systems Engineering</u>	Esparza, J., Grumberg, O., Sickert, S.	Series D: Information and Communication Security	IOS Press	45
G4910	<u>Nanomaterials for Security</u>	Bonča, Janez, Kruchinin, Sergei	Series A: Chemistry and Biology	Springer	N/A
G4918	<u>International Crisis Management: NATO, EU, OSCE and Civil Society</u>	Goda, S., Tytarchuk, O., Khyliko, M.	Series E: Human and Societal Dynamics	IOS Press	184
G4985	<u>Addressing Security Risks at the Ukrainian Border Through Best Practices on Good Governance</u>	Kęsek, R., Boroda, M., Jóźwik, Z	Series E: Human and Societal Dynamics	IOS Press	129
G5022	<u>Countering Hybrid Threats: Lessons Learned from Ukraine</u>	Iancu, N., Fortuna, A., Barna, C., Teodor, M.	Series E: Human and Societal Dynamics	IOS Press	128
G5123	<u>Critical Infrastructure Protection Against Hybrid Warfare - Security Related Challenges</u>	Niglia, A.	Series D: Information and Communication Security	IOS Press	46



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