



The Secretary General's  
**Annual Report**

**2021**





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# FOREWORD



Romanian IAR 330 helicopters transport Special Forces troops during Exercise Steadfast Defender 2021. Cincu, Romania, May 2021.



UK soldiers during cold weather training in Estonia. UK and Estonian soldiers took part in Exercise Winter Camp, training in temperatures as low as minus 20 degrees Celsius. Estonia, February 2021.

## Europe and North America United and Stronger Together in Turbulent Times

In a more dangerous and competitive world, NATO continues to do whatever is necessary to keep our people, nations and values safe.

Over the past year, Russia's aggressive rhetoric and actions have continued apace, culminating in the brutal and unprovoked invasion of Ukraine in late February 2022. President Putin has been clear that his objectives are not limited to Ukraine. He has demanded legally binding agreements to end further NATO enlargement, and to remove troops and infrastructure from NATO Allies that joined after 1997 — almost half of the Alliance. For the first time ever, in an agreement signed between Russia and China in early February 2022, Beijing has sided with Moscow in calling on NATO to stop admitting new members.

As this report goes to print, President Putin's war in Ukraine — enabled by Belarus — still rages, killing innocent civilians, destroying cities and infrastructure and causing millions to flee the country. In response, NATO Allies continue to

step up support for Ukraine, impose economic costs on Russia, and bolster our deterrence and defence. In recent weeks, we have more than doubled our military presence in the eastern part of the Alliance, with more troops, aircraft and ships, to protect and defend every inch of Allied territory.

We have entered a new era in global security, where authoritarian powers, like Russia and China, are openly contesting core principles for our security, and seeking to re-write the entire international order on which our peace and prosperity depend. Moscow is using force to pursue its objectives. At the same time, other challenges to our security have not gone away, including terrorism, nuclear proliferation, cyber attacks, disruptive technologies and climate change.

Faced with this new reality, Europe and North America must continue to stand united and work closely together in a strong NATO. This is exactly



what we are doing. At our Brussels Summit in June 2021, we agreed an ambitious and forward-looking NATO 2030 agenda. In this report, you will read about the concrete actions NATO has taken to adapt our Alliance politically and militarily to an ever-changing world.

At our Madrid Summit in June 2022, we will take further steps to implement the NATO 2030 decisions and modernise our Alliance for the future. We will continue to strengthen NATO's long-term deterrence and defence posture and increase our readiness. We will agree clear resilience objectives to make sure that our societies and critical infrastructure are less vulnerable to attack. We will also continue to accelerate transatlantic innovation to ensure we retain our technological edge, with the full launch of the Defence Innovation Accelerator for the North Atlantic (DIANA) and the Innovation Fund. We will agree an ambitious target to reduce our militaries' impact on the climate. To address global challenges, we will boost our support and cooperation with like-minded partners, including the European Union.

In Madrid, we will also endorse NATO's next Strategic Concept, the most important guiding document for our Alliance after our founding North Atlantic Treaty. The 2022 Strategic Concept will reflect our new security reality, reaffirm NATO's core values and purpose, and drive the ongoing adaptation of our Alliance.

According to polls commissioned by NATO in 2021, over 80% of citizens in Allied countries believe

that the cooperation between Europe and North America on security matters is important. While our security environment has changed dramatically in the last decade, our fundamental values have not, and neither has NATO Allies' commitment to protect and defend each other. The bond between Europe and North America is stronger than ever. Together in NATO, we will continue to keep our one billion people safe and free.



Jens Stoltenberg  
NATO Secretary General

# NATO AT A GLANCE



Meeting of the North Atlantic Council at the level of heads of state and government during the 2021 Brussels Summit. Brussels, Belgium, June 2021.



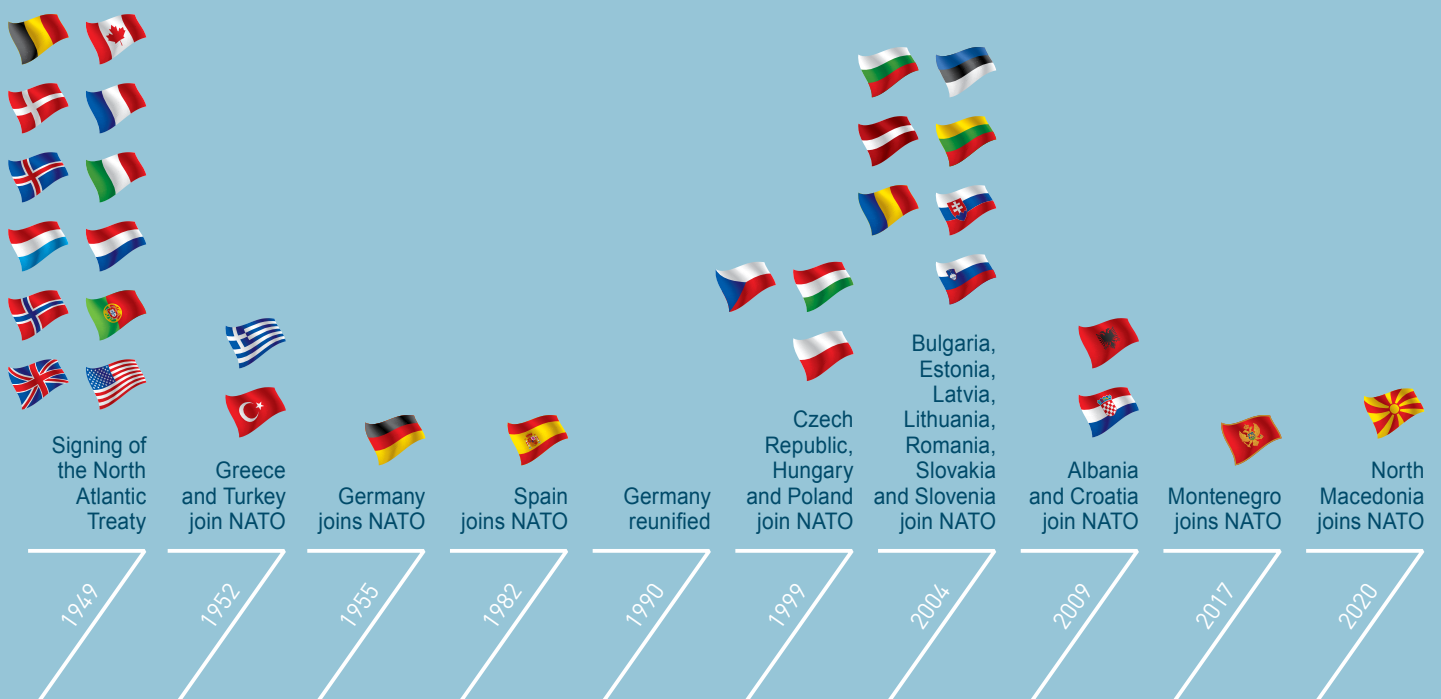
Together, NATO Allies represent one billion people and roughly half of the world's economic and military might.

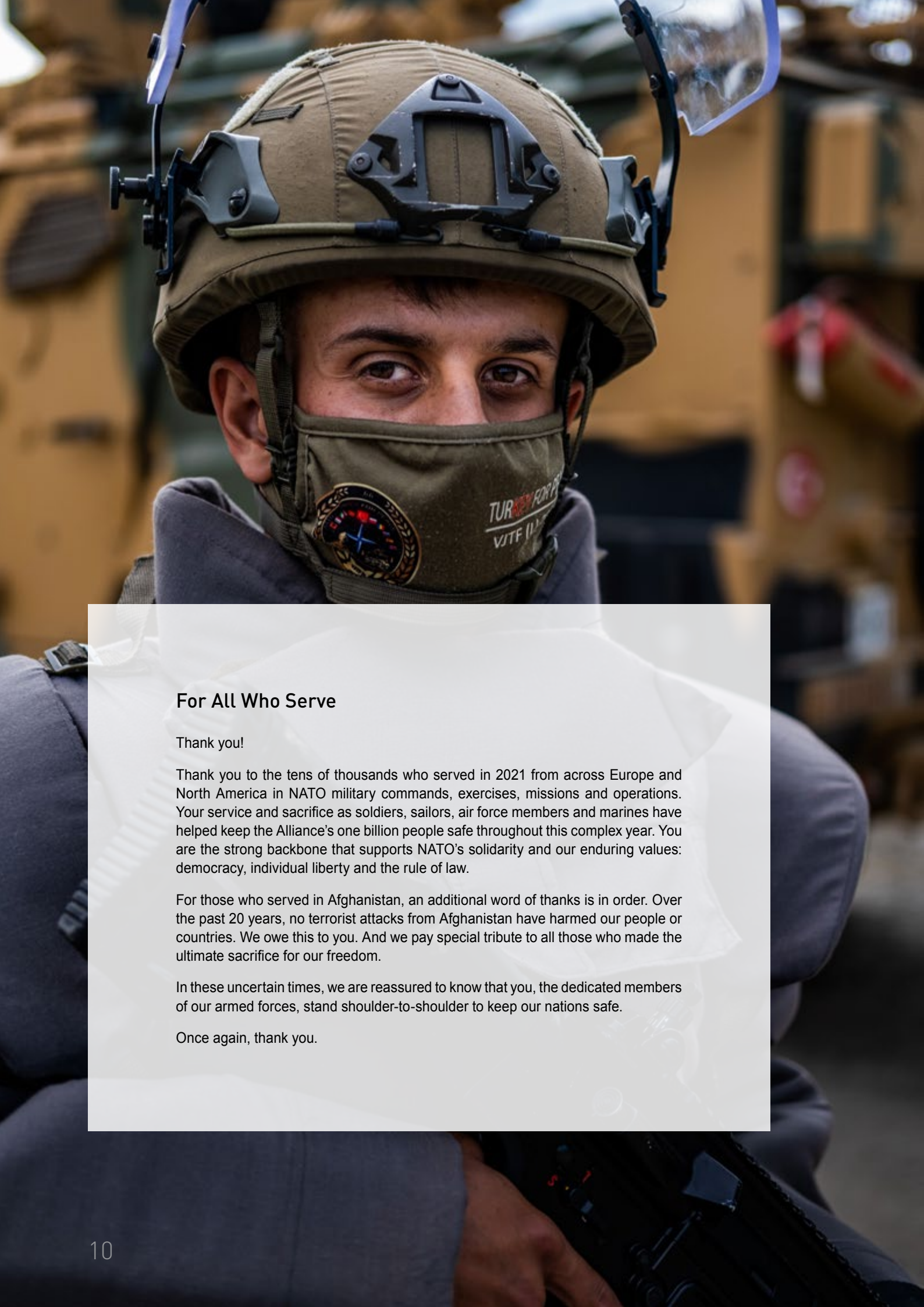
## Why Was NATO Founded?

The North Atlantic Treaty Organization was founded in 1949 in the aftermath of the Second World War. Its essential purpose is to safeguard the freedom and security of all its members by political and military means. The principle of collective defence is at the very heart of NATO's founding document — the North Atlantic Treaty. This principle, enshrined in Article 5 of the Treaty, binds NATO Allies together, committing them to protect each other against attack. NATO strives to secure a lasting peace in Europe, based on common values of democracy, individual liberty and the rule of law.

## How Many Member States Are There?

The Alliance started with 12 founding members: Belgium, Canada, Denmark, France, Iceland, Italy, Luxembourg, the Netherlands, Norway, Portugal, the United Kingdom and the United States. The North Atlantic Treaty allows other European states to join the Alliance, as long as all existing Allies agree. Any prospective member must share NATO's core values and have the capacity and willingness to contribute to security in the Euro-Atlantic area. Over the decades, the following 18 countries have joined NATO: Greece and Turkey (1952), Germany (1955), Spain (1982), the Czech Republic, Hungary and Poland (1999), Bulgaria, Estonia, Latvia, Lithuania, Romania, Slovakia, and Slovenia (2004), Albania and Croatia (2009), Montenegro (2017) and North Macedonia (2020). All 30 NATO Allies are stronger and safer together than they would be alone.





## For All Who Serve

Thank you!

Thank you to the tens of thousands who served in 2021 from across Europe and North America in NATO military commands, exercises, missions and operations. Your service and sacrifice as soldiers, sailors, air force members and marines have helped keep the Alliance's one billion people safe throughout this complex year. You are the strong backbone that supports NATO's solidarity and our enduring values: democracy, individual liberty and the rule of law.

For those who served in Afghanistan, an additional word of thanks is in order. Over the past 20 years, no terrorist attacks from Afghanistan have harmed our people or countries. We owe this to you. And we pay special tribute to all those who made the ultimate sacrifice for our freedom.

In these uncertain times, we are reassured to know that you, the dedicated members of our armed forces, stand shoulder-to-shoulder to keep our nations safe.

Once again, thank you.





Turkish (left) and Romanian (right) soldiers. Romania, May 2021.





**BRUSSELS**

14 VI 2021  
Summit





# PREPARING FOR THE FUTURE: NATO 2030

NATO  
OTAN

BRUXELLES

14 VI 2021  
Sommet





Bilateral meeting between NATO Secretary General Jens Stoltenberg and President of the United States Joe Biden in the margins of the 2021 Brussels Summit. Brussels, Belgium, June 2021.

*Through NATO 2030, we are adapting to a more competitive world.  
Our ambitions must be high, as the challenges to our security are great.*

NATO Secretary General Jens Stoltenberg, previewing the NATO Summit in Brussels at event organised by NATO, the German Council on Foreign Relations (DGAP) and the Brookings Institution. Brussels, Belgium, 4 June 2021.

NATO 2030 is an ambitious initiative, led by Secretary General Jens Stoltenberg, to make sure NATO remains ready, strong and united for a new era of increased global competition.

Throughout 2020 and 2021, the Secretary General consulted widely with Allies on how to make NATO even stronger and better prepared for the future. He also received valuable input from an independent group of experts.<sup>1</sup> In addition, the Secretary General engaged with civil society, young people, parliamentarians and the private sector to gather ideas that ultimately helped shape the NATO 2030 agenda.

NATO Allies endorsed this agenda at the Brussels Summit on 14 June 2021. It consists of eight key proposals.

### Enhancing Political Dialogue and Consultations

NATO is the unique and indispensable forum for transatlantic consultations. Allies committed to

consulting even more on all issues that affect transatlantic security. These include issues like arms control, climate change and security, and emerging and disruptive technologies. Allies also agreed to take steps to re-establish consultations on economic matters related to security, such as export controls and technology transfers.

### Strengthening Deterrence and Defence

NATO Allies' commitment to collective defence, against all threats, is ironclad. Allies agreed to enhance NATO's ability to deter and defend, notably by rapidly and fully implementing the plans to strengthen their military posture, continuing to increase the readiness of their forces, modernising their capabilities and investing more in defence. They reiterated the importance of continuing to aim to meet the NATO-agreed guideline of spending 2% of Gross Domestic Product on defence and 20% of annual defence spending on major new equipment by 2024.

### Improving Resilience

Strong societies are NATO's first line of defence. Allies decided to raise the level of ambition when it comes to resilience to better protect the critical infrastructure on NATO territory, make societies

<sup>1</sup> The group was co-chaired by Thomas de Maizière (Germany) and A. Wess Mitchell (United States), and consisted of John Bew (United Kingdom), Greta Bossenmaier (Canada), Anja Dalgaard-Nielsen (Denmark), Marta Dassù (Italy), Anna Fotyga (Poland), Tacan Ildem (Turkey), Hubert Védrine (France), and Herna Verhagen (the Netherlands). The group submitted its report "NATO 2030: United for a New Era" to the Secretary General in November 2020.



NATO Secretary General Jens Stoltenberg engages with the NATO 2030 Young Leaders Group on their vision of the future of the transatlantic Alliance, one that “guards its strengths and values with the one hand and embraces change with the other”. The event “New Ideas for NATO 2030” was organised by NATO and Chatham House. Brussels, Belgium, February 2021.

less vulnerable to attack and coercion, and ensure NATO militaries can operate at all times. To do this, Leaders agreed to develop resilience objectives to guide nationally tailored resilience goals and implementation plans. They also decided to designate a senior official to coordinate efforts on the national level, and enhance and streamline consultations within NATO.

### Preserving NATO’s Technological Edge

NATO’s ability to innovate has always been key to its success. In times of rising competition, it is essential to sharpen NATO’s technological edge. Allies agreed to set up a Defence Innovation Accelerator for the North Atlantic (DIANA) to boost transatlantic cooperation on critical technologies, promote interoperability and harness civilian innovation by engaging with academia and the private sector, including start-ups. Allies also agreed to establish a NATO Innovation Fund to invest in start-ups working on dual-use and emerging and disruptive technologies in areas that are critical to Allied security.

### Upholding the Rules-Based International Order

NATO has a role to play in upholding the rules-based international order, together with the broader international community. Allies committed to stepping up efforts to uphold that order, including by strengthening NATO’s partnerships with like-minded

countries, and exploring opportunities for new engagements around the world. They reaffirmed the importance of the Open Door policy. Allies also took steps to further deepen and strengthen cooperation with the European Union.

### Boosting Training and Capacity-Building

When NATO’s neighbours are more stable, the Alliance is more secure. Experience shows that prevention is better than intervention when it comes to contributing to stability. Allies agreed to step up NATO efforts to build the capacity of partners in areas like counter-terrorism, stabilisation, countering hybrid attacks, crisis management, peacekeeping and defence reform.

### Combatting and Adapting to Climate Change

Climate change is a defining challenge of our time with a direct impact on Allied security. Allies endorsed the Climate Change and Security Action Plan in June 2021, with the aim of making NATO the leading international organisation in understanding and adapting to the impacts of climate change on security. They decided to monitor and track climate change much more closely at NATO; assess its impact on assets and installations Alliance-wide; integrate climate change into NATO planning and exercises; and partner with industry to invest in green technologies. Allies also invited the Secretary General to develop a target for the reduction of greenhouse gas emissions by the NATO political and military structures and facilities, and to assess the feasibility of reaching net zero emissions by 2050.

### Toward NATO’s Next Strategic Concept in 2022

Allies invited the Secretary General to lead the process to develop NATO’s next Strategic Concept in time for the NATO Summit in Madrid in June 2022. The Strategic Concept is a key document that outlines NATO’s enduring purpose and nature, and its fundamental security tasks. It also identifies the central features of the security environment, specifies the elements of the Alliance’s strategy, and provides guidelines for its future political and military adaptation.







# DETERRENCE, DEFENCE AND DIALOGUE

KEEPING OUR PEOPLE SAFE

UK soldier, based with NATO's enhanced Forward Presence Battlegroup in Estonia, during a cold weather training exercise. Estonia, February 2021.

*To keep our people safe in today's unpredictable world, we must continue to strengthen and modernise our deterrence and defence. To do this, three things are key: strong, capable forces; robust, resilient societies; and a global perspective.*

NATO Secretary General Jens Stoltenberg, first Strategic Concept seminar — Deterrence and Defence in the 21st Century. Brussels, Belgium, 13 December 2021.

NATO faces the most complex security environment since the end of the Cold War. In response, the Alliance has engaged in its biggest adaptation in a generation — increasing investments, modernising capabilities and investing in higher force readiness.

In 2021, Allies took further steps to ensure that the right forces are in the right place at the right time, including by continuing to invest in readiness and in the Alliance's rapid response capability. NATO has further implemented its Readiness Initiative, agreed in 2018. Designed to strengthen the culture of readiness within the Alliance and help provide forces within 30 days or less, the initiative also helps ensure that the Alliance is able to respond on short notice and quickly reinforce national forces on land, in the air and at sea — be it for crisis intervention or high-intensity warfighting. At the Brussels Summit in June 2021, Allies also agreed to further strengthen and modernise the NATO Force Structure — encompassing the national and multinational forces available to NATO — to meet current and future deterrence and defence needs.



*Readiness is a key part of NATO's posture. Allies are taking important steps to further strengthen and modernise the NATO Force Structure and to improve readiness. I'm proud to have supported these efforts in 2021.*

**Kadri Metspalu (Estonia)**

Policy Officer, Defence Capabilities Section  
NATO Headquarters, Brussels, Belgium

## NATO's Military Adaptation

NATO has developed two high-level military concepts that establish the direction for NATO's ongoing adaptation. The first one, the Concept for the Deterrence and Defence of the Euro-Atlantic Area, provides the Alliance with a framework to respond to major known threats. The concept supports proactive planning to tackle potential crises and conflict. It improves the organisation, command and control of Allied forces and capabilities. In short, it enhances NATO's ability to respond to any contingency.

The second concept, the NATO Warfighting Capstone Concept, sets a 20-year vision for NATO Allies to maintain military advantage. Based on current and emerging threats, it details the military instrument NATO needs to protect its one billion citizens, and sets a realistic path to achieve that goal through the Warfare Development Agenda. The concept enables NATO to preserve and strengthen its military and technological advantage even as the character of conflict evolves.





## Deploying Forces, Enhancing Readiness, Accelerating Responsiveness

In 2021, NATO maintained its forward presence in the eastern part of the Alliance. In the Baltic Sea region, the Alliance continued to deploy four battalion-size multinational and combat-ready battlegroups led by the United Kingdom in Estonia; by Canada in Latvia; by Germany in Lithuania; and by the United States in Poland. The battlegroups — involving thousands of troops from multiple NATO Allies — conducted 15 joint training activities and exercises in 2021. For example, in April, June and September, exercise Ramstein Alloy engaged Estonia, Latvia, Lithuania and partners Finland and Sweden in a collective defence (Article 5) scenario to promote interoperability and coordination, primarily in the air domain. These exercises are key to sustaining and developing readiness and interoperability among Allied forces. NATO's forward presence is defensive, proportionate and fully in line with the Alliance's international commitments and its aim to preserve peace and stability.



*Being a photographer on this deployment has allowed me to see all of the elements that make up a NATO Battlegroup and gain an understanding of how NATO functions in a joint environment.*

**Rachael Seaman (United Kingdom)**  
Sapper, enhanced Forward Presence (Estonia)

Polish tanks during Exercise Eager Leopard 2021.  
Pabrade, Lithuania, September 2021.

## NATO's Forward Presence in 2021



In the Black Sea region, Allies contribute forces and capabilities to support a forward presence on land, at sea and in the air. In 2021, Allies stepped up cooperation in air training and air policing, increased the activities of NATO's Standing Naval Forces and trained Allied land forces via the multinational framework brigade in Craiova, Romania. In July, maritime exercise Breeze 2021 brought together more than 2,000 forces and 30 ships from 12 NATO Allies — Albania, Belgium, Bulgaria, Greece, Italy, Latvia, Poland, Romania, Spain, Turkey, the United Kingdom and the United States — as well as NATO partners Georgia and Ukraine.



Portuguese marines (the Fuzileiros) and navy divers practise skills and tactics in Lithuania. Stealth can be key to securing the objectives of the Portuguese Fuzileiros. Using light inflatable boats, reconnaissance teams move quietly by water, keeping as low a profile as possible. Lithuania, July 2021.





Turkish soldiers from NATO's Very High Readiness Joint Task Force following a training patrol held as part of Exercise Steadfast Defender 2021. This task force is a rapidly deployable multinational unit made up of land, air, maritime and special operations forces. Romania, May 2021.

Further reinforcing its forward presence in the eastern part of Alliance, NATO established the NATO Response Force Network, a standing network governance and management structure. The network supports the 40,000-troop NATO Response Force, which is prepared to deploy in a defence scenario alongside NATO's 5,000-troop-strong Very High Readiness Joint Task Force, Allies' additional high-readiness forces and NATO's heavier follow-on forces. In addition, the network integrates the various command, control, information and communications technology capabilities of troop-contributing nations.

In 2021, in response to increased Russian military activities in the spring and autumn, Allies conducted land, sea and air activities along the Alliance's eastern borders to reassure local populations throughout the region and reinforce national defences. These assurance measures enhance vigilance, deter potential aggression and increase the security of the Alliance as a whole.



A US Army Chinook helicopter lifts an M-777 Howitzer during Exercise Swift Response 2021 in Estonia. Swift Response was a US Army-led multinational exercise involving more than 7,000 paratroopers from 10 NATO Allies. Estonia, May 2021.

### **Enablement: Enhancing NATO's Mobility**

Every NATO deployment — whether to defend an Allied country or aid civilians in a crisis — entails mobilising and transporting troops, vehicles, equipment, supplies and fuel. Enabling effective military mobility for Allied countries — via land, sea and air — is critically important to improve NATO's agility and its ability to rapidly deploy and sustain forces throughout the Alliance.

NATO's enablement work has been underway for some time, with its scope involving multiple governmental, civil and commercial dimensions. In 2021, Allies led efforts to further increase transport capabilities, enhance command and control, improve legislation and upgrade critical infrastructure in Europe. In addition, work continued on fuel supply and distribution arrangements. To advance these efforts, NATO continued working with the European Union in the area of military mobility.

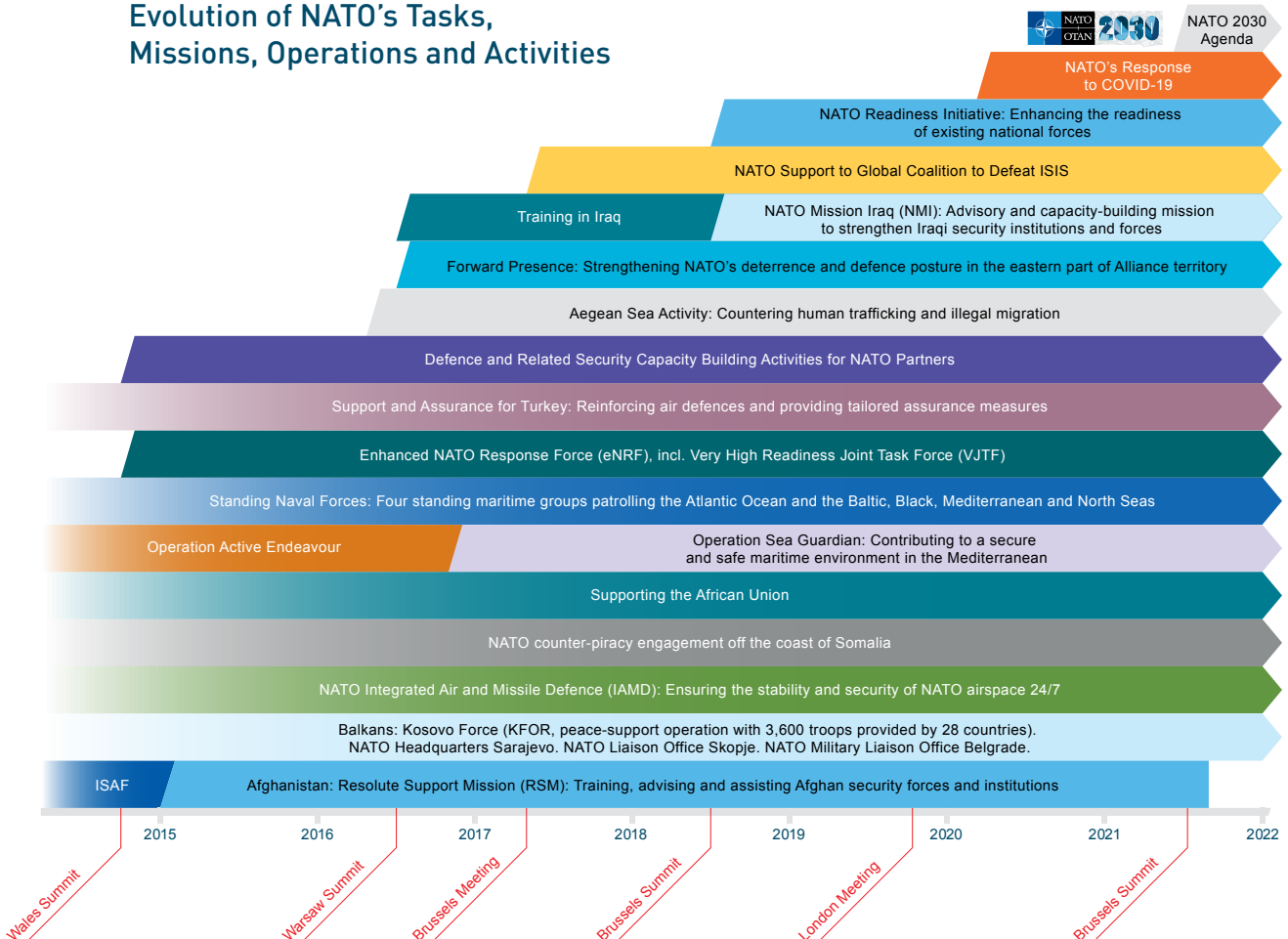
In the Alliance's southern neighbourhood, Allies reaffirmed their commitment to supporting Turkey in responding to potential security challenges in that region. With a continued commitment by Spain,

NATO maintained its additional support to Turkey by augmenting its air defence capabilities with the deployment of missile defence batteries.

NATO also continued to strengthen its capacity to deal with the threats and challenges emanating from the south — including in the Mediterranean Sea region — by enhancing its strategic awareness, its planning and the readiness of its forces. Specifically, the Alliance invested in capabilities for expeditionary operations and conducted exercises with scenarios

relevant to the south. NATO's ongoing contributions to fighting terrorism included its participation in the Global Coalition to Defeat Daesh/ISIS and regional partnerships. The Alliance's Regional Hub for the South, at Allied Joint Force Command Naples, Italy, also provided situational awareness on trends in the region.

## Evolution of NATO's Tasks, Missions, Operations and Activities







The Arleigh Burke-class guided-missile destroyer USS Paul Ignatius successfully fires a Standard Missile-3 interceptor to engage a ballistic missile target during Exercise At-Sea-Demonstration/Formidable Shield. British Isles, May 2021. U.S. Navy photo by Mass Communication Specialist 2nd Class Nathan T. Beard/Released.

## Deterrence and Defence in the Air

NATO's Integrated Air and Missile Defence is an essential mission contributing to NATO's overall deterrence and defence. This mission safeguards Alliance territory, populations and forces. It stands ready to counter all air and missile threats emanating from any direction.

Both state and non-state actors continue to develop and deploy offensive air and missile assets, which are of concern to the Alliance. Potential challenges range from relatively simple unmanned aerial systems to sophisticated hypersonic missiles. Many of these systems can reach NATO territory or place NATO forces at risk. Because of this, NATO has continued to enhance its Integrated Air and Missile Defence mission and has taken steps to improve force readiness and responsiveness.

Allies have further increased their ability to implement all necessary measures to rapidly ensure the security of the Alliance, including through the effective training and exercising of Integrated Air and Missile Defence forces. Allies have also committed to further improving NATO Integrated Air and Missile Defence capabilities, including sensors, interceptors, and command and control. In January 2021, the Integrated Air and Missile Defence Centre of Excellence in Greece was launched as a NATO-accredited international military body. The new centre contributes to enhancing the interoperability and development of NATO Integrated Air and Missile Defence capabilities. It also provides additional opportunities for research, experimentation and education.



*In 2021, Allies strengthened NATO's Integrated Air and Missile Defence mission, a key element of deterrence and defence. In that context, I helped establish a new senior Integrated Air and Missile Defence policy committee, and negotiate Integrated Air and Missile Defence and Ballistic Missile Defence tasks and principles agreed in the Brussels Summit communique.*

**Radoslava Stefanova (Italy, Bulgaria)**

Head, Integrated Air  
and Missile Defence Section  
NATO Headquarters, Brussels, Belgium





Two Italian F-35 fighters fly over Estonia during interception training as part of NATO Air Policing Exercise Ramstein Alloy, Estonia, June 2021.



Norwegian force protection soldiers with an F-35 taking off in the background during Icelandic Air Policing 2021. Keflavik, Iceland, February 2021.

### Safe Skies: 60 Years of NATO Air Policing

Established 60 years ago, NATO's Air Policing mission secures Alliance airspace in peacetime. It is also a tangible expression of Alliance solidarity. Allies that do not possess full air policing capabilities are protected by other Allies that do.

In 2021, Hungary and Italy covered Slovenia's airspace, while Greece and Italy protected Albania and Montenegro. NATO's Air Policing mission has also supported NATO's newest Ally, North Macedonia, whose airspace in 2021 was covered by Italy. Rotational deployments of air policing capabilities provided support to the Baltic States, Bulgaria, Iceland, Poland and Romania, while the Belgian and Dutch Air Forces secured Benelux<sup>2</sup> airspace.

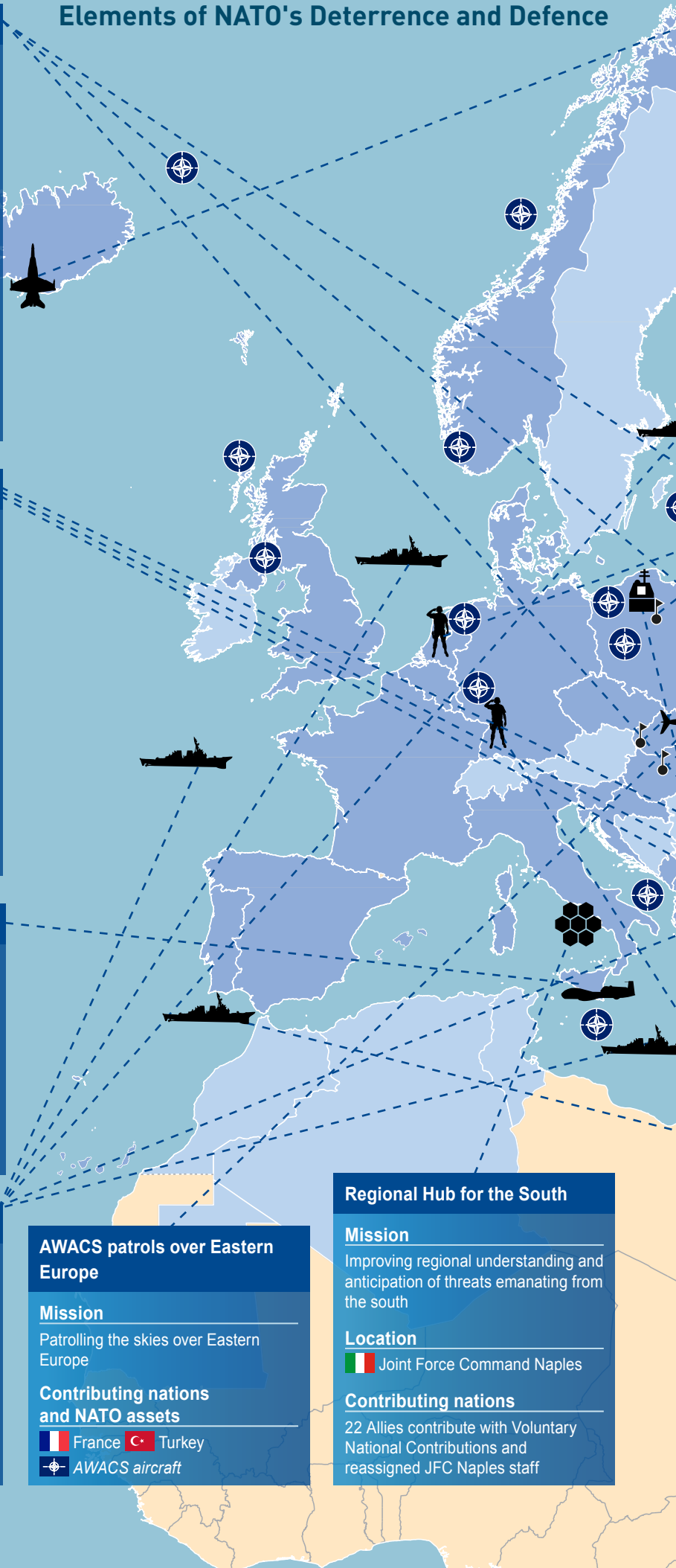
Across Europe, NATO fighter jets are on duty around the clock, ready to scramble in case of suspicious or unannounced flights near the airspace of Allies. NATO fighter jets scrambled around 370 times across Europe in 2021, mostly to check aircraft flying unannounced near Allied air space. Roughly 80% of the missions, 290 in total, were in response to flights by Russian military aircraft. Most of the intercepts in 2021 occurred in the Baltic region. Generally, intercepts occurred without incidents as NATO planes take off to identify the approaching aircraft and escort it out of the area. Very few intercepted flights entered Allied airspace.

At the NATO Summit in June 2021, Allies reaffirmed their commitment to the NATO Ballistic Missile Defence mission. This purely defensive mission aims to provide full protection to all NATO European populations, territory and forces from the increasing threats posed by the proliferation of ballistic missiles. The mission's main concern remains missiles that could potentially be launched from outside the Euro-

Atlantic area, for example from the Middle East, where Iran and Syria continue to develop and deploy missiles that could reach NATO territory. Among the assets currently placed under NATO command and control are US radars and interceptors in Romania and Turkey. Additional assets would be provided by Allies in times of crisis.

2 Belgium, Luxembourg and the Netherlands.

# Elements of NATO's Deterrence and Defence



### Air Policing

**Mission**  
Protecting the airspace of the eastern flank of the Alliance

**Location**  

 Bulgaria, Estonia, Latvia, Lithuania, Poland, Romania

**Contributing nations**  

 Canada (Mihail Kogălniceanu, Romania), Denmark (Šiauliai, Lithuania), Germany (Ämari, Estonia and Mihail Kogălniceanu, Romania), Italy (Šiauliai, Lithuania and Ämari, Estonia), Portugal (Šiauliai, Lithuania), Spain (Šiauliai, Lithuania and Mihail Kogălniceanu, Romania), Turkey (Malbork, Poland), United Kingdom (Mihail Kogălniceanu, Romania)

### Support and Assurance for Turkey

**Mission**  
Reinforcing air defences and providing tailored assurance measures for Turkey

**Location**  

 Turkey

**Contributing nations**  

 Poland (Incirlik, Turkey) - *Maritime Patrol Aircraft*  
 Spain (Adana, Turkey) - *Surface-to-air missile batteries*

**NATO assets**  

 NATO (Konya, Turkey) - *AWACS surveillance aircraft*  
 Allies also contribute through increased Standing Naval Forces port calls, participation in exercises and Intelligence, Surveillance and Reconnaissance activities

### Joint Intelligence Surveillance and Reconnaissance

**Mission**  
Supporting decision-makers with timely information and intelligence

**Contributing nations and NATO assets**  

 Belgium, Bulgaria, Czech Republic, France, Germany, Greece, Italy, Norway, Poland, Spain, Turkey, United Kingdom, United States  

 NATO - *AGS AWACS aircraft*

### Standing Naval Forces

**Mission**  
Providing the Alliance with a continuous naval presence

**Location**  
The Atlantic Ocean, the Baltic, Black, Mediterranean and North Seas

**NATO assets**  

 NATO - *Standing NATO Maritime Groups (SNMG1 & 2), Standing NATO Mine Countermeasures Groups (SNMCMG1 & 2)*

### AWACS patrols over Eastern Europe

**Mission**  
Patrolling the skies over Eastern Europe

**Contributing nations and NATO assets**  

 France, Turkey  

 AWACS aircraft

### Regional Hub for the South

**Mission**  
Improving regional understanding and anticipation of threats emanating from the south

**Location**  

 Joint Force Command Naples

**Contributing nations**  
22 Allies contribute with Voluntary National Contributions and reassigned JFC Naples staff

Note: Map data display contributions by Allies in 2021

**Iceland Peacetime Preparedness**

**Mission**  
Protecting Iceland's airspace

**Location**  
Iceland, Keflavik

**Contributing nations**  
Norway, Poland, United States

**NATO Force Integration Units**

**Mission**  
Facilitating the rapid deployment of NATO forces

**Location**  
Bulgaria, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia

**Contributing nations**  
27 Allies and partner nations

**Enhanced NATO Response Force / Very High Readiness Joint Task Force**

**Mission**  
Ready to deploy at short notice for crisis management or collective defence

**Location**  
Joint Force Command Naples (eNRF 2021)  
France, Italy, Turkey

**Contributing nations**  
Enhanced NATO Response Force (eNRF): 31 NATO Allies and Partners  
Very High Readiness Joint Task Force (VJTF): 26 NATO Allies

**NATO's Forward Presence**

**Mission**  
Strengthening NATO's deterrence and defence

**Location**  
Bulgaria, Estonia, Latvia, Lithuania, Poland, Romania

**Contributing nations**

ESTONIA	<b>Framework nation:</b> United Kingdom
	Denmark, France, Iceland
LATVIA	<b>Framework nation:</b> Canada
	Albania, Czech Republic, Iceland, Italy, Montenegro, Poland, Slovakia, Slovenia, Spain
LITHUANIA	<b>Framework nation:</b> Germany
	Belgium, Czech Republic, Iceland, Luxembourg, Netherlands, Norway
POLAND	<b>Framework nation:</b> United States
	Croatia, Romania, United Kingdom
BLACK SEA, BULGARIA AND ROMANIA	Bulgaria, Canada, France, Germany, Hungary, Italy, Luxembourg, Poland, Portugal, Romania, Spain, Turkey

**Ballistic Missile Defence**

**Mission**  
Protecting NATO's populations, territory and forces

**Location**  
Germany, Poland, Romania, Spain, Turkey

**NATO assets**

- United States (Rota, Spain) - US Aegis BMD-capable ships
- United States (Deveselu, Romania) - Aegis Ashore
- United States (Kürecik, Turkey) - BMD tracking sensor
- United States (Redzikowo, Poland) - Aegis Ashore (under construction)
- NATO (Ramstein, Germany) - Allied Air Command

- NATO members
- NATO partners
- Cooperation suspended
- Key NATO and Allied exercises

For more on NATO exercises please refer to pages 74-79

0 500 km





### NATO and Luxembourg Boost Alliance Situational Awareness in Space

At the Brussels Summit, NATO and Luxembourg signed a joint statement to develop a Strategic Space Situational Awareness System in the Situation Centre's Geospatial Section at NATO Headquarters. With funding from Luxembourg of EUR 6.7 million, this capability will allow the Alliance to better understand space objects and space events, as well as their effects across all operational domains. The project will support NATO's Space Centre established in Ramstein, Germany in 2020.

## Deterrence and Defence in Space

In 2019, NATO recognised space as a new military operational domain, along with land, air, sea and cyberspace. At the NATO Summit in June 2021, Allies reaffirmed that secure access to space services, products and capabilities is essential for the Alliance's operations, missions and activities. They agreed that attacks to, from or within space present a clear challenge to the security of the Alliance, could be as harmful to modern societies as a conventional attack and could lead to the invocation of the mutual defence clause (Article 5) of the North Atlantic Treaty.

To implement space as an operational domain, the Alliance is enhancing its space domain awareness and common understanding of the space environment. To that end, NATO announced plans in 2021 to develop a Strategic Space Situational Awareness System at NATO Headquarters in Brussels. In addition, NATO's military authorities have accepted an offer from France to establish a NATO Centre of Excellence devoted to space in Toulouse. NATO also agreed on a roadmap for further implementation of NATO's Space Policy in the upcoming years to guide NATO's efforts in a number of areas, including science and technology, resilience and exercises. In 2021, space operational activities were integrated into several exercises, including Steadfast Jupiter, Ramstein Ambition

and Steadfast Leda. These exercises involved the development and management of space effects and the integration of space products.

NATO's Space Centre at Allied Air Command in Ramstein, Germany continued to build its capacity as a focal point for space data and products. The centre is designed to connect with national space entities to ensure that NATO's missions and operations can benefit from Allied space services such as imagery, navigation, early warning and communication.

The Alliance continues to face a challenging space security environment with emerging risks, vulnerabilities and potential threats. In November 2021, the North Atlantic Council issued a statement strongly condemning the "reckless and irresponsible" anti-satellite missile test conducted by the Russian Federation on 15 November 2021. This test created an orbital debris field that significantly increased risk to human life and to the space-based assets of numerous nations and entities.

NATO Allies remain committed to protecting and preserving the peaceful access to and exploration of space and call upon all nations to join the international efforts to develop norms, rules and principles of responsible behaviour to reduce space threats.

## Dual-Track Approach to Russia: Deterrence and Defence, and Dialogue

In 2021, NATO continued to pursue a two-track policy toward Russia: defence and dialogue.

After the end of the Cold War, NATO worked diligently to build a win-win strategic partnership with Russia, based on dialogue and practical cooperation in areas of common interest. For more than 30 years, NATO has worked to build a partnership with Russia. At the 1990 London Summit, as the Cold War was coming to an end, the Alliance extended a hand of friendship, offering dialogue and partnership in place of confrontation and distrust. Key milestones in the NATO-Russia relationship included the 1997 signing of the NATO-Russia Founding Act and the 2002 creation of the NATO-Russia Council, established to serve as the primary forum for dialogue and cooperation between NATO Allies and Russia. No other partner has been offered a comparable institutional relationship.

In 2014, as a consequence of Russia's illegal and illegitimate annexation of Crimea, NATO suspended all practical cooperation with Russia. Allies decided that there can be "no business as usual" until Russia returns to compliance with international law.

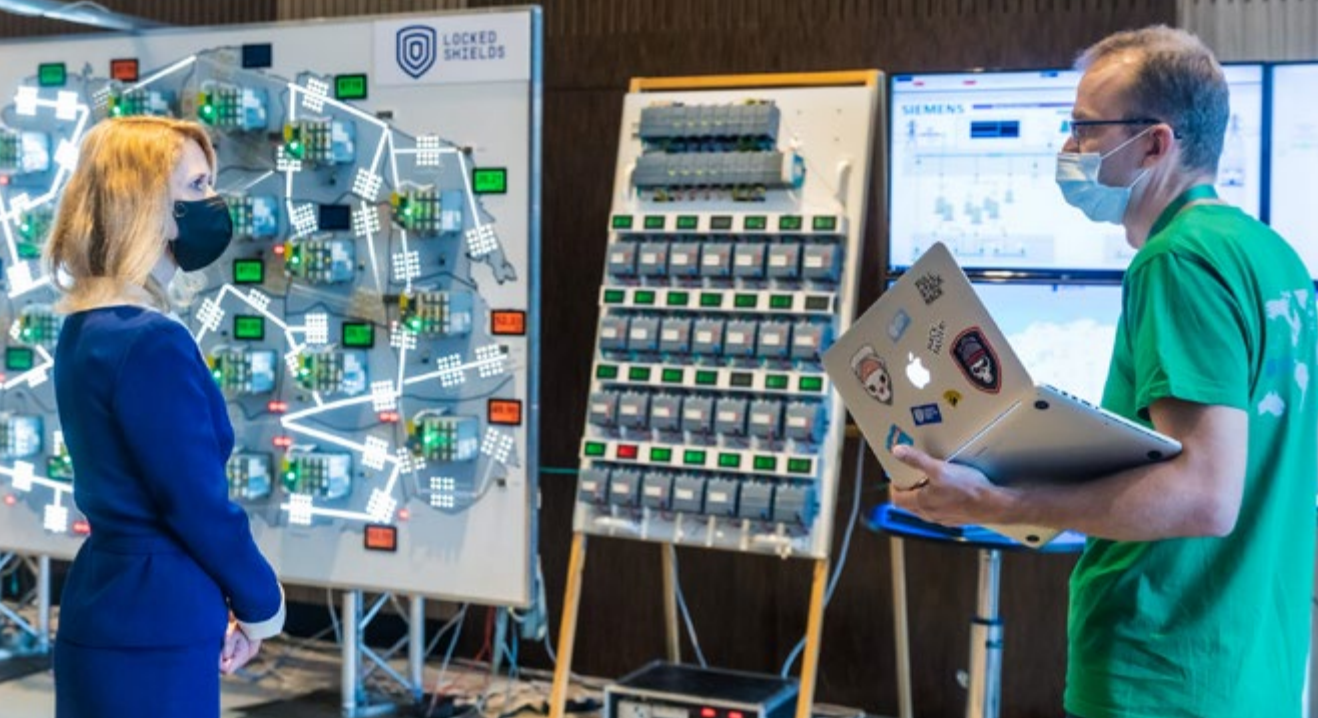
In 2021, Allies remain concerned about Russia's destabilising policies and provocative military activities near NATO's borders, as well as by its conventional and hybrid activities, including the military build-up in and around Ukraine in 2021. Russia continued to conduct no-notice and large-scale exercises, such as its Zapad 2021 exercise, contravening its international obligations under the Vienna Document and further straining the already tense NATO-Russia relationship.

NATO's defence-and-dialogue approach allows the Alliance to respond to the deteriorated security environment caused by Russian aggressive

behaviour. This is why Allies continued to strengthen their deterrence and defence capabilities, while remaining open to a focused, periodic and meaningful dialogue with Russia. Through its readiness for dialogue, NATO demonstrates its commitment to resolving critical issues peacefully and to avoiding misunderstandings, miscalculation and unintended escalation.

NATO remained open to dialogue in the NATO-Russia Council to address international security issues, as well as to increase transparency and predictability. In 2021, Russia consistently declined NATO's invitations to convene a meeting of the NATO-Russia Council. Russia's decision to suspend the operations of its Brussels-based Mission to NATO, as of November 2021, further hampered the ability to pursue meaningful dialogue between Russia and the Alliance. Moreover, its decision to close down the NATO Information Office in Moscow and to suspend the work of the NATO Military Liaison Mission in Moscow further hindered the lines of communication between NATO and Russia.

Nonetheless, some contact between high-level officials continued. In September 2021, NATO Secretary General Jens Stoltenberg met with Russian Foreign Minister Sergey Lavrov in the margins of the 76th Session of the United Nations General Assembly in New York. Issues discussed included NATO-Russia relations, Russia's aggressive actions against Ukraine, transparency and risk reduction, arms control, and the situation in Afghanistan. The Secretary General underscored NATO's commitment to its dual-track policy towards Russia.



Locked Shields is the largest and most complex international live-fire cyber defence exercise in the world, organised annually by the NATO Cooperative Cyber Defence Centre of Excellence. In 2021, the exercise included new cyber-physical systems and integrated technical and strategic elements, enabling participating nations to exercise the entire chain of command in solving a large-scale cyber incident. Tallinn, Estonia, April 2021.

## Comprehensive Approach to Cyber Defence

Cyber threats continued to evolve in 2021, with an increase in disruptive and malicious cyber campaigns, including damaging ransomware attacks by state and non-state actors. These malicious attacks targeted critical infrastructure and supply chains in Allied and partner countries. To address this challenge, Allies endorsed NATO's Comprehensive Cyber Defence Policy. This marked a milestone in defining NATO's approach to cyber defence for the next decade. Allies underscored that cyber threats to the Alliance are complex, destructive, coercive and becoming ever more frequent, with cyberspace continually being contested.

The Alliance is determined to employ — in accordance with NATO's defensive mandate and international law — its full range of capabilities to deter and counter cyber threats, including those conducted as part of hybrid campaigns.

Effective cyber defence requires a comprehensive approach that unites efforts on the political, military and technical levels.

NATO must be able to protect its networks, operate seamlessly in cyberspace and promote a norms-based approach in cyberspace. This requires shared situational awareness among Allies, as well as the



*In 2021, we worked to boost the Cyberspace Operations Centre's ability to conduct cyber operations. I feel proud we showcased the progress made during exercise Steadfast Jupiter.*

**Lieutenant Colonel Bram Verhoeff MA  
(The Netherlands)**

Staff Officer, Cyber Defence and Effects  
at Cyberspace Operations Centre  
SHAPE, Mons Belgium

ability to detect, prevent and respond to intrusions in real-time.

In cyberspace, the Alliance is only as strong as its weakest link. At the 2021 Summit, Allies agreed that resilience and the ability to detect, understand and respond to new vulnerabilities are becoming ever more crucial. The Cyber Defence Pledge,

adopted in 2016 at the Warsaw Summit, remains a key means to build national resilience. Through the Pledge, Allies work to develop their cyber workforce, recruit experts through innovative approaches such as cyber reserve programmes, and invest in cyber defence capabilities and expertise. NATO pursues these defensive efforts through a whole-of-government approach that recognises the roles the military, government, industry and academia play in delivering resilient cyber defences.

Allies are committed to promoting a free, open, peaceful and secure cyberspace. This means standing up for these values and the rules-based international order. In July 2021, the North Atlantic Council issued a statement condemning malicious cyber activities, including the Microsoft Exchange Server compromise. NATO issued this statement alongside individual Allies as well as partner countries and other international organisations.

## Improving Allied Resilience

NATO's commitment to strengthening collective and national resilience is rooted in Article 3 of the North Atlantic Treaty. The resilience challenges that NATO seeks to address range from cyber attacks, hazardous materials incidents and terrorism to natural disasters, such as pandemics or climate-related events.

NATO places significant emphasis on helping increase Allies' preparedness for crises. NATO's work on resilience focuses on assisting Allies to meet seven baseline requirements for national resilience, which address vital national functions such as the continuity of government as well as the provision of health care and critical infrastructure services related to transport, communications, energy, food and water.



*With the introduction of societal resilience in the Strengthened Resilience Commitment at the 2021 Summit, NATO Leaders reconfirmed the important contribution of citizens and societies to broader resilience and defence.*

**Khan Jahier (The Netherlands)**

Policy Adviser, Enablement and Resilience  
NATO Headquarters, Brussels, Belgium

## NATO's Seven Baseline Requirements for National Resilience

- Assured continuity of government and critical government services
- Resilient energy supplies
- Resilient food and water resources
- Resilient civil communications systems
- Resilient transportation systems
- Ability to deal effectively with uncontrolled movement of people
- Ability to deal with mass casualties



In June 2021, NATO agreed on proposals to enhance societal resilience, encourage Allies to further recognise the role citizens play as enablers of national resilience and to continue to take steps to enhance the resilience of their citizens and societies in the broader interest of their national security and defence.

Moving forward, enhancing cooperation with partner nations and international organisations, in particular the European Union, remains a top priority at NATO for building resilience. The European Union and NATO deepened their dialogue in the field of civil preparedness and resilience in an effort to harness synergies between both organisations.

### Resilience and COVID-19

The ongoing COVID-19 pandemic continued to test the Alliance's resilience.

NATO helps Allies and partner nations in the fight against COVID-19 by providing support and assistance. Building on the lessons learned concerning the medium- to long-term implications of the pandemic in the field of civil preparedness and resilience, Allies revised the resilience baseline requirements in October 2021 and added evaluation criteria for individual Allies to measure their level of preparedness to deal with future high-impact, transboundary crises of similar scale and complexity.



Ambassador Dubravka Lalović, Permanent Representative of Montenegro to NATO, and Mr Marc Di Paolo, Director of Defence Institution and Capacity Building Directorate in the Operations Division of the NATO International Staff, sign an agreement for the purchase of a magnetic resonance imaging scanner and x-ray machine, in response to the COVID-19 pandemic. The donated equipment will be used in a hospital in the northern city of Berane to reduce the pressure on the Clinical Center in Podgorica, which is the only city that has comparable equipment. Brussels, Belgium, May 2021.





The consequence management exercise North Macedonia 2021 was co-organised by NATO's Euro-Atlantic Disaster Response Coordination Centre and the Crisis Management Centre of North Macedonia. Area of Ohrid and Struga, North Macedonia, September 2021.

### **Resilience and Disaster Relief: The Euro-Atlantic Disaster Response Coordination Centre**

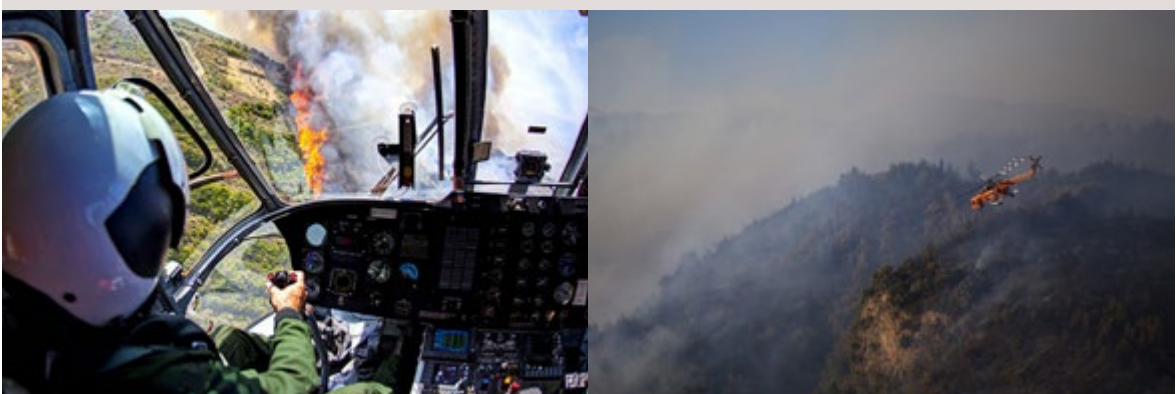
The Euro-Atlantic Disaster Response Coordination Centre is NATO's principal civil emergency response mechanism working with Allies and partners to respond to natural and human-caused disasters. It functions as a clearing-house mechanism for the coordination of requests by affected nations and offers of assistance. The Centre works closely with the United Nations Office for the Coordination of Humanitarian Affairs and with the European Union's Emergency Response Coordination Centre, both in exercises and real-life emergencies.

In 2021, the Centre continued to coordinate the Alliance's COVID-19 response by reacting to 19 pandemic-related requests for assistance and supported a request from North Macedonia to respond to wildfires in August 2021.

Since the establishment of the Pandemic Response Trust Fund in 2020, 21 Allies and two partners have made financial contributions of more than EUR 5 million and in-kind contributions of medical equipment to the NATO stockpile, including ventilators from Hungary, Slovakia and the United States, disinfectant detergents from Latvia and personal protective equipment from Germany and Poland.

Throughout 2021, the Centre implemented 24 Pandemic Response Trust Fund projects to support three Allies and six partners. This assistance enhanced the resilience of the beneficiaries' national health systems during recurring waves of the pandemic, reducing the pressure in central hospitals and augmenting national inventories with modern medical equipment to save the lives of infected patients.

The NATO stockpile, established in June 2020 at the NATO Support and Procurement Agency's Southern Operational Centre in Taranto, Italy, maintains a stock of rapidly deployable medical equipment and supplies.



In summer 2021, Greece faced devastating wildfires, forcing thousands to evacuate and threatening landscapes, natural resources and historical sites in the country. The Greek authorities requested the support of the NATO Support and Procurement Agency, which assisted the Hellenic Fire Brigade with helicopters, pilots, crewmembers and mechanics. Eight heavy-lift and 12 medium-lift helicopters with different capabilities were deployed to different strategic locations in Greece. August 2021. Photo by Erickson Inc. (NSPA contractor).



Operators from the Royal Danish Army's Special Forces, the Jaeger Corps, unleash their combat assault dog, Kaos, during Exercise Night Hawk 21. Hosted by Denmark, Nighthawk brought together Special Operations Forces from 13 NATO Allies and partners to test their ability to coordinate on a series of complex counter-terrorism and hybrid warfare scenarios. Denmark, October 2021.

## Addressing Hybrid Threats

The combination of military and non-military tools by hostile states or non-state actors remains a major and growing security challenge. Hostile information campaigns or cyber attacks seek to hit Allied nations below the threshold of an armed attack, with the aim to destabilise and divide communities without fear of retribution. Hybrid threats can also undermine NATO's collective defence, for example, by disrupting timely reinforcements in strategic sectors such as transport and communications. NATO uses a variety of non-military tools to support the Alliance's three core tasks of collective defence, crisis management and cooperative security. NATO also serves as a platform for enhancing the coherent use of non-military tools by Allies, under their own authority and control and alongside other international actors.

In 2021, NATO stepped up its efforts to respond to hybrid threats. Work started on comprehensive and preventive response options, fusing military and non-military instruments to signal to potential aggressors that they will not achieve their aims. Allies also systematically analyse vulnerabilities linked to Chinese and Russian hybrid activity, as

well as the potential use of emerging and disruptive technologies in hybrid campaigns.

In September 2021, at Lithuania's request, NATO deployed a Counter Hybrid Support Team to that country. The team of experts assisted Lithuanian authorities in analysing the migration-related campaign conducted by Belarus, and supported Lithuania's efforts to bolster preparedness and enhance resilience against hybrid threats. This second deployment of a Counter Hybrid Support Team — the first took place in Montenegro in November 2019 — demonstrated that NATO can help Allies respond to hybrid threats below the threshold of military action.

NATO also deepened cooperation with the European Union, exchanging best practices on hybrid threats and responses. Staff from both organisations also continued to work closely with the Helsinki-based European Centre of Excellence for Countering Hybrid Threats, including through participating in the Centre's exercises and workshops.

## Transparency and Risk Reduction: Conventional Arms Control in Europe

In 2021, conventional arms control remained a NATO priority. Verifiable conventional arms control helps to maintain peace and security by limiting military forces in the Euro-Atlantic area, as well as by providing transparency and predictability for military deployments, manoeuvres and exercises.

To be effective, however, arms control agreements must be implemented fully and in good faith by all parties. Allies have continued to point out the need for Russia to uphold key conventional arms control agreements (such as the Vienna Document and the Treaty on Open Skies) and to re-implement the



Bonnie Denise Jenkins, United States Under Secretary of State for Arms Control and International Security, meets with NATO Deputy Secretary General Mircea Geoană at NATO Headquarters, Brussels, Belgium, October 2021.

Treaty on Conventional Armed Forces in Europe. These agreements have established the standards for verification, transparency and risk reduction in the Euro-Atlantic region, leading to increased predictability and security.

Allies deeply regret the Russian withdrawal on 18 December 2021 from the Treaty on Open Skies and Russia's long-standing failure to implement the Treaty on Conventional Armed Forces in Europe. These actions undermine security and stability in the Euro-Atlantic area. Allies also continuously expressed their commitment to conventional arms control as a key element of Euro-Atlantic security.

Since 2014, Allies have underscored that Russia's military intervention in Ukraine has undermined peace, security and stability across the region. In 2021, Russia deployed troops and combat equipment in and around Ukraine, raising serious security concerns and failing to comply with transparency and risk reduction obligations and commitments.

In light of these developments, Allies continued to pursue the modernisation of the Vienna Document on military transparency, within the Organization for Security and Co-operation in Europe. Under the Vienna Document, participating States commit to confidence- and security-building measures, including annual exchanges of military information about forces in Europe, consultations about unusual military activities, prior notifications and observations of military activities, and inspection visits.

NATO Allies have consistently stood by the letter and the spirit of the Vienna Document. In 2021, Allies notified the Organization for Security and Co-operation in Europe of military exercises well in advance and in most cases well below the notification thresholds.

Russia, by contrast, continued to conduct large-scale exercises, including snap exercises. One such military exercise was Zapad 2021. While the Russian Ministry of Defence stated that 200,000 military personnel were involved in the exercise, Russia continued to flout its commitments to mandatory military transparency by refusing to provide for a required Vienna Document observation. In fact, since the end of the Cold War, Russia has repeatedly failed to open exercises for mandatory Vienna Document observation. NATO calls on Russia to act in a predictable and transparent way in compliance with its international obligations.



*I was able to contribute to transparency and risk reduction by supporting Allies in coordinating their arms control activities. This was all the more important in light of the impact the COVID-19 pandemic had on Allied verification activities.*

**Julia Freese (Germany)**

Officer, Arms Control, Disarmament & WMD  
Non-Proliferation Centre  
NATO Headquarters, Brussels, Belgium





A Bulgarian chemical, biological, radiological and nuclear technician decontaminates his comrade following a hazardous materials sweep during consequence management exercise North Macedonia 2021. Area of Ohrid and Struga, North Macedonia, September 2021.

## Defending against Weapons of Mass Destruction and Chemical, Biological, Radiological and Nuclear Threats

In 2021, NATO worked with Allies, partners and other international organisations to combat the proliferation of weapons of mass destruction and to defend against chemical, biological, radiological and nuclear threats.

NATO remained engaged in building the capacity of Allies and partners to counter these serious threats. Training courses were held both virtually and in-person by the NATO School in Oberammergau, Germany and the Joint Chemical, Biological, Radiological and Nuclear Defence Centre of Excellence in Vyškov, Czech Republic. As part of NATO's commitment to helping partners address the threats posed by these weapons, the Centre of Excellence delivered a successful online pilot training to the NATO Istanbul Cooperation Initiative Regional Centre.

NATO and Allies continued to support the Treaty on the Non-Proliferation of Nuclear Weapons. Key measures included coordinating Allies' contributions to the 10th Treaty Review Conference, planned for

2022; continuing efforts on strategic risk reduction; and providing support for a range of international initiatives that directly support the non-proliferation treaty. While remaining fully committed to the Treaty as the only credible path to nuclear disarmament, NATO and Allies continued to oppose the Treaty on the Prohibition of Nuclear Weapons noting that this treaty remains at odds with the existing non-proliferation and disarmament architecture, lacks a verification mechanism and does not reflect the increasingly challenging security environment.

In September 2021, NATO held its 17th annual conference on Weapons of Mass Destruction, Arms Control, Disarmament and Non-Proliferation in Copenhagen. Taking part were 120 representatives from more than 50 NATO Allies, partners and other countries, including representatives from the European Union, the International Atomic Energy Agency, the Organisation for the Prohibition of Chemical Weapons, the Organization for Security and Co-operation in Europe, and the Comprehensive Nuclear-Test-Ban Treaty Organization. Opening

the conference, NATO Secretary General Jens Stoltenberg underlined the importance of preserving the Nuclear Non-Proliferation Treaty, while emphasising the need to strengthen and modernise existing arms control instruments. The conference considered a number of other key actions needed to uphold international norms against the use of chemical weapons, to address the broader missile challenge to NATO Allies and partners, and to enhance NATO's contribution to arms control, disarmament and non-proliferation.

In 2021, NATO's Science and Technology Organization completed a long-term scientific study

on weapons of mass destruction and chemical, biological, radiological and nuclear threats. Some 70 scientists from Allied and partner nations worked on this study for five years, producing a significant compendium of scientific advice that will provide a sound basis for collaboration by NATO and its partners to strengthen their defence posture against these threats.

The Czech Republic assumed the annually rotating role of Framework Nation of NATO's modernised Combined Joint Chemical, Biological, Radiological and Nuclear Defence Task Force.

## Countering Illicit Small Arms, Light Weapons, and Mines

Over the past 25 years, NATO has worked with partner countries to counter the illicit manufacture, transfer and trade of small arms and light weapons and their ammunition — weapons with devastating security and humanitarian consequences. NATO Allies and partners have also addressed the deadly threat of abandoned landmines, improvised explosive devices and other dangerous remnants of war that continue to kill and maim civilian populations, as well as Allied and partner forces.

NATO Allies coordinate efforts and share information, integrate small arms and light weapons into security sector reform projects and provide expertise for physical security and stockpile management of these weapons.

Throughout 2021, NATO took steps to further integrate comprehensive weapons and ammunition management into its overall partnership efforts. Of particular importance is Allied support for national and regional initiatives to destroy surplus conventional ammunition, a central plank in NATO's efforts to combat the proliferation of small arms and light weapons. In the Western Balkans, for example, the Alliance continued to support the destruction of remaining national stocks of surplus conventional

ammunition. In Serbia, NATO supported the ongoing process of destroying surplus ammunition — approximately 462 tonnes by the end of 2021. NATO oversaw in 2021 the destruction of conventional ammunition totalling 356 tonnes in Bulgaria, 240 tonnes in Jordan and 1,124 tonnes in Ukraine.

Also in 2021, Allies worked with Mediterranean Dialogue partners to continue to identify areas for practical cooperation to curb the proliferation of small arms and light weapons trafficking and reduce the threat of landmines and other explosive devices. These collaborations included support in the destruction of ammunition, physical security and stockpile management, and training and education.

In 2021, NATO conducted virtually a "Small Arms, Light Weapons and Mine Action" course and developed a new online training course on the NATO Guidelines for Gender Mainstreaming in Small Arms and Light Weapons Projects. The course, which will be made available in 2022, is intended to increase awareness among practitioners, Allies and partners about the importance of considering gender and diverse perspectives in designing weapons management projects.

## Ensuring Safe, Secure and Effective Nuclear Deterrence

NATO Defence Ministers met in October 2021 to address the challenges of maintaining a safe, secure and effective nuclear deterrent — a deterrent that has preserved peace for decades — in light of growing nuclear challenges around the world. Russia is modernising, diversifying and expanding its nuclear capabilities — among other actions by increasing the quality and quantity of its non-strategic nuclear weapons. China is rapidly expanding its nuclear arsenal with more warheads and sophisticated delivery systems. It is doing so with no constraint and with a complete lack of transparency. North Korea continues its nuclear expansion, and Iran is increasing its stockpile of enriched uranium above previously agreed levels.

The Defence Ministers endorsed a new overarching plan to defend the Alliance in a more complex and competitive world. The plan includes steps to strengthen the Alliance's dual-capable aircraft mission, address the opportunities and challenges posed by emerging and disruptive technologies, and reduce nuclear risks.

Exercise Steadfast Noon kicked off on 18 October 2021. This annual week-long exercise helps to ensure that NATO's nuclear deterrent remains safe, secure and effective. Fourteen NATO countries

participated in the exercise, which included training flights with dual-capable and conventional fighter jets backed by surveillance aircraft.

In 2021, NATO continued to broaden its understanding of nuclear deterrence issues. In April, Sir Lawrence Freedman, a leading British scholar in the field of nuclear deterrence and strategy, briefed NATO's North Atlantic Council. In November, NATO hosted its annual Nuclear Policy Symposium, which brought together policymakers from across the Alliance to discuss a range of challenges and ways to ensure the ongoing credibility of NATO's deterrence. Among these are NATO's nuclear sharing arrangements, which Secretary General Jens Stoltenberg said in an address to the North Atlantic Council are of "unique importance to our collective deterrence and defence". He also noted that "NATO's aim is a world free of nuclear weapons, but as long as they exist, NATO will remain a nuclear Alliance".







CAUTION  
HOT SURFACE

WARNING - Do not  
WITHIN 3 FEET'S (1)

RESCUE  
EMERGENCY CANOPY  
RELEASE ON OTHER SIDE

DANGER  
HOT METALS  
NO ENTRY



# INVESTING IN DEFENCE



Two Italian F-35 Lightning II fighters leave their hangar at Ämari Air Base in Estonia as part of NATO Air Policing exercise Ramstein Alloy. Ämari, Estonia, July 2021.



*We must continue to invest in the capabilities to deter and defend ourselves on land, in the air and at sea. But we must also be able to do so in cyberspace and in outer space. Areas that will be of critical importance in future conflicts.*

NATO Secretary General Jens Stoltenberg,  
Deterrence and Defence Seminar, Brussels, Belgium. 13 December 2021.

## The 2014 Defence Investment Pledge

At the 2014 NATO Summit, Allies endorsed the Defence Investment Pledge. The pledge recognises that fair burden-sharing is the foundation of the Alliance. It calls for all Allies to meet the NATO-agreed guideline of spending 2% of Gross Domestic Product (GDP) on defence by 2024. It also calls for Allies to spend at least 20% of annual defence expenditure on major new equipment, including related research and development, within the same time frame. Finally, the pledge commits Allies to ensuring that their land, air and maritime forces meet NATO-agreed guidelines for deployability, sustainability and other metrics, and that these forces can operate together effectively, including through the implementation of NATO standards and doctrines.

The threats and security challenges that led to the adoption of the Defence Investment Pledge in 2014 have not subsided. Indeed, they have multiplied and intensified. By investing in defence, NATO Allies continue to develop, acquire and maintain the forces and capabilities required to ensure the Alliance's security in this challenging and unpredictable environment.

For seven consecutive years, European Allies and Canada have increased defence spending. From 2020 to 2021, defence spending increased by 3.1% in real terms. In total, over the last seven years, this increase added USD 270 billion for defence.

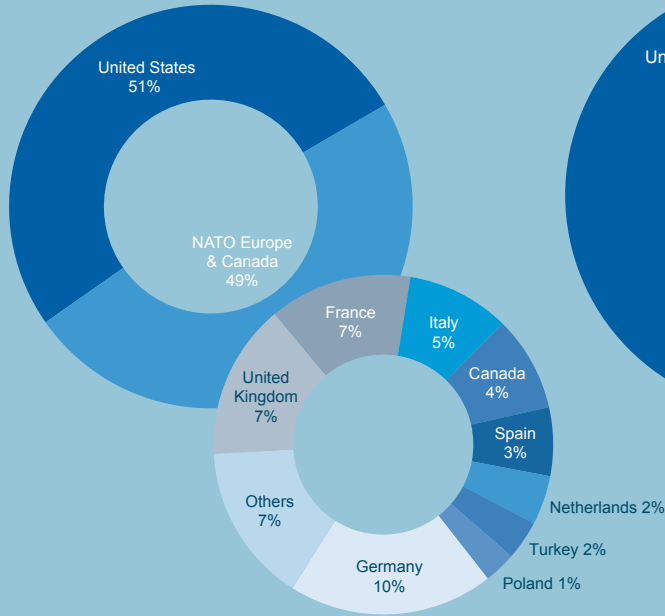
In 2021, eight Allies met the guideline of spending 2% of their GDP on defence, up from just three Allies in 2014.<sup>3</sup> The United States accounted for 51% of the Allies' combined GDP and 69% of combined defence expenditure. Total NATO military spending in 2021 was estimated to exceed USD 1 trillion.

Allies also made progress on their pledge to invest 20% or more of defence expenditures in major new capabilities. In 2021, 21 Allies met the NATO-agreed 20% guideline, compared to only seven in 2014, and 20 Allies spent more in real terms on major equipment than they did in 2020.

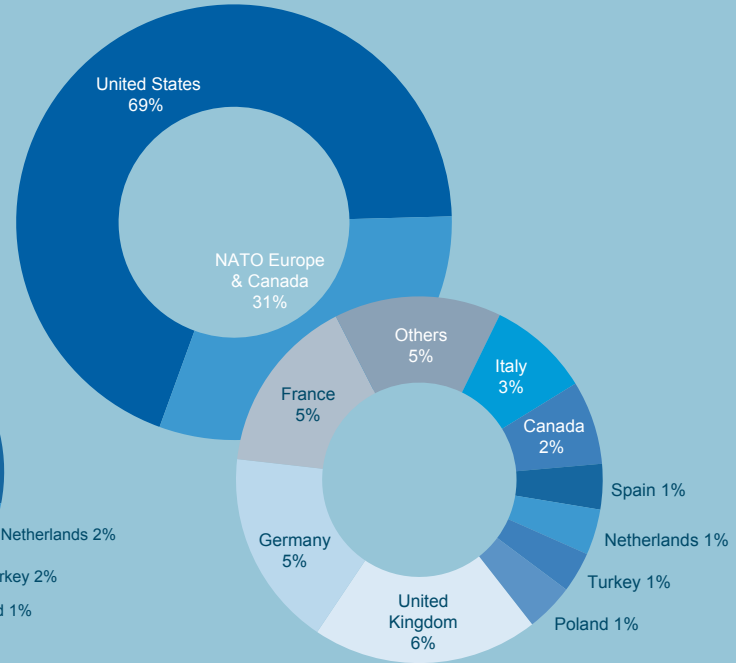
Allies continued to advance the readiness, deployability, sustainability and interoperability of their forces in line with the NATO capability targets agreed by Allies in October 2021. These targets set out areas in which NATO seeks to improve its capabilities, from procuring heavier and more high-end equipment to reducing forces' response time in deploying and defending against threats.

<sup>3</sup> For all the graphs in this chapter of the report, it should be noted that Iceland has no armed forces. The figures presented at aggregate level may differ from the sum of their components due to rounding. All figures for 2021 are estimates.

### Share of Alliance GDP 2021

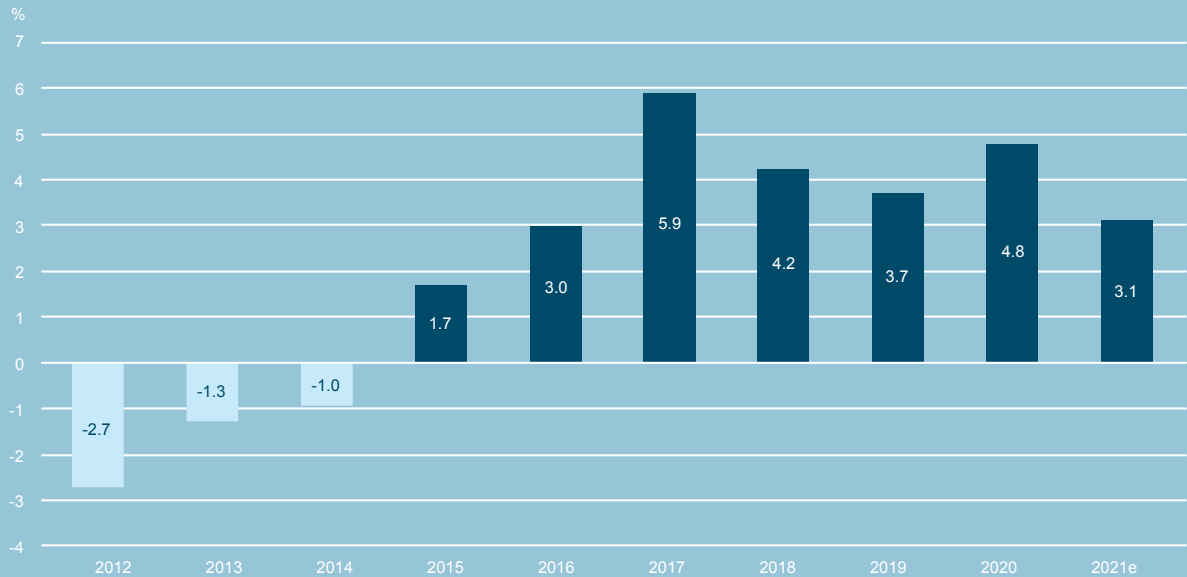


### Share of Alliance defence expenditure 2021



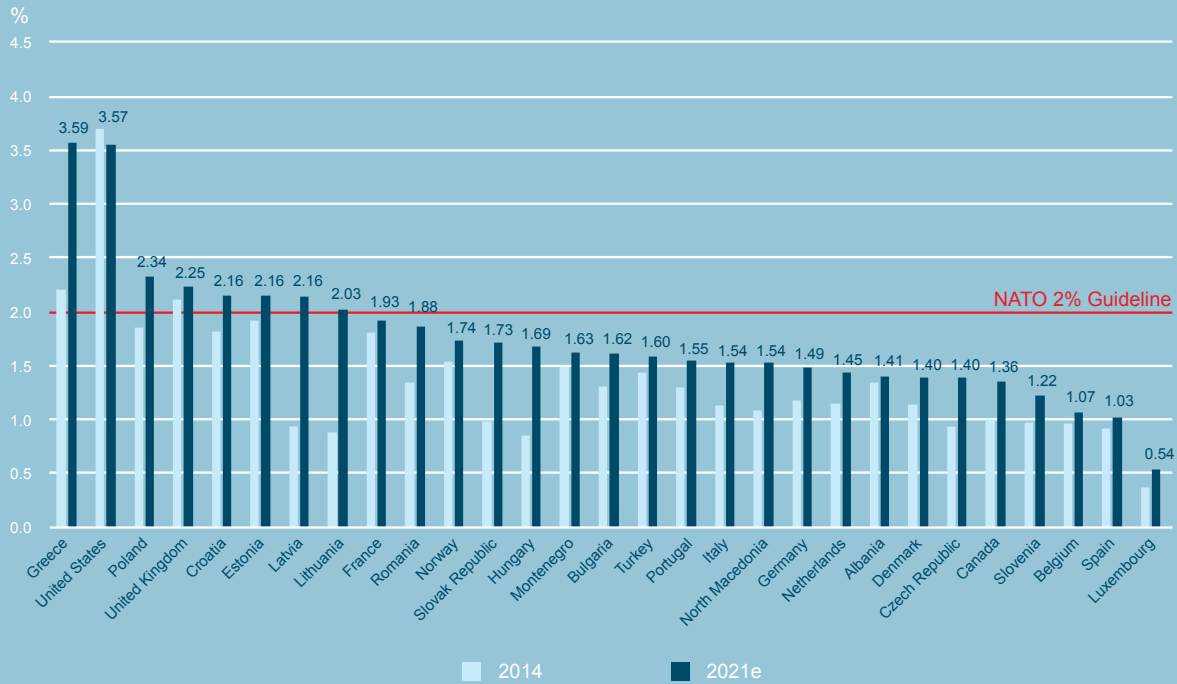
Based on current prices and exchange rates. Figures for 2021 are estimates.

### NATO Europe and Canada - defence expenditure (annual real change, based on 2015 prices and exchange rates)

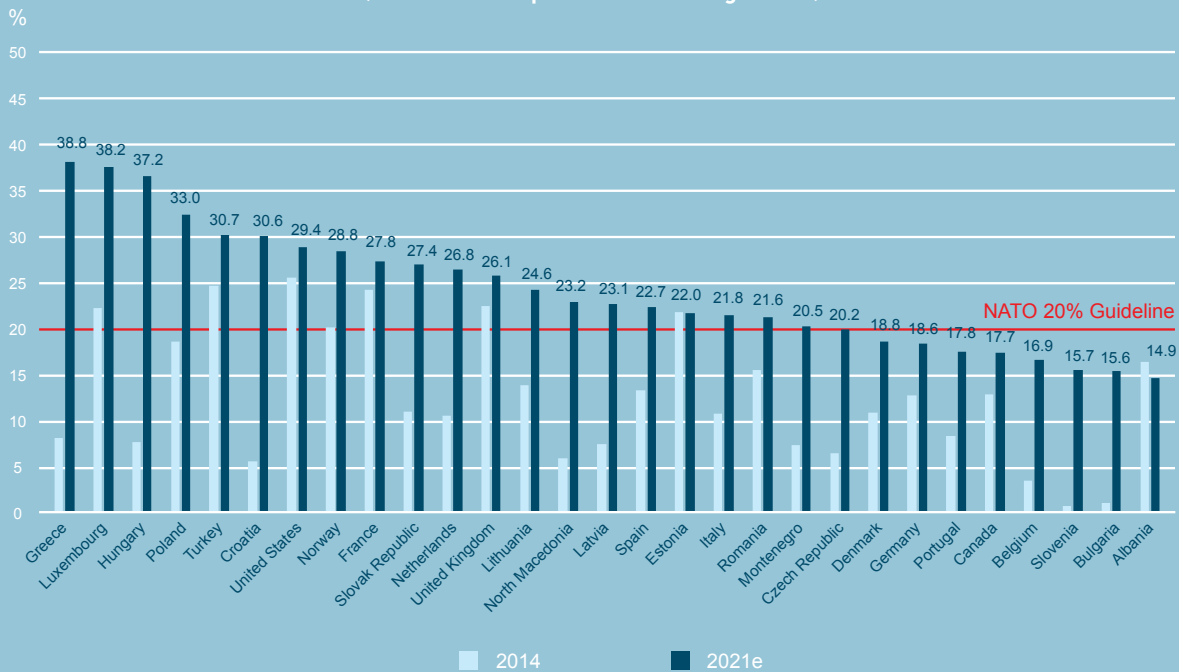


Notes: Figures for 2021 are estimates. The NATO Europe and Canada aggregate from 2017 onwards includes Montenegro, which became an Ally on 5 June 2017, and from 2020 onwards includes North Macedonia, which became an Ally on 27 March 2020.

## Defence expenditure as a share of GDP (%) (based on 2015 prices and exchange rates)

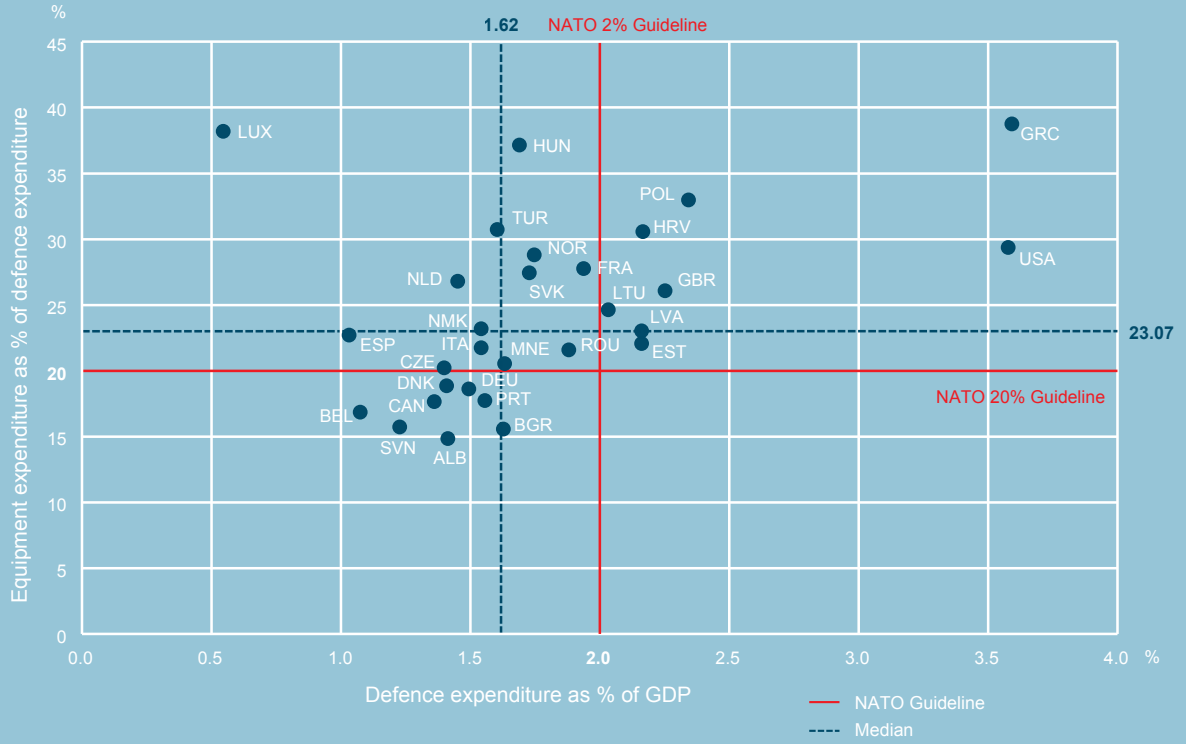


## Equipment expenditure as a share of defence expenditure (%) (based on 2015 prices and exchange rates)





## Defence expenditure as a share of GDP versus equipment expenditure as a share of defence expenditure - 2021



# 20

# 30





# ENGAGING WITH CITIZENS, BUILDING AWARENESS



Doorstep statement by NATO Secretary General Jens Stoltenberg at the opening of the NATO Summit in Brussels, Belgium. June 2021.



*Engaging with tomorrow's leaders, like you, is so valuable. Because you were born into this unpredictable world. You have the greatest stake in our security. And you must have your say in the future of NATO.*

NATO Secretary General Jens Stoltenberg,  
Science Po Youth and Leaders Summit, Paris, France. 18 January 2021.

Citizens who understand and support NATO's mission are vital to the Alliance's continued success. Keeping citizens in Allied countries and around the world informed is, therefore, a large part of the Alliance's vigorous communications and public diplomacy engagement.

NATO is continually reaching out to audiences — both existing and new — with information and news about what NATO is, what it is doing and why it is important. In addition, given today's information environment, NATO works hard to counter hostile information — including disinformation — with fact-based, credible public communications.

In 2021, against the backdrop of an increasingly fluid and complex security environment, NATO public communications activities focused on engaging with less traditional audiences, including younger citizens and private sector representatives. NATO conducted, supported and financed 481 public diplomacy projects. These were followed by over 5,500,000 people from 48 countries.



*In 2021, it was exciting to write speeches for the Secretary General that told the story of NATO 2030 and how our Alliance continues to adapt to an unpredictable world.*

**Claire Craanen (The Netherlands)**

Speechwriter, Press and Media Section  
NATO Headquarters, Brussels, Belgium



A delegation from the Youth Atlantic Treaty Association with NATO staff. The organisation brings together young professionals, university students and researchers interested in Euro-Atlantic and international security policies. Brussels, Belgium, November 2021.

## NATO's Digital Communication Channels

In 2021, NATO's digital communication channels — including broadcast, social media and the NATO website — continued to reach existing and new audiences. Notably, 69% of NATO followers on Instagram, 65% on YouTube and 54% on Facebook were under the age of 35. Among the year's innovations, a youth-initiated and youth-led podcast gave younger audiences a behind-the-scenes glimpse of the 2021 NATO Summit. NATO's social media presence in the Russian language was also revamped, with the "HATO по-русски" or "NATO in Russian" accounts on Instagram and Twitter seeing rapid growth.

The audiences of NATO's social media platforms continued to grow in 2021. The largest percentage increases over the past year were on:



*As part of NATO's communications for the 2021 Brussels Summit, I helped produce and co-host the "Behind the Scenes" podcast. I interviewed fascinating guests from across the Alliance and spoke to young audiences about why NATO matters.*

**Bruce Cinnamon (Canada)**

Digital Editor, Editorial Services  
NATO Headquarters, Brussels, Belgium

## 2021 Communications Highlights

NATO's communications efforts in 2021 included press and media activities, speeches, digital outreach, sponsored conferences, workshops and roundtables. Due to the ongoing COVID-19 pandemic, many activities and events took place virtually. 2021 highlights included:

### **NATO's First-Ever Policy Hackathon (29 January–4 February)**

The Hackathon saw university students pitch innovative ideas for NATO 2030, the Secretary General's ambitious agenda to make sure NATO

remains ready, strong and united. Over 80 students from 10 universities in Allied countries took part in developing policy pitches around five core themes: NATO's role in defending and reshaping a values-based international order; building resilience against economic security risks; protecting populations in modern-day conflicts; next steps in Allied technology cooperation; and reducing military carbon emissions. A jury of experts as well as a live audience named the team from Freie Universität Berlin as the competition winner with their pitch on "Innovating innovation: next steps in Allied technology cooperation".

### **New Ideas for NATO 2030 with Students and NATO Young Leaders (4 February)**

NATO Secretary General Jens Stoltenberg engaged with students and a group of 14 young leaders from across the Alliance on their vision of the future of the transatlantic Alliance. At the event, the young leaders submitted their report “NATO 2030: Embrace the Change, Guard the Values” to the Secretary General. The report contained their ideas on how to further strengthen NATO.



NATO Secretary General Jens Stoltenberg engages with students and young leaders on their ideas and vision for NATO at the “New Ideas for NATO 2030” online event. Brussels, Belgium, February 2021.

### **NATO 2030: NATO-Private Sector Dialogues**

Starting in late 2020 and continuing throughout 2021, a series of six virtual meetings brought together NATO and over 100 leading private sector stakeholders. They discussed: the future of warfare; potential private sector contributions to Alliance security; sustainable defence innovation and climate change, geopolitical competition in the information landscape; the ethical deployment and governance of new technologies; and the security of critical infrastructure and supply chains. Launched by GLOBSEC, with NATO support, these dialogues were held behind closed doors and looked into deepening the involvement of the private sector across the transatlantic sphere.

### **Exercise Steadfast Defender 2021 (20 May–22 June)**

NATO leveraged its digital platforms and channels to showcase this month-long collective defence exercise. More than 9,000 troops, 23 ships, 80 aircraft and one submarine took part in the Article 5-based scenario. An interactive map on NATO’s website invited visitors to follow the exercise in real time as it unfolded across Bulgaria, Hungary, Portugal and Romania. Demonstrations of NATO capabilities on Instagram’s new Reels format caught the attention of new audiences. A wide range of media were invited to different stages of the exercise, to report on some of the key objectives and activities.

### **Marking the 2021 Brussels Summit (11–15 June)**

Brussels citizens were treated to the sight of historic landmarks emblazoned with NATO blue colours and flags to honour the Alliance in the period leading up to and following the NATO Brussels Summit. On the historic Grand Place, the 15th-century façade of the Town Hall shimmered. Elsewhere in Brussels, the popular Manneken Pis statue sported a NATO outfit, and NATO flags fluttered at the monumental Cinquantenaire Arch and the Atomium museum.



The historic Brussels Town Hall on the Grand Place illuminated in NATO blue in honour of the NATO Summit (left).

The NATO flag flies under the Cinquantenaire Arch in Brussels. Brussels landmarks went NATO blue for the 2021 NATO Summit (right).

Brussels, Belgium, June 2021.



## NATO 2030 at Brussels Forum (14 June)

Running in parallel to the June 2021 NATO Summit and hosted by NATO and the German Marshall Fund of the United States, this virtual forum featured high-level discussions of the most pressing challenges faced by NATO Allies and partners. NATO Secretary General Jens Stoltenberg delivered opening remarks from NATO Headquarters. Conversations with NATO leaders, experts, representatives from business, civil society leaders and young professionals followed. All told, the forum featured 50 speakers, eight of whom were Heads of State and Government.



Reporters engage with NATO Secretary General Jens Stoltenberg during a press conference that followed the NATO Brussels Summit. Brussels, Belgium, June 2021.

The NATO 2030 virtual event at the Brussels Forum reached an Alliance-wide audience in collaboration with satellite studios in Washington, D.C. (United States), Berlin (Germany) and Warsaw (Poland).

- 36,342 viewers across digital platforms
- 9,000 Twitter mentions
- 232 million total media reach
- 159 million potential audience reach captured from broadcast detections
- 39% of the audience were young viewers, 20 to 34 years old



*Our annual conference of communicators was a highlight. It brought together policy-makers from NATO and Allied capitals to discuss communication challenges up to the Madrid Summit and to exchange priorities and best practices.*

**Iciar Ormaechea (Spain)**

Programme Coordinator,  
Engagements Section  
NATO Headquarters, Brussels, Belgium



The 2021 Conference of NATO Communicators: The Road to Madrid welcomed over 130 Alliance communicators to NATO Headquarters to share the latest insights on communications trends, including polling, digital tools, insights from civilian and military public affairs and in-person campaign work, and to ensure communications are coordinated towards the Madrid Summit in June 2022. Brussels, Belgium, November 2021.

## Protecting Citizens against Hostile Information

Hostile information activities targeted at NATO and Allies remain a key challenge that can undermine Allied societies. NATO's approach to counter disinformation is threefold: 1) to understand the information environment; 2) to engage with audiences through tailored public communications; and 3) to coordinate with Allies and like-minded partners.

As part of NATO's efforts to understand the information environment, the Alliance tracks, monitors and analyses information relevant to NATO's mission. The Alliance also leverages its networks of Allies, partner countries and international organisations to ensure a common understanding of hostile information activities. NATO works with experts in industry, non-governmental organisations and academia to exchange insights, conduct joint research projects and lead resilience-building initiatives.

In 2021, with the benefit of ongoing collaboration with partners at the European Union, the NATO Strategic Communications Centre of Excellence in Riga, Latvia and the European Centre of Excellence for Countering Hybrid Threats in Helsinki, Finland, NATO made significant progress in more deeply understanding manipulative behaviours of hostile actors.

NATO and European Union staff also continued to cooperate closely to further strengthen their strategic communications. They exchanged best practices and methodologies to counter disinformation and

build societal resilience, and they participated in one another's public diplomacy events to reinforce common messaging. Digital teams at NATO and the European Union cross-posted content on topics of mutual interest. Joint public outreach events in partner countries were organised to strengthen societal resilience against disinformation.

NATO is committed to fact-based, timely, credible public communications. Proactive and tailored communications about NATO's mission are critical to countering disinformation. NATO has continued to build societal resilience to disinformation throughout the Alliance, including through its grant programme, launched in 2020, which invites non-governmental organisations, think-tanks and universities to submit innovative projects aimed at enhancing societal resilience to disinformation.

In some cases, NATO directly debunks and exposes disinformation. An example is "NATO-Russia — Setting the Record Straight", a webpage that counters aggressive and ongoing Russian disinformation falsely accusing NATO of a series of threats and hostile actions. The webpage debunks falsehoods with facts, including satellite images, fact sheets and interviews, as well as the column "Top Five Russian Myths Debunked". This column is regularly updated to take account of evolving Russian accusations towards NATO. Persistent myths include that NATO is aggressive and a threat to Russia, that it is encircling and trying to contain Russia, and that Ukraine cannot join NATO.



### #WeAreNATO Campaign

An innovative online communications campaign, #WeAreNATO tells NATO's story in a lively, colourful style. #WeAreNATO has become NATO's primary vehicle for reaching young audiences, who tend to be less familiar with the Alliance. Allied nations and military entities use the framework to communicate about their work and introduce the people who perform that work — from soldiers to scientists, cyber experts to civilian emergency responders. Ten Allies have adopted the campaign: Bulgaria, Croatia, Canada, the Czech Republic, Montenegro, Portugal, Romania, Slovakia, Turkey and the United Kingdom.

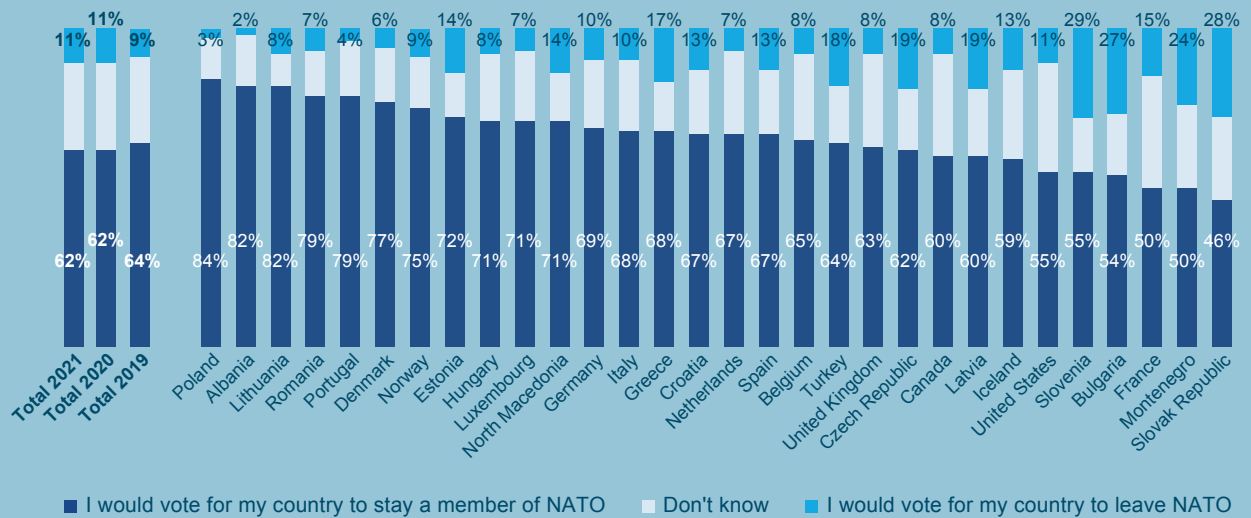
In spring 2021, a #WeAreNATO targeted and time-bound campaign was launched to increase awareness and support of the Alliance among 18-to-24-year-olds in France, Montenegro, Spain, the United Kingdom and the United States. This campaign focused on explaining NATO's efforts to respond to the COVID-19 pandemic, advance gender equality and protect the environment. It reached 18 million young people.

## Listening to Citizens: Continued Support for the Alliance in 2021

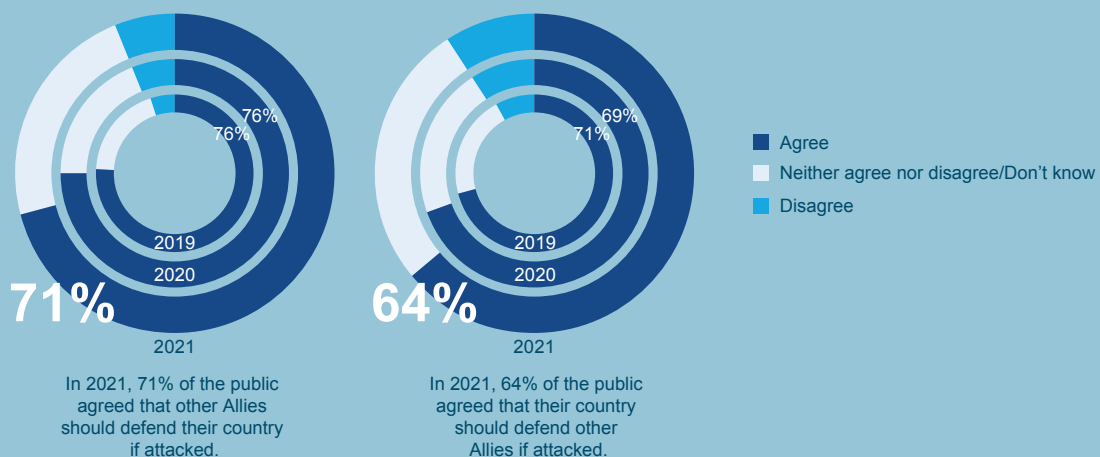
In 2021, NATO commissioned surveys across all 30 Allies to understand their citizens' perceptions of NATO and to monitor trends in comparison to 2020.<sup>4</sup> The data for 2021 was collected between 12 November and 2 December.

### Support for NATO remains high

As in 2020, most citizens would vote for their country to remain a member of NATO in a referendum (62%), with only 11% stating they would vote for their country to leave the Alliance. The graph below shows responses to the question "If you could vote for or against your country's membership in NATO, how would you vote?"



### Support for collective defence remains high across the Alliance

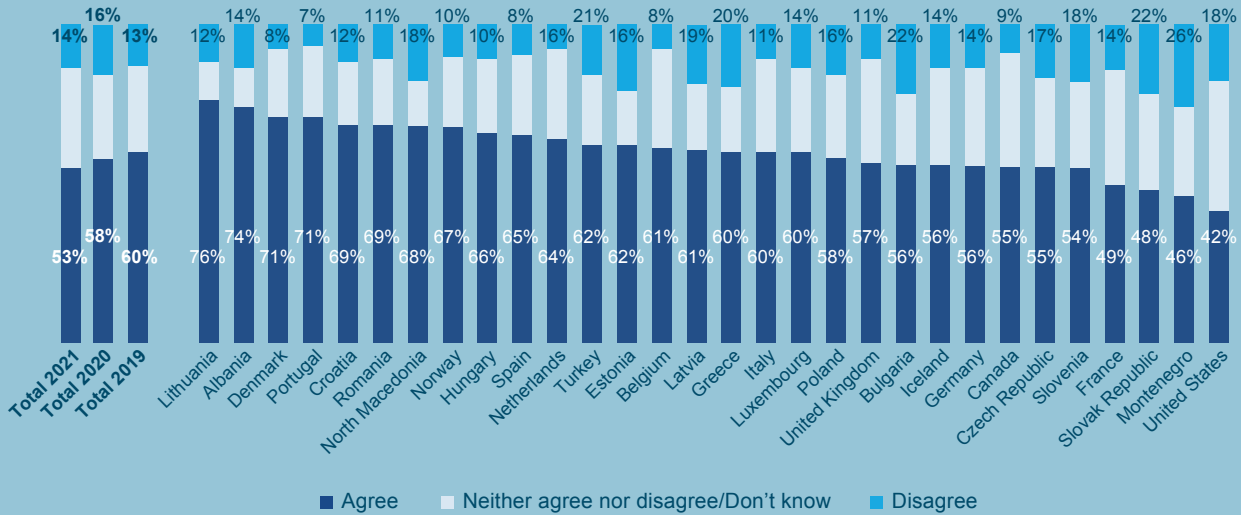


<sup>4</sup> Based on surveys of 28,909 adults conducted by Kantar in 30 NATO member countries between 12 November and 2 December 2021 and 28,517 adults between 5 and 23 November 2020. In 2019 a survey of 28,752 adults was carried out by Populus. Interviews were conducted online, except for North Macedonia, Albania and Montenegro where a face-to-face methodology was used due to the limited penetration of online panels in these countries. In all countries polled online a sample of at least 1,000 respondents per country was achieved. In face-to-face countries at least 500 individuals per country were interviewed. Quotas for gender, age and region were set and post-weighting was applied to ensure the samples for each country were representative of the adult population. Total results (across all Allies polled) were weighted to the population distribution of NATO. The surveys referenced are based on non-probability sampling, with an indicative margin of error of  $\pm 3\%$ . For more information see <https://www.nato.int/SGReport2021/audience-insight-en/>.



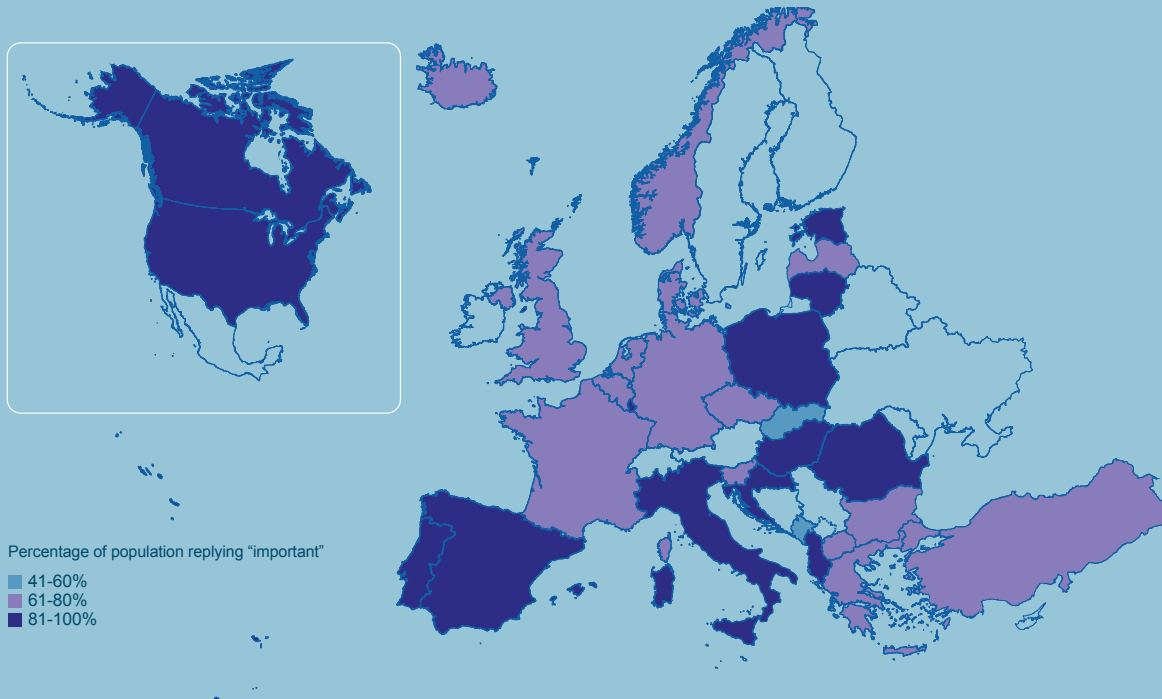
## NATO keeps us safe

The majority of Allied citizens (53%) continue to see NATO membership as decreasing the likelihood of attack by a foreign nation, with only 14% disagreeing with that statement. The graph below shows agreement with the statement “Our membership in NATO makes it less likely that a foreign nation will attack our country”.



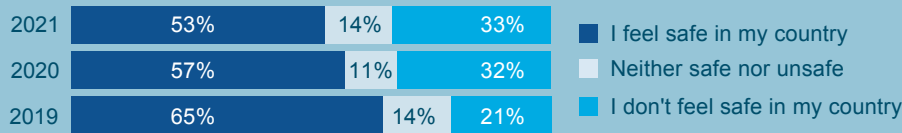
## Strong belief in the value of NATO and the transatlantic bond

Support for the transatlantic bond remains strong. 81% of citizens believe collaboration between North America and Europe on safety and security matters is important, compared to 79% in 2020.



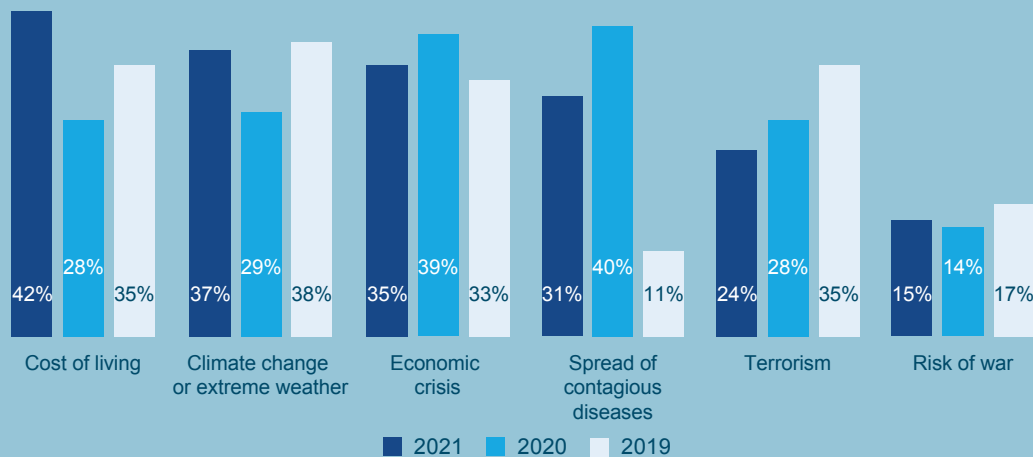
## Perceptions of safety have declined among Allied citizens

The majority of Allied citizens continue to feel safe in their country, though as in 2020, a significant proportion do not feel safe (33%, compared to 32% in 2020).



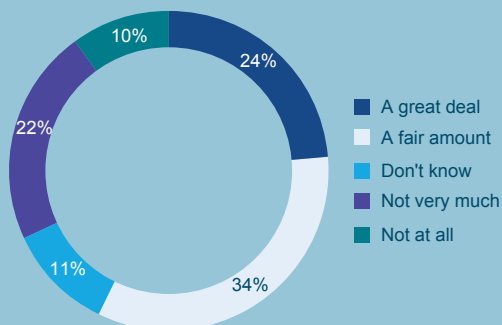
## Spread of contagious disease and economic crisis are primary concerns for Allied citizens

Alliance-wide, concerns about the risk of war remain low (15%). These data show responses to the question "Which of the following are of greatest concern to you?" in November 2019, November 2020 and November 2021.

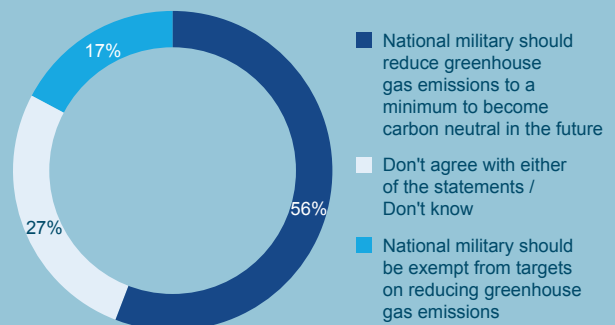


## Climate change as a security concern

Climate change is considered a security concern by 58% of Allied citizens. Only 10% do not think climate change affects national security. These responses were to the question: "How much, if at all, do you consider climate change an issue that affects (COUNTRY)'s national security?"



There is majority support across the Alliance for national military to reduce greenhouse gas emissions and become carbon neutral in the future (56%). Only 17% think national military should be exempt from emissions targets.







An aerial view of two NATO Phoenix RQ-4D surveillance drones on a tarmac. The drones are dark blue with white wings and tail sections. They feature the NATO logo and the text 'NATO' and 'OTAN' on their fuselages. The tarmac is marked with yellow and red lines. The text 'ADAPTING THE ALLIANCE FOR A MORE COMPLEX WORLD' is overlaid in white, serif font.

# ADAPTING THE ALLIANCE FOR A MORE COMPLEX WORLD

The full complement of five NATO Alliance Ground Surveillance Phoenix RQ-4Ds on display, for which initial operational capability has been declared. Sigonella, Italy, February 2021.

*NATO is the most successful alliance in history mainly because of two things: our ability to unite and our ability to change. We will need more of both in the years to come, because we live in turbulent times.*

NATO Secretary General Jens Stoltenberg,  
Nordic Council, Copenhagen, Denmark. 3 November 2021.

Since its founding in 1949, NATO has been able to adapt to changing security challenges. In 2021, as the security environment grew more complex, NATO

modernised its military structures and capabilities, accelerated innovation and stepped up efforts to address the impact of climate change on security.

## Command Structure Modernisation in 2021

The NATO Command Structure is the military backbone of the Alliance. It consists primarily of Allied Command Operations and Allied Command Transformation, and their subordinate commands and headquarters. During 2021, the Command Structure continued to adapt.

NATO's two newest joint headquarters achieved significant milestones. In July, the Joint Force Command in Norfolk, Virginia (United States) reached full operational capability. The Command is tasked to oversee NATO activities to protect transatlantic sea lines of communication. In September, the Joint Support and Enabling Command in Ulm, Germany, supporting the rapid movement of troops and equipment into, across and out of Europe, also became fully operational.

The Alliance's newest Joint Logistics Support Groups in Brunssum, the Netherlands, and Naples, Italy, each achieved initial operational capability in April and aim to continue increasing their ability to provide logistics support. Across the rest of the Command Structure, Allies implemented adaptations agreed in 2018, including with the addition of more than 1,200 posts over the past four years. Of particular importance have been command structure changes in the cyberspace and space domains. The Cyberspace Operations Centre at Allied Command Operations in Mons, Belgium, operational since 2020, coordinates NATO operations in cyberspace, provides cyberspace

situational awareness, assesses risks and supports decision-making, planning and exercises. The NATO Space Centre at Allied Air Command in Ramstein, Germany, also operational since 2020, coordinates Allied space activities, including with communications and satellite imagery to help protect Allied space systems.



UK soldiers on Exercise Spring Storm 2021. During Exercise Spring Storm, soldiers from the British Army 20th Armoured Infantry Brigade's Mercian Regiment used an artificial intelligence engine, which provides information on the surrounding environment and terrain. Estonia, June 2021. Photo by Marina Loštšina.



## Investing in Cutting-Edge and Interoperable Capabilities

NATO carries out a vast range of multinational missions and tasks, for which it requires interoperable, cutting-edge and cost-effective capabilities. To support Allies in developing these capabilities, NATO invests in a number of multinational High Visibility Projects. These projects address one or more key NATO defence planning priorities. Multinational cooperation on capability development and delivery enables Allies — and in some instances partners — to pool resources and share expertise. This helps to close key capability gaps.

In 2021, Allies launched five new High Visibility Projects covering a wide range of capabilities:

- The Surface Based Air and Missile Defence Command and Control Layer project aims to develop and field an air defence management solution for ground-based air defence, to reduce the number of systems currently in use. This system will serve as the “brain” of the Air and Missile Defence System, acquiring and analysing data from the sensors and acting as the interface between all modules of the system.
- A chemical, biological, radiological and nuclear defence project to create a network of defence facilities connecting nationally owned structures under a single architecture. As a result, the capabilities of these centres — ranging from live agent training to analytical laboratories — will be more widely available across the Alliance.
- A chemical, biological, radiological and nuclear defence project to establish a framework for participating nations to jointly procure individual protective gear and collective protection systems.
- A chemical, biological, radiological and nuclear defence project to enable participating nations to jointly develop and procure advanced solutions to detect and identify these dangerous agents.
- The Multinational Ammunition Warehousing Initiative to support one of the key enablers of NATO operations and stockpile planning: smart ammunition storage solutions. The project creates a flexible, scalable and expandable approach for nations to address their storage needs.

NATO also made significant progress in implementing several existing High Visibility Projects in 2021:

- Under the NATO Flight Training Europe Initiative, 10 Allies<sup>5</sup> took the next step towards the creation

of a European network of pilot training campuses. After the signature of the Memorandum of Understanding in June 2021, Allies selected the first two training campuses, located in the Czech Republic and Italy.

- Following the initial success of the Air to Ground Precision Guided Munition project, achieving cost savings of 15–20% per delivery, Allies decided to further expand the scope of that project to include all air-launched ammunition, and named it the Air Battle Decisive Munition project.
- In 2021, the Multi Role Tanker Transport Capability framework, developed jointly by NATO and the European Union and supported by the NATO Support and Procurement Agency, delivered the fourth and fifth aircraft to the multinational fleet in Eindhoven, the Netherlands. The remaining four aircraft will be delivered over the coming years, with the final delivery scheduled for 2024. The fleet will be used to provide air-to-air refuelling — vital in supporting operations that require long-range or long-duration air missions — as well as medical evacuation.
- The Regional Special Operations Component Command reached initial operational capability in May during Exercise Black Swan 2021. This command leads and coordinates special operations forces in support of NATO operations. NATO Allies Croatia, Hungary, Slovakia and Slovenia as well as partner nation Austria plan to make the command available for the NATO Response Force rotation, starting in 2025.
- The Multinational Special Aviation Programme’s training campus is dedicated to supporting the insertion and extraction of special operations forces. The programme commenced flight training in mid-2021. Moving forward, the multinational cadre of students will benefit from an increasingly comprehensive and versatile training offering at the campus.

Existing multinational High Visibility Projects continued to attract new participants in 2021. For example, the Modular Ground Based Air Defence project welcomed Norway, Poland, the United Kingdom and the United States, bringing the total number of participants to 14 nations. In the same area, the Rapidly Deployable Mobile Counter Rockets, Artillery and Mortar project welcomed Norway, Poland and the United States.

<sup>5</sup> Belgium, the Czech Republic, Greece, Hungary, Italy, Montenegro, North Macedonia, Romania, Spain and Turkey.





Based at Los Llanos Air Base in Albacete, Spain, the tactical leadership programme takes NATO's best pilots and presents them with a series of training missions that simulate the cutting edge of aerial combat, including search-and-rescue missions, suppression of enemy air defences and integration with ground forces. Albacete, Spain, November 2021.

## Aviation Capabilities

Throughout 2021, NATO continued to modernise and adapt its air capabilities in many areas, including rapid air mobility, military-civilian interoperability and crisis response.

NATO's total systems approach to aviation ensures that all aspects of aviation support NATO's three core tasks of deterrence and defence, crisis management and cooperative security. The total systems approach considers strategic, organisational, procedural, technical and human factors that contribute to the effectiveness of the military mission. This approach has contributed to the establishment of a rapid air mobility process, an airworthiness NATO recognition process, Alliance Ground Surveillance airspace integration support, as well as cyber defence assessments for aviation.



*Developing the Joint Air Power Interoperability Action Plan was my most meaningful achievement in 2021. This action plan will allow Allies to conduct operations with cross-generational assets in the air domain.*

**Alexander DeFazio (United States)**

Staff Officer, Aerospace Capabilities Section  
NATO Headquarters, Brussels, Belgium



Close-up of a Belgian F-16 fighter pilot during a quick reaction alert exercise. This "scramble" exercise is a state of readiness and *modus operandi* of air defence maintained at all hours of the day by NATO air forces. Florennes Air Base, Belgium, April 2021.



Heavy Airlift Wing C-17 at Keflavik Air Base unloading Norwegian Armed Forces personnel and material. Keflavik Air Base, Iceland, February 2021.

NATO's rapid air mobility initiative enables Allied military aircraft, when activated during crises, to deploy swiftly and on short notice across Europe. The rapid air mobility process was first activated in March 2020 to support COVID-19 response efforts. Rapid air mobility aircraft eased cross-border traffic of military and state aircraft by ferrying imported medical supplies and personnel to combat the pandemic. In August 2021, rapid air mobility was activated a second time for Operation Allied Solace in response to the crisis in Afghanistan. Rapid air mobility aircraft evacuated at-risk Afghans, simplifying the movement of aircraft across national boundaries and reducing flight times.

Civilian-military interoperability is key for NATO and the Allies when planning present-day and future aviation training activities, missions and operations. NATO's ability to react to crises, both natural and human-caused, hinge on flexible and reactive transportation systems. In 2021, NATO

worked with the European Organisation for the Safety of Air Navigation (EUROCONTROL) in the areas of rapid air mobility, standardisation and the setting of future aviation-related requirements. NATO's close coordination with EUROCONTROL fosters ongoing efforts by the Alliance to find new and effective ways for aviation to support NATO's security, deterrence and defence requirements.

The US Army's 12th Combat Aviation Brigade keeps a company of AH-64 Apache attack helicopters stationed at Katterbach Army Airfield near Ansbach, Germany. The Apaches regularly train with other NATO Allies across Europe, giving troops the useful experience of working with US air support. Ansbach, Germany, March 2021.







A NATO RQ-4D Phoenix remotely piloted aircraft took off toward the Black Sea and returned 24 hours later to its home base. Sigonella, Italy, November 2021. Photo by NATO Alliance Ground Surveillance Force.

## Intelligence, Surveillance and Reconnaissance Capabilities

The Alliance has long recognised the importance of intelligence, surveillance and reconnaissance to its strategic preparedness and the success of its operations and missions. The Alliance Ground Surveillance system plays a particularly crucial role in NATO's overall intelligence effort. Fifteen NATO Allies<sup>6</sup> have acquired high-altitude, long-endurance capabilities that will enable the Alliance to monitor wide areas from remotely piloted aircraft fully owned and operated by NATO. This system enables NATO commanders to enjoy a state-of-the-art capability to conduct ground surveillance operating at considerable distances in adverse weather or lighting conditions.

Around 375 personnel, five remotely piloted aircraft and associated ground equipment make up the Alliance Ground Surveillance programme. It achieved

initial operational capability in February 2021, and, having flown over 50 missions since receiving its first aircraft, the Alliance Ground Surveillance capability has proven to be a flagship Joint Intelligence, Surveillance and Reconnaissance asset.

On 16 September 2021, NATO Deputy Secretary General Mircea Geoană and a group of NATO ambassadors visited the Alliance's fleet of unmanned surveillance aircraft stationed in Sicily. In his remarks to senior officers at the Sigonella air base, the Deputy Secretary General thanked Italy for hosting Alliance Ground Surveillance aircraft: "This is the essence of the Alliance — a state-of-the-art capability that functions to the benefit of all Allies". He praised the sophistication of the capability, noting that it enables the Alliance to monitor wide areas, providing a comprehensive picture of conditions on the ground at any time. He also noted that all Allies have access to the intelligence generated by this programme.

<sup>6</sup> Bulgaria, the Czech Republic, Denmark, Estonia, Germany, Italy, Latvia, Lithuania, Luxembourg, Norway, Poland, Romania, Slovakia, Slovenia and the United States.



The NATO Alliance Ground Surveillance Force receiving and processing Intelligence, Surveillance and Reconnaissance products from the aircraft. Sigonella, Italy, 2021.





NATO Deputy Secretary General Mircea Geoană visits the NATO Alliance Ground Surveillance Force in Sigonella, together with a group of NATO ambassadors. Sigonella Air Base, Italy, September 2021.

In addition to the Alliance Ground Surveillance system, the NATO Airborne Warning and Control System fleet also plays an important role in NATO's joint intelligence, surveillance and reconnaissance ecosystem. The iconic NATO aircraft, with its radar on top, has been NATO's eyes and ears in the sky since the 1980s. The fleet will eventually move into retirement around 2035. At the 2016 Warsaw Summit, NATO Heads of State and Government publicly declared their commitment to "collectively start the process of defining options for future NATO surveillance and control capabilities". In 2017, the first step, in the form of a concept development stage, was formally launched. Named Alliance Future Surveillance and Control, this initiative

represents NATO's largest and most complex capability development initiative to date. Once operational, it will be NATO's first true multi-domain capability. The new system will do more than replace the old Airborne Warning and Control System. It will significantly upgrade NATO's surveillance capabilities with an agile, open and resilient network that allows for collecting and distributing data from varied sources across all five operational domains (land, air, sea, cyber and space). In addition to the land, air, sea and cyber domains, intelligence, surveillance and reconnaissance plays a crucial role in enabling the Alliance to provide monitoring and protection in the space domain.



A NATO Airborne Warning and Control System aircraft takes off for an Assurance Measures mission, 2021.



A soldier with the French Army's 13th Battalion Chasseurs Alpins takes a knee while on a training patrol. The Chasseurs Alpins, or Alpine Hunters, are France's premier mountain operations soldiers. They train in the French Alps, honing their skills while contending with extreme weather and rugged terrain. France, March 2021.

## Land Capabilities

In 2021, NATO enhanced its land-related defence capabilities in several significant areas, including rotorcraft, interoperability and mobility. 2021 highlights include:

- The development of the Digital Fires Command and Control Standard to promote interoperability among Allies. The standard was tested during the Dynamic Front 2021 exercise series held in Poland, Germany and Turkey, with the participation of over 25 Allies.
- The development of the Soldier Situational Awareness standard that enables interoperability of Command, Control, Communications and Computer Systems between dismounted soldiers. This standard was tested through the Coalition Warrior Interoperability Exercise 2021 held in Poland.
- Progress was also achieved on tactical mobility, including the "Embarked Personnel" focus, answering questions on how to safely and securely transport personnel and their equipment using different nations' platforms, and how to respond to the needs of data and power connectivity between the embarked personnel and the transport assets.

The land armaments communities have also been active in ensuring ammunition interchangeability, with effective use of NATO certification processes through standardisation and testing at NATO and national test facilities.



CPT Nathalie F. operates the SitaWare command and control and information system inside the commander's Boxer armoured transport vehicle. As a platoon leader, CPT Nathalie F. has 70 service members under her command. Lithuania, July 2021. Photo by Maurice Fateiger.





Royal Danish Navy guided-missile frigate FFG HDMS Iver Huitfeldt participates in Exercise At-Sea-Demonstration/ Formidable Shield 2021. British Isles, June 2021. Photo by Royal Danish Navy.

## Maritime Capabilities

NATO has worked to understand the potential of emerging and disruptive technologies in the maritime domain. With the Smart Defence Project for Anti-Submarine Warfare Barrier, for instance, Allies have explored the use of unmanned systems, big data and machine learning to develop agile, cost-effective methods for deterring and detecting submarines.

NATO participated in Portugal's exercise Robotic Experimentation and Prototyping augmented by Maritime Unmanned Systems. This annual exercise gives Allies and partners a chance to field and evaluate new maritime technologies. It is jointly organised by the Portuguese Navy, the University of Porto, the NATO Science and Technology



Autonomous underwater vehicle Slocum glider deployed from NATO Research Vessel Alliance during Exercise Robotic Experimentation and Prototyping augmented by Maritime Unmanned Systems 2021. Off the coast of Portugal, September 2021.

Organization's Centre for Maritime Research and Experimentation, and the NATO Maritime Unmanned Systems Initiative.

A total of 17 navies, 18 industry partners and five universities participated in the 2021 edition of this exercise. This contributed to operational experimentation toward developing capabilities, tactics and procedures in key warfighting areas such as mine warfare, anti-submarine warfare and anti-surface warfare. It also spurred further progress toward developing a multi-domain command and control of unmanned systems standard.

The NATO Centre for Maritime Research and Experimentation contributed to the success of the 2021 exercise by demonstrating:

- A new network of low-power, long-endurance autonomous robotic systems for anti-submarine warfare operations and assisting in locating submarines in distress.
- A decentralised data architecture for command and control of autonomous systems, providing a layer of interoperability between the Centre and national assets and command and control systems.
- A digital communications technology that aids in life-saving submarine rescue operations.





Standing NATO Maritime Group One flagship HMCS Halifax conducts a replenishment-at-sea with RFA Tidespring during Exercise Steadfast Defender 2021. Portugal, May 2021.

NATO's maritime community has also been developing the key components of a Digital Ocean Concept, which was presented in spring 2021 at the Conference of National Armaments Directors and has been adopted by a number of Allied navies. The concept is designed to improve Allies' capacity to "see our oceans" through the creation of a global scale network of sensors, from seabed to space, to better predict, identify, classify and combat threats. It envisages maritime domain awareness, subsea

sensors, unmanned surface vessels, drones and satellites, and exploits artificial intelligence, big data and autonomous systems, alongside conventional assets.

Further development of the Alliance's vision of a digital ocean will help mitigate the risks of climate change, protect undersea critical infrastructure and safeguard essential supply chains and strategic waterways in a safe, sustainable and more affordable way.

### NATO Research Vessel Alliance and the Nordic Recognized Environmental Picture Trial

Climate change continues to rapidly transform the Arctic, making environmental alterations that will affect NATO's activities in this region.

In 2020, the NATO Science and Technology Organization's Centre for Maritime Research and Experimentation released an Arctic Science and Technology Strategy. This strategy identifies and develops the Rapid Environmental Assessment requirements and capabilities to optimise anti-submarine warfare operations by NATO forces in the Arctic.

From 11 June to 10 July, researchers aboard NATO Research Vessel Alliance collected data on water temperature and salinity as well data on ambient sound in the Greenland Sea/Svalbard region for the Nordic Recognized Environmental Picture trial. In addition, two permanent moorings — long chains equipped with advanced sensors — were deployed nearby the Molloy Hole, the deepest point in the Arctic Ocean, and in the Svalbard continental slope, to continuously collect data.

Data from the research vessel, when compared to previously collected data, showed a significant freshening and cooling of the Atlantic waters in the region, most noticeably in the last three years, with rapid changes in the underwater soundscape conditions in areas of the Arctic Ocean. These findings are highly relevant to understanding the impact of climate change. Data being collected will also help inform NATO decision-making about optimal system configurations for Arctic anti-submarine operations.



NATO Research Vessel Alliance on location in the Arctic during the Nordic Recognized Environmental Picture trial. The quietest ship in its class, the Alliance was designed to minimise noise radiating from the ship into the water, making it an excellent platform for sonar, acoustic devices testing and other types of research where a quiet undersea environment is essential. Arctic Ocean, June 2021.



A group of Acecore "Neo" octocopters take flight during Exercise Robotic Experimentation and Prototyping augmented by Maritime Unmanned Systems (REP(MUS)). Troia Peninsula, Portugal, September 2021.

## Investing in Innovation and Data

### Emerging and Disruptive Technologies: Tapping into the Alliance's Innovation Ecosystems

Technologies such as artificial intelligence, autonomous systems, big data, biotech and quantum are changing the world and our everyday lives. They are also changing the way the Alliance operates. These and other emerging and disruptive technologies present both risks and opportunities for NATO and Allies. They provide new opportunities for NATO and Allied militaries, helping them become more effective, resilient, efficient and sustainable. Conversely, they represent new threats — both militarily and to Allied civil societies — from state and non-state actors.

At the 2021 Brussels Summit, NATO Leaders agreed two initiatives to support the Alliance's efforts to maintain its technological edge: the establishment of the NATO Defence Innovation Accelerator for the North Atlantic (DIANA) and the NATO Innovation Fund. These initiatives are designed to help harness commercial civilian innovation to meet Allied military objectives. DIANA will accelerate emerging and disruptive technological solutions to critical transatlantic challenges in defence and security. To support this aim, DIANA will leverage a network of deep tech test centres and start-up accelerator sites across the Alliance to enable innovators to collaborate alongside operational end users.



*Emerging tech policy; an AI strategy; a €1 billion venture capital fund and an accelerator network with universities and entrepreneurs — 2021 was quite the year! The biggest achievement was leading the great team that made it happen.*

**Rob Murray (United Kingdom)**

Head, Innovation Unit  
NATO Headquarters, Brussels, Belgium

The NATO Innovation Fund is about investing in innovative start-ups that have the potential to produce such technological solutions. The Fund will provide venture capital investments to promising Allied deep tech start-ups developing dual-use, breakthrough technologies. In October, 17 Allies signed up to establish the NATO Innovation Fund and a further four Allies have since joined them in these efforts.<sup>7</sup>

<sup>7</sup> The signatories at the Defence Ministers Meeting were: Belgium, the Czech Republic, Estonia, Germany, Greece, Hungary, Italy, Latvia, Lithuania, Luxembourg, the Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia and the United Kingdom. Since the meeting, Denmark, Montenegro, Norway and Turkey have also signed up to establish the Fund.

## Maintaining Our Technological Edge

In this era of unprecedented technological advancement, sharpening NATO's technological edge underpins its ability to deter and defend. The Alliance has recently taken important steps to that end, building on the Emerging and Disruptive Technologies Roadmap agreed in 2019, and has now adopted the strategy to foster and protect emerging and disruptive technologies. This strategy outlines a clear approach for identifying, developing and adopting emerging and disruptive technologies at the speed of relevance, guided by principles of responsible use, in accordance with international law, and taking into account discussions in relevant international forums. Drawing on the extensive innovation expertise of all 30 Allies, NATO is investing to further leverage its partnerships, including with the private sector and academia, to maintain its technological edge.

The emerging and disruptive technologies strategy establishes NATO's priorities in key emerging technology areas, including artificial intelligence, data, autonomy, quantum technologies, biotechnologies, and human enhancements. In 2021, NATO began developing follow-on strategies in each of these areas, starting with artificial intelligence and data.

In October, Allies endorsed NATO's first strategy on artificial intelligence. Under this strategy, Allies collectively agreed to a set of ethical principles for the responsible development and use of artificial intelligence in defence and security. This positions NATO as a thought-leader and driving force in the responsible use of artificial intelligence. The principles of responsible use are core to the Alliance's efforts in this regard. Not only will these enhance interoperability, they will also engender trust with civil society and our own end user operators employing artificial intelligence capabilities. The strategy establishes an ambitious tone and concrete actions for the Alliance to foster the accelerated, responsible and secure adoption of artificial intelligence, as well as to protect our ability to innovate and safeguard against threats.

Allies also endorsed NATO's data exploitation framework policy. The policy shows that NATO is taking concrete steps toward achieving information superiority and trusted, responsible and protected data-driven decision-making. The policy enables NATO to harness its available resources for big data



Allied Defence Ministers take the lead on the development of the NATO Innovation Fund at the Defence Ministers Meeting in October 2021.

science and analytics, machine learning and artificial intelligence to exploit data more rapidly and effectively.

To support the Alliance's efforts to maintain its technological edge, NATO and Allies are striving to foster an Alliance-wide innovation ecosystem, in which actors from government, academia and the private sector collaborate to develop and adopt emerging and disruptive technologies. In addition, the Alliance is engaging with other international organisations, including the European Union and the United Nations.

In support of the Alliance's efforts in this area, the NATO Advisory Group on Emerging and Disruptive Technologies continued its work. The group, composed of 12 experts from academia and industry, advises NATO on its efforts to drive the adoption of new technologies. In their first annual report, in March 2021, the experts offered concrete short- and long-term recommendations on NATO's approach to emerging and disruptive technologies.

The group provided advice on how NATO might best finance its innovation efforts, build an operational network of Innovation Centres, promote successful innovation business and operating models, and increase the level of technical literacy across NATO. The experts agreed that NATO is exceptionally well-placed to be a global driver for a values-based innovation agenda.



## Accelerating the Adoption of Emerging and Disruptive Technologies

Understanding emerging and disruptive technologies and how to successfully integrate them into NATO military and enterprise capabilities was a focus of NATO's Science and Technology Organization activities in 2021. The year began with a highly successful virtual disruptive technology exercise engaging international partners, NATO commands and a broad spectrum of scientists and engineers. This exercise focused on identifying new technologies and capabilities to support NATO operations and included climate change and nuclear verification driven scenarios.

In 2021, the NATO Office of the Chief Scientist supplemented its earlier emerging and disruptive technologies studies, publishing in-depth trends analysis of open-source databases (patents, publications and industrial activity), Science and Technology Organization research, and other reports. These activities included detailed reviews and consolidated assessments of science and technology developments in autonomous systems, quantum technologies, the science and technology ecosystems of near-peer competitors, and the future technological battlespace. Of particular note was a significant analysis of "weak" technology trends (i.e., weak signals), both within and beyond the existing set of emerging and disruptive technologies relevant for NATO operations and technological developments. Working with several NATO agencies, the Office of

the Chief Scientist developed a prototype technology watch dashboard employing artificial intelligence and big data analytics to support future NATO technology watch and science and technology intelligence activities.

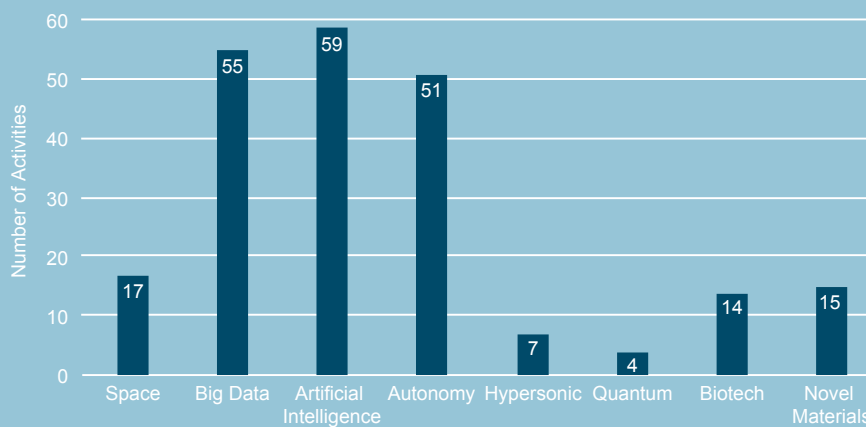


*Evidence-based advice and the conduct of science are inseparable and are the lifeblood of informed decision-making in NATO. In 2021, that advice spanned an astounding range across the human, information and physical domains.*

**Dale F. Reding (Canada)**

Scientific Advisor,  
NATO Office of the Chief Scientist  
Science and Technology Organization,  
Brussels, Belgium.

### Science and Technology Organization's Emerging and Disruptive Technologies-Related Activities in 2021



Alignment of emerging and disruptive technologies with Science and Technology Organization activities for 2021. [Please note that an activity can refer to more than one emerging and disruptive technology (in particular for big data, artificial intelligence and autonomy)].



The NATO Secretary General speaks at the NATO-Industry Forum. Rome, Italy, November 2021.

## Working with Industry

In 2021, NATO continued to expand its network and enhance its dialogue with industry to promote critical innovation in current and future capabilities. Close cooperation with industry is key to enabling NATO's ongoing adaptation. NATO needs access to the latest developments to maintain its technological edge and to guarantee effective deterrence and defence.

The Alliance pursues dialogue with industry through a number of platforms. The NATO-Industry Forum is NATO's highest-level engagement with industry. Through the forum, hundreds of experts from dozens of companies, big and small, from defence and other industries, help to assess the impact of technological developments on NATO decision-making. The November 2021 NATO-Industry Forum, hosted by Italy in Rome, attracted more than 660 experts from industry, military and Allied governments interested in NATO's vision for future capabilities and in deepening the dialogue with NATO to address the technological and strategic challenges of tomorrow. Forum participants recognised the need to strengthen

the frameworks for industry to work together with individual Allies and the Alliance as a whole.

NATO also engages with industry through the NATO Industrial Advisory Group, which comprises over 5,000 companies, including small- and medium-sized enterprises from both sides of the Atlantic. The group undertakes studies and formulates recommendations to help develop initial concepts for NATO capabilities. In 2021, the group finalised 17 studies and launched 14 new technical advice studies on key topics, including protection of NATO's aviation systems against cyber adversaries, interface standards for maritime unmanned systems, directed energy weapons, future gap-crossing capabilities and sense-and-avoid capabilities for unmanned aircraft. The group issued two reports on NATO core communications network development and on the opportunities presented by 5G mobile telecommunications technologies for NATO operations.

## Advancing Energy Security

Energy security plays a vital role in Allies' common security. In 2021, NATO made progress on its energy security agenda, focusing on strategic awareness, protecting critical infrastructure and ensuring reliable and efficient energy supplies to the military.

In May 2021, to enhance its strategic awareness, NATO held a meeting of the North Atlantic Council with energy experts from the International Energy Agency, the European Commission and the US State Department. The Alliance continued to consult on key energy developments, such as the global energy transition, in order to understand their security implications and be ready for the energy challenges of tomorrow. NATO's Energy Security Strategic Awareness course at the NATO School Oberammergau and the Annual Energy Security Roundtable with experts from other international organisations also contributed to this effort.

In September, energy experts from NATO and Ukraine met in Odesa to conduct the table-top exercise Coherence Resilience, which focused

on enhancing Ukraine's preparedness in light of hybrid attacks against its infrastructure. The same month, a similar exercise took place at the NATO Energy Security Centre of Excellence in Lithuania with a focus on risks to the Baltic States' electricity infrastructure. In October, the NATO Istanbul Cooperation Initiative Regional Centre in Kuwait hosted a course on critical energy infrastructure protection and resilience, with the participation of experts from the Gulf region.

Throughout the year, Allies also explored win-win technological solutions, which could enhance both energy efficiency and operational effectiveness of NATO's military forces. Training on energy efficiency in the military and science activities also supported work in this regard. For example, NATO continued its Science for Peace and Security Programme project on "Harmonised Energy Monitoring and Camp Simulation Tool for Energy Efficiency" and conducted scientific projects on innovative ship coatings, safer lithium-sulphur batteries and fuel cells for unmanned vehicles.

## Addressing the Impact of Climate Change on Security

Climate change poses significant security challenges for all NATO Allies. In 2021, Allies took a major step towards making NATO the leading international organisation when it comes to adapting to the security implications of climate change.

At the Brussels Summit, Allies agreed a NATO Climate Change and Security Action Plan to mainstream climate considerations throughout the Alliance. NATO Allies agreed to conduct an annual climate change and security impact assessment to study the impact of climate change on NATO's strategic environment and NATO's assets, installations, missions and operations. They also agreed to incorporate climate change considerations into NATO's work on resilience, civil preparedness, defence planning, capability delivery, assets and installations, standards, innovation, training, exercises and disaster response.



NATO Secretary General Jens Stoltenberg meets with United States Special Presidential Envoy for Climate John Kerry. Brussels, Belgium, March 2021.





Elke Van den Brandt, Minister of the Government of the Brussels-Capital Region responsible for Mobility, Public Works and Road Safety, visits NATO Headquarters. Brussels, Belgium, October 2021.

To contribute to the mitigation of climate change, in 2021 NATO started to develop a methodology to map greenhouse gas emissions from military activities and installations across the Alliance. This methodology is designed to help Allies' own emission assessment programmes and could contribute to formulating voluntary goals to reduce greenhouse gas emissions from the military. In 2021, Allies invited the Secretary General to develop a concrete

and ambitious target for the reduction of greenhouse gas emissions by the NATO political and military structures and facilities, and to assess the feasibility of reaching net zero emissions by 2050.

NATO Allies also agreed to strengthen NATO's exchanges on matters pertaining to climate change and security with a range of partners. These partners include countries, other international and regional organisations such as the European Union and the United Nations, as well as civil society, academia and industry.

**Brussels Summit Communiqué: Statement on Climate Change**

Climate change is one of the defining challenges of our times. It is a threat multiplier that impacts Allied security, both in the Euro-Atlantic area and in the Alliance's broader neighbourhood. Climate change puts our resilience and civil preparedness to the test, affects our planning and the resilience of our military installations and critical infrastructure, and may create harsher conditions for our operations. Today we have endorsed an Action Plan to implement our NATO Agenda on Climate Change and Security, which increases our awareness, adaptation, mitigation, and outreach efforts, while ensuring a credible deterrence and defence posture and upholding the priorities of the safety of military personnel and operational and cost effectiveness.

*From the Brussels Summit Communiqué, issued by the Heads of State and Government participating in the meeting of the North Atlantic Council in Brussels on 14 June 2021.*



*NATO's Climate Change and Security Action Plan marks a real breakthrough. By incorporating climate change considerations into its structures and policies, NATO will make a major contribution to meeting this challenge.*

**Michael Rühle (Germany)**

Head, Climate and Energy Security Section  
NATO Headquarters, Brussels, Belgium

## Enhancing Intelligence and Security

In the area of intelligence and security, NATO works to ensure that the Alliance remains secure across all its domains and agencies, and that decision-making is properly informed through accurate, relevant and timely intelligence. Throughout 2021, the Alliance made substantial progress on the implementation of the 2020–2023 Strategy for the NATO Intelligence Enterprise. The strategy set a high level of ambition in five key areas: security, intelligence production, communication and information systems, workforce, and intelligence enterprise governance and management.

Concrete steps were taken in 2021 to implement the strategy, including by enhancing data, information and intelligence-sharing for cyber threats, optimising the management of intelligence processes and maximising cooperation with selected partners. Throughout 2021, NATO's intelligence production unit worked closely with Allied intelligence services and with Allied Command Operations to deliver more timely and relevant insight in support of NATO decision-making. This has informed NATO's work on important issues related to arms control, cyber threats, terrorism, and a wide range of regional issues impacting NATO Allies and partners.



*I contributed to enhancing NATO and Allies' senior leadership's situational awareness in the intelligence domain, supporting timely and data-driven decision-making for a strong, relevant and future-proof Alliance.*

**Apolline Keraudy-Aigueperse (France)**

Senior Analyst, Situation Awareness Team  
NATO Headquarters, Brussels, Belgium

## Key NATO and Allied Multinational Exercises in 2021

NATO exercises are defensive in nature and proportionate. They send an important deterrence and defence message. They test the Alliance's readiness and responsiveness to a wide range of security challenges.

Fighting terrorist threats in urban environments, fielding maritime unmanned systems and coordinating the movement of thousands of troops and vehicles across Europe are some examples of the tasks and capabilities that are tested through exercises. A rich and varied exercise programme ensures that NATO multinational troops have regular opportunities to fight side by side, overcome obstacles, and prepare to safeguard Allied populations in the Euro-Atlantic area by responding to any threat from any direction.

Exercise programmes are publicly announced on NATO's website, allowing partners to view upcoming NATO exercise and plan their involvement. This not

only improves interoperability, but it also reflects a strong commitment to transparency, predictability, arms control and confidence-building.

In 2021, NATO conducted a total of 79 exercises. Six previously scheduled exercises were cancelled and five were postponed or scaled down due to COVID-19 pandemic restrictions. As in 2020, live exercises in 2021 fully respected COVID-19 public health protocols.

Individual Allies also offered national opportunities to train both domestic and international Allied troops. In 2021, Allies conducted 196 national exercises. Of these, three were associated with NATO for improving interoperability and strategic communications. Among the exercises scheduled and conducted in 2021, almost half were open to observation and participation from partner nations and international organisations.



An Italian Army machine gunner during Exercise Steadfast Defender 2021. Romania, May 2021.



A German mechanised infantryman firing blanks in the forest during Exercise Iron Wolf in May 2021. Gaižiūnai Military Training Area, Lithuania, May 2021.



Over 2,000 forces and 30 ships take part in Exercise Breeze 2021 in the Black Sea. Two of four NATO fleets participate — Standing NATO Maritime Group Two and Standing NATO Mine Countermeasures Group Two. Black Sea, July 2021.



Turkish Land Forces 66<sup>th</sup> Mechanised Infantry Brigade cross the Turkish-Bulgarian Hamzabeyli border during their land deployment to Cincu, Romania to take part in Exercise Steadfast Defender 2021. May 2021. Photo provided by NATO Media Information Centre.



## Exercise Steadfast Defender 2021

Steadfast Defender 2021 was NATO's flagship exercise in 2021. This collective defence exercise, based on an Article 5 scenario, took place in Romania, Bulgaria, Hungary and Portugal from 20 May to 22 June. It focused on the reinforcement of the Very High Readiness Joint Task Force across the Atlantic and throughout Europe, and particularly on deterrence operations in South-Eastern Europe.

Steadfast Defender 2021 aimed at training and evaluating a wide range of elements of the NATO Command Structure, NATO Force Structure, and National Force Elements involved in the enablement and deployment of the Very High Readiness Joint

Task Force. Over 9,000 troops from more than 20 NATO Allies and partners, 23 ships, 80 aircraft and one submarine participated.

The exercise demonstrated the value of North America and Europe working together. It contributed to enhancing Alliance security by maintaining NATO's broad range of interoperability and military capabilities to deter potential adversaries and reassure Allies of NATO's ability to defend them. The geographic locations of the exercise and the scale of deployment across sea, land and air reflected NATO's resolve to deter, confront and defeat potential aggressors.



US Army soldier maintaining his M1A1 Abrams tank during Exercise Steadfast Defender 2021. Romania, May 2021.



NATO Secretary General Jens Stoltenberg visits the HMS Queen Elizabeth during Exercise Steadfast Defender 2021. The Royal Navy's flagship aircraft carrier, on its maiden deployment, joined NATO ships, submarines and aircraft off the coast of Portugal to practise NATO's ability to defend sea lines of communication between North America and Europe. Portugal, May 2021.



Italian Army soldiers prepare to move out during urban operations training during Exercise Steadfast Defender 2021. Romania, May 2021.



A Montenegrin search-and-rescue responder reaches the bottom of a cliff after rescuing a simulated casualty during consequence-management exercise North Macedonia 2021. Near Ohrid, North Macedonia, September 2021.

### Preparing for Disaster: Exercise North Macedonia 2021

Disaster exercises with realistic scenarios enhance national and collective preparedness and resilience, improve interoperability between NATO and partner countries and provide a platform for innovation in disaster response. NATO's Euro-Atlantic Disaster Response Coordination Centre contributes to this through the large-scale disaster response exercises it conducts — 19 of them so far — in Allied and partner countries. The most recent of these was North Macedonia 2021, which the Centre co-organised with the Crisis Management Centre of the Republic of North Macedonia.

Incorporating both field training and table-top training components, the exercise presented the scenario of an earthquake in the areas of Ohrid and Struga, North Macedonia. Participants from 27 countries and 15 international organisations worked shoulder-to-shoulder over a four-day period, 20–23 September, through multiple crises drawn from previous real-life disaster incidents. These included mountain and urban search-and-rescue operations and responding to everything from floods to chemical, biological and radiological incidents to public misinformation campaigns.

The exercise also provided the opportunity to test NATO's Next-Generation Incident Command System, a web-based collaborative platform that facilitates real-time coordination of disaster responses, among nations from the Western Balkans region.

The lessons learned from previous disaster exercises have helped Allies and partners save lives, most recently during the forest fires and floods that hit Europe in the summer of 2021.



Greek search-and-rescue responders prepare to jackhammer through a concrete wall to rescue a simulated casualty during the North Macedonia 2021 disaster response exercise. Near Ohrid, North Macedonia, September 2021.



## NATO Exercises (Selected)

DESCRIPTION	DATE	LOCATION
<p><b>RAMSTEIN GUARD</b> Electronic Warfare Exercise Ramstein Guard trained Allied air forces in the use of the NATO Integrated Air and Missile Defence System in the event of an adverse electromagnetic environment in electronic warfare. Under the auspices of Allied Air Command headquarters in Ramstein, Germany, the exercise was conducted throughout the year at locations across the Alliance.</p>	22–26 March 11–22 April 2–13 May 23–27 May 13–17 June 4–8 July 18–22 July 19–23 July 17–21 October 8–11 November 21–25 November	Denmark Netherlands Portugal Poland Spain Belgium Bulgaria Romania Turkey Norway Hungary and Slovenia
<p><b>GRIFFIN FORCE I</b> The exercise trained for the deployment of land forces of the NATO Very High Readiness Joint Task Force, involving commands, land forces as well as the host receiving nation. The goal was enhanced enablement of NATO forces and rapid military mobilisation.</p>	18–20 January 9–10 February	Poland
<p><b>DYNAMIC MANTA</b> This annual air-and-naval exercise tested submarine warfare and anti-submarine warfare capabilities, providing a framework for naval forces to maintain high readiness and the ability to operate together. The exercise involved 2,500 participants from naval and air units of multiple NATO countries. Submarines from Greece, Italy, Turkey and the United States, all under NATO Submarine Command, joined surface ships from France, Greece, Italy, Spain and Turkey. Also taking part were maritime patrol aircraft from France, Germany, Greece, Italy and the United States, as well as Standing NATO Maritime Group Two.</p>	22 February– 5 March	Italy — Mediterranean Sea
<p><b>LOCKED SHIELDS</b> One of the world's largest and most complex live cyber defence exercises, Locked Shields is hosted annually by the NATO Cooperative Cyber Defence Centre of Excellence in Tallinn, Estonia. Two-thousand NATO cyber defence experts from 30 Allied nations participated alongside colleagues from partner nations, responding to a simulation of a massive cyber incident threatening national IT systems and critical infrastructure, and involving strategic decision-making as well as legal and communication aspects.</p>	1 March–15 April	Estonia and worldwide
<p><b>STEADFAST ARMOUR</b> The table-top exercise trained NATO's tactical and operational abilities to transition from an Integrated Air and Missile Defence peacetime mission to an operation with a focus on ballistic missile defence. NATO's premier missile defence exercise, it drew 200 participants and showcased the fusion of sensors, weapons systems and operator abilities to meet current and future threats to the Alliance.</p>	5–17 April	Germany, Italy, Portugal, Spain, Turkey, United Kingdom
<p><b>RAMSTEIN DUST II</b> This exercise, with some 200 participants, focused on the control of air missions, the provision of air surveillance and the production of a recognised air picture as part of a simulated NATO operation. A convoy of 19 vehicles and specialists from NATO's Deployable Air Surveillance and Control Unit deployed from the Port of Ancona in Italy to the area of operations near Larissa, Greece.</p>	12–23 April	Greece



DESCRIPTION	DATE	LOCATION
<p><b>AT SEA DEMONSTRATION — FORMIDABLE SHIELD</b></p> <p>A large-scale tactical exercise led by the US Sixth Fleet, the exercise enabled nations and units to incorporate capability development and training in the context of Integrated Air and Missile Defence. In total, 16 ships (from Belgium, Denmark, France, Germany, Italy, the Netherlands, Norway, Spain, the United Kingdom and the United States.), 31 aircraft and approximately 3,300 personnel from 10 NATO nations participated.</p>	14 May–2 June	Norway, United Kingdom
<p><b>NOBLE JUMP II</b></p> <p>Elements of the Very High Readiness Joint Task Force were deployed to test NATO's deployment functions and the NATO Force Integration Units concept. Moving from Turkey through Bulgaria and finally into Romania, the exercise involved 4,000 troops from 12 nations spanning the Alliance from the United States to Montenegro, along with more than 600 vehicles and aircraft.</p>	19 May–2 June	Romania
<p><b>CWIX</b></p> <p>Conducted annually, the NATO Coalition Warrior Interoperability exploration, experimentation, examination exercise is designed to support continuous improvement in the interoperability of the Alliance. It focuses on the validation and verification of communication and information systems, and experimental, developmental and fielded communication and information systems. Participants included engineers, operators and software developers. The exercise emanated from its execution site at the Joint Force Training Centre in Bydgoszcz, Poland and involved 1,000 to 2,500 participants remotely across 13 time zones. Personnel from 28 nations conducted over 10,000 technical interoperability tests across land, maritime, air and cyber environments.</p>	7–25 June	Poland
<p><b>DYNAMIC MONGOOSE</b></p> <p>This annual NATO exercise in the North Atlantic trained submarines, anti-submarine surface units and maritime patrol aircraft in submarine and anti-submarine warfare. The exercise involved 2,500 personnel, sailors and aircrew from seven NATO nations (Canada, Denmark, France, Germany, Norway, the United Kingdom and the United States) and included two submarines, six surface ships and eight maritime patrol aircraft.</p>	28 June–9 July	Norway
<p><b>RAMSTEIN ALLOY 1, 2 and 3</b></p> <p>These live exercises had Article 5 scenarios, with a focus on the air domain. They promoted interoperability and coordination with partners Finland and Sweden. Approximately 100 units participated in each exercise.</p>	19–21 April 28–30 June 21–22 September	Latvia Estonia Lithuania
<p><b>CYBER COALITION</b></p> <p>This exercise was based on a scenario involving significant cyber threats, creating an opportunity for Allies to share best practices to enhance situational awareness and information-sharing to defend against cyber attacks. The exercise objectives emphasised decision-making processes, technical and operational procedures, and collaboration between all participants. Approximately 1,000 personnel from Allied and partner countries participated.</p>	29 November– 3 December	Estonia
<p><b>STEADFAST JACKAL</b></p> <p>The aim of this exercise was to train and evaluate NATO Rapid Deployable Corps-Italy as a Joint Task Force Headquarters in planning and conducting a non-Article 5 small joint operation under NATO, focusing on counter-hybrid activities, comprehensive approach and stabilisation. The exercise also tested the operational capability of the French Joint Force Air Component implementing the new Air Command and Control concept as part of their certification process for the NATO Response Force 2022. Approximately 1,000 personnel took part in the exercise.</p>	30 November– 9 December	France, Italy, Turkey

## Allied National Exercises (Selected)

DESCRIPTION	DATE	LOCATION
<p><b>SPRING STORM</b> A large, live exercise of the Estonian Defence Forces, Spring Storm drew participation from NATO's enhanced Forward Presence Battlegroups and other Allied forces. About 2,000 personnel from Denmark, France, Italy, Latvia, Poland, the United Kingdom and the United States took part in the exercise, along with 5,000 Estonian personnel.</p>	17 May–9 June	Estonia
<p><b>SABER GUARDIAN</b> Bi-annual, multinational and led by US Army Europe, this exercise had about 500 participants and focused on training for collective defence. It was part of the much larger multinational Defender-Europe 21 exercise and was designed to improve the integration of multinational combat forces involving long-range precision live-fires.</p>	24 May–9 June	Bulgaria, Romania, Hungary
<p><b>BALTOPS</b> This annual, US-led maritime live exercise included air defence, anti-submarine warfare, amphibious operations, maritime interdiction and mine counter-measure operations. Sixteen NATO and two partner nations provided approximately 40 maritime units, 60 aircraft and 4,000 personnel. Participants included Belgium, Canada, Denmark, Estonia, Finland, France, Germany, Italy, Latvia, Lithuania, the Netherlands, Norway, Poland, Spain, Sweden, Turkey, the United Kingdom and the United States.</p>	1–21 June	Germany and the Baltic Sea
<p><b>BREEZE</b> Led by the Bulgarian Navy, this exercise aimed at enhancing interoperability among participating naval units and staffs in conducting conventional and non-conventional warfare. It focused on operational and tactical interoperability, increasing interagency coordination, and refining cooperation with government and non-governmental organisations. Approximately 2,500 personnel took part from 14 NATO Allies and partners (Albania, Belgium, Bulgaria, Georgia, Greece, Italy, Latvia, Poland, Romania, Spain, Turkey, Ukraine, the United Kingdom and the United States) as well as Standing NATO Mine Countermeasures Group 2 and Standing NATO Maritime Group 2.</p>	11–19 July	Bulgaria
<p><b>JOINT WARRIOR</b> The United Kingdom-led, multinational, live exercise provided collective training in tactical formations and prepared participants to operate as a combined joint task force. Participating were 11 NATO nations (Canada, Belgium, France, Germany, Latvia, the Netherlands, Norway, Portugal, Spain, the United Kingdom and the United States) with about 6,750 military personnel, 25 warships, 3 submarines and more than 30 aircraft.</p>	18–30 September	United Kingdom
<p><b>IRON WOLF II</b> This Lithuanian live exercise was aimed at training NATO's enhanced Forward Presence Battlegroup and enhancing the interoperability of multinational forces in the land domain. The exercise involved 3,000 NATO soldiers, additional soldiers from Ukraine, and 1,000 pieces of military equipment from Belgium, Czech Republic, Germany, Latvia, Lithuania, Luxembourg, the Netherlands, Norway, Poland, Spain, the United Kingdom and the United States.</p>	12–14 October	Lithuania
<p><b>MARE APERTO</b> This Italian-led live maritime exercise trained and tested commands, staff and forces in a multidimensional scenario. The focus of the exercise was amphibious operations, to enable the certification of the Italian-led Amphibious Task Force as part of NATO Response Force 2022. Participants included 4,000 personnel from nine Allied and partner Navies, 21 naval units, four AV-8B aircraft and 17 embarked helicopters, including two combat helicopters of the Italian Army, three Italian submarines and several maritime patrol aircraft.</p>	4–27 October	Italy





# PROMOTING PEACE

CONTRIBUTING TO  
SECURITY AND STABILITY  
AT HOME AND ABROAD



A Spanish Air Force A400M multirole tanker taxis into the sunrise during Exercise European Air Refuelling Training 2021. Held over Spain's Canary Islands, this exercise gave Allies a chance to practise aerial refuelling while supporting the Spanish-led fighter exercise Ocean Sky 2021. Lanzarote, Spain, October 2021.

*Together we will continue to tackle instability, fight terrorism and safeguard the rules-based international order, by stepping up training and capacity-building for partners. And deepening our relations with other countries, international organisations, the private sector and academic institutions.*

NATO Secretary General Jens Stoltenberg,  
67<sup>th</sup> Annual Session of the NATO Parliamentary Assembly. 11 October 2021.

To keep its people safe and protect its fundamental values — democracy, individual liberty and the rule of law — NATO engages in operations and missions beyond its borders, and cooperates with a range of partner organisations and countries near and far.

Working closely together, NATO and its partners can better uphold the rules-based international order, defend common values and interests and tackle global challenges, including terrorism.

## Fighting Terrorism

Terrorism continues to pose a major threat to the security of the citizens of NATO countries, and to international peace and stability.

This past 11 September (2021) marked the 20<sup>th</sup> anniversary since the horrific terrorist attacks against the United States. Shortly after these attacks, organised by Al Qaeda from Afghanistan, NATO invoked Article 5 of its founding treaty for the first and only time in its history. After 9/11, NATO deployed in Afghanistan to prevent the country from serving as a safe haven and operational basis for terrorists to carry out attacks against Allies. Over



Ceremony held at NATO Headquarters to commemorate the 20<sup>th</sup> anniversary of the 11 September 2001 terrorist attacks on the United States. The 9/11 Memorial is a twisted steel beam from the 107<sup>th</sup> floor of the World Trade Center's Tower in New York City. Brussels, Belgium, September 2021.

the past two decades, no terrorist attacks against NATO Allies have been organised from Afghanistan. In 2021, NATO ended its military mission there.

## NATO's Approach to Fighting Terrorism

- A comprehensive plan defines and determines NATO's role in the international community's fight against terrorism.
- The plan focuses on improving awareness of the threat, developing capabilities to prepare and respond, and enhancing engagement with partner countries and other international actors.
- NATO trains, advises and assists Iraqi security forces and institutions through NATO Mission Iraq and is a member of the Global Coalition to

Defeat Daesh/ISIS, providing the coalition with AWACS surveillance aircraft.

- NATO supports the development of new capabilities and technologies to tackle the terrorist threat and to manage the consequences of a terrorist attack.
- NATO cooperates with partners and international organisations to leverage the full potential of each stakeholder engaged in the global counter-terrorism effort.

In 2021, NATO continued its efforts to strengthen partners in their fight against terrorism, including through NATO Mission Iraq (see page 87). In addition, NATO increased its support to Jordan and Tunisia, it resumed on-site partner capacity building programmes in the NATO-Istanbul Cooperation Initiative Regional Centre in Kuwait and delivered its first in-person counter-terrorism course for participants from partner countries in the Gulf. With the support of the US Department of State, NATO conducted the first of four rounds of battlefield evidence training for law enforcement and military

staff from NATO's Mediterranean Dialogue<sup>7</sup> and Istanbul Cooperation Initiative<sup>8</sup> partners, as well as eligible G5 Sahel<sup>9</sup> countries. The training in November and December 2021 combined hands-on fieldwork exercises and classroom modules provided by the NATO Centre of Excellence for Stability Policing in Vicenza, Italy. The Alliance also began using its standardised curriculum in counter-terrorism to deliver online courses to participants of the Odesa Military Academy and the National Defence University in Kyiv, Ukraine.



Participants in the battlefield evidence training at the NATO Stability Policing Centre of Excellence exercise the collection of information in conflict situations, such as fingerprints and documents that may later be used to support law enforcement efforts. Vicenza, Italy, November-December 2021.

NATO also assisted Allies in the development of counter-terrorism capabilities, including through its long-standing Defence Against Terrorism Programme of Work. The programme funds innovative and pioneering projects, addresses shortfalls and strengthens interoperability. In 2021, it supported 16 cooperative projects in the areas of:

- Countering unmanned aircraft systems;
- Protecting harbours and other critical infrastructure;
- Defending against terrorist use of chemical, biological, radiological and nuclear substances;
- Adding aircraft survivability in electronic warfare;

- Using and sharing of biometrics data;
- Countering improvised explosive devices.

In late 2021, NATO adopted an updated action plan to enhance its role in the international community's fight against terrorism. The plan includes new areas such as terrorist misuse of technology, human security and countering terrorist financing.

8 Algeria, Egypt, Israel, Jordan, Mauritania, Morocco and Tunisia.

9 Bahrain, Kuwait, Qatar and the United Arab Emirates.

10 G5 Sahel countries include: Burkina Faso, Chad, Mali, Mauritania and Niger.





NATO E-3A Airborne Warning and Control System (AWACS) aircraft returning to Konya, Turkey, as part of NATO's contribution to the Global Coalition to Defeat Daesh/ISIS. The aircraft support the Coalition's overall air picture by providing surveillance and situational awareness, thereby making the skies safer. Konya, Turkey, November 2021. Photo courtesy of NATO AWACS Force.

## Countering Unmanned Aircraft in the Fight against Terrorism

The misuse of small unmanned aircraft systems (often referred to as drones) represents a significant and growing risk to NATO operations and day-to-day defence activities. Today, these aircraft are a valuable tool and major element of asymmetric warfare. Their relatively low cost, flexible capabilities and potential lethality make them attractive to terrorist groups and non-state actors, who have incorporated their use as standard tactics to plan, prepare and execute attacks on forces, critical infrastructure and political figures.

Countering the threat posed by unmanned aircraft requires a coherent and holistic approach. Through NATO, Allies continue to exchange information and learn from each other. In 2021, through the Defence Against Terrorism Programme of Work, NATO conducted a number of trials to assess technological developments regarding counter-unmanned aircraft systems, in particular:

- **Counter-Unmanned Aircraft Systems Innovation Challenge.** Run by the NATO Communications and Information Agency in February and March 2021, the challenge tested academia, industry and research agencies' use of the latest tracking, data fusion and machine learning techniques to detect, track and identify unmanned systems.
- **Summer Jamm 2021.** With Germany taking the lead, this exercise tested the operational interoperability of counter-unmanned aircraft systems teams in civil-military operations, in particular in the protection of an airfield. Thirteen nations<sup>11</sup> participated in the exercise in October 2021.
- **NATO Counter-Unmanned Aircraft Systems Technical Interoperability Exercise 2021.** Led by the NATO Communications and Information Agency and conducted in November in the Netherlands, this exercise demonstrated interoperability between more than 70 systems and components deployed by 25 companies through standard protocols, allowing for plug-and-play integration and interface standardisation.

<sup>11</sup> NATO Allies Belgium, Denmark, Germany, Greece, Italy, Lithuania, Luxembourg, the Netherlands, Romania, Spain, the United Kingdom and the United States; NATO partner Sweden; NATO Headquarters, the NATO Communications and Information Agency, Allied Joint Force Command Naples; a joint European Union delegation composed of the European Commission and the European Defence Agency

## NATO Missions and Operations

NATO contributes to peace and security on the international stage. It promotes democratic values and is committed to the peaceful resolution of disputes. When diplomatic efforts fail, NATO has the

capacity to undertake crisis management operations and other military missions, either alone or in cooperation with other countries and international organisations.

### NATO Mission in Afghanistan

Following the 9/11 terrorist attacks on the United States, NATO Allies went into Afghanistan to ensure that the country would not again become a safe haven for international terrorists to attack the homelands of NATO countries. Over the last two decades, there have been no terrorist attacks on Allied soil from Afghanistan.

From August 2003, NATO led the UN-mandated International Security Assistance Force, which aimed to create the conditions whereby the Afghan government could exercise its authority throughout the country and build the capacity of the Afghan national security forces, including in the fight against international terrorism. This UN-mandated force was terminated in December 2014, when the Afghan National Defence and Security Forces assumed full responsibility for security across their country.



NATO Secretary General Jens Stoltenberg participating in a virtual meeting of foreign ministers on Afghanistan. Brussels, Belgium, September 2021.

**MY SERVICE IN AFGHANISTAN**

In 2021, Supreme Headquarters Allied Powers Europe (SHAPE), in collaboration with the NATO International Military Staff, launched a video series entitled “My Service in Afghanistan” aimed at highlighting the extraordinary service provided by uniformed personnel during NATO’s Resolute Support Mission in Afghanistan. Watch the whole series: <https://www.youtube.com/hashtag/myerviceinafghanistan>

In January 2015, NATO launched the Resolute Support Mission to train, advise and assist Afghan security forces and institutions to fight terrorism and secure their country.

On 14 April 2021, following close consultations among all Allies, NATO announced the withdrawal of NATO-led Resolute Support Mission forces within a few months. This decision initiated the end of NATO’s almost 20-year military engagement in Afghanistan.

NATO honours the service and sacrifice of hundreds of thousands of Allied and partner nation military and civilian personnel who served in Afghanistan over the years; and that of all the Afghans who served alongside them.



Afghan citizens arriving in Luxembourg to start a new life. Luxembourg, October 2021.

In August 2021, following the rapid collapse of the Afghan political and military leadership, and the return to power of the Taliban, NATO launched one of the largest airlift efforts in history. It provided critical functions to ensure the operation of Kabul airport, and led the coordination of the evacuation effort on the ground. Over the course of three weeks, more than 120,000 people were flown out on hundreds of flights, including from Allied countries. The United States, the United Kingdom, Turkey and Norway provided security and operated the airport under extremely challenging circumstances. Around 2,000 NATO-affiliated Afghans were evacuated and resettled to Allied countries.

NATO has suspended all areas of cooperation with Afghanistan, but it remains dedicated to Afghanistan. Together with partners and the wider international community, NATO Allies hold the Taliban accountable to the commitments they have undertaken to safeguard the human rights of all Afghans, particularly women, children and minorities; uphold the rule of law; allow unhindered humanitarian access; and ensure that Afghanistan never again serves as a safe haven for terrorists.



*I was involved in the evacuation of NATO-affiliated Afghans and proudly witnessed the incredible effort of NATO staff and selfless cooperation between Allies.*

**Voy Rutkowski (United Kingdom)**

Coordinator, Mission Safety and Security Section  
NATO Headquarters, Brussels, Belgium

After the end of its military mission, NATO launched a comprehensive assessment of its military and political engagement in Afghanistan. In December 2021, NATO Defence Ministers discussed in-depth the lessons learned from this engagement. The lessons NATO has learned from Afghanistan will shape the Alliance's crisis management role in the future.



*Evacuating and resettling almost 2,000 Afghans who had worked with NATO was a major achievement. Those Afghans had chosen to serve their country by supporting our Alliance.*

**Ulrich Pilster (Germany)**

Policy Officer, Current Operations Section  
NATO Headquarters, Brussels, Belgium





The Dean of the Military College receives a team from NATO Mission Iraq. One of the crucial goals for the Military College is transferring experience from NATO institutions and military colleges to Iraqi educational and training institutions. Baghdad, Iraq, April 2021.

## NATO Mission Iraq

NATO Mission Iraq is the cornerstone of NATO's engagement in the Middle East. It is a non-combat, advisory, training and capacity-building mission. The mission supports Iraq in strengthening its security institutions and forces, so they are able to stabilise their country, fight terrorism and prevent the return of Daesh/ISIS.

To achieve these goals, NATO advises relevant Iraqi defence and security officials in the Ministry of Defence, the Office of the National Security Advisor and the Prime Minister's National Operations Centre. The mission also advises Iraq's professional military education institutions in the greater Baghdad area. Specific areas of focus include policy and strategy; force generation and development; resource management; Women, Peace and Security; leadership development and good governance in the security sector.

In February 2021, NATO Defence Ministers decided to expand the NATO mission in Iraq, following a request by the Iraqi government. All activities of NATO Mission Iraq are agreed upon by the Iraqi government and conducted in full respect of Iraq's sovereignty and territorial integrity. NATO Mission Iraq promotes inclusiveness, gender awareness and respect for international humanitarian law and human rights.

All 30 NATO Allies and three partner countries (Australia, Finland and Sweden) contribute to NATO Mission Iraq. In 2021, the mission expanded its strength by a few hundred more support staff and advisors, including civilians, military and support elements. This expansion to about 500 personnel helped the mission enhance its engagements with Iraqi defence and security officials.

NATO complements the broader international effort to help Iraq eradicate terrorism and promote stability. NATO Mission Iraq coordinates with other stakeholders, such as Operation Inherent Resolve, the United Nations and the European Union. Since May 2020 — through its Euro-Atlantic Disaster Response Coordination Centre — NATO has also been helping the Iraqi authorities with their request for assistance in response to the COVID-19 pandemic.

In November 2020, Lieutenant-General Michael Lollsgaard from Denmark took over command of NATO Mission Iraq from Canada. In May 2022, Italy will take over command from Denmark, to be followed by Spain as lead nation in November 2023.



NATO Secretary General Jens Stoltenberg meets with Kosovo Force troops during a visit. Kosovo, July 2021.



Kosovo Force helicopters helping to extinguish a vast fire in a mountain resort area in western Kosovo. Rugova area, Kosovo, August 2021.

## NATO Mission in Kosovo

NATO's presence in Kosovo remains crucial for the stability of the Western Balkans region. Since 1999, the NATO-led Kosovo Force has continued its work to maintain a safe and secure environment and freedom of movement for all communities in Kosovo.

The Kosovo operation was established when NATO's 78-day air campaign, aimed at stopping the violence in Kosovo, came to an end. The mandate for NATO's role in Kosovo stems from United Nations Security Council Resolution 1244 (adopted in 1999).

During 2021, in close cooperation with the United Nations, the European Union and other international actors, NATO's mission supported the development of a stable, democratic, multi-ethnic and peaceful Kosovo. It also provided assistance to the institutions in Kosovo and the European Union Rule of Law Mission, upon their request. In 2021, 28 NATO Allies and partners provided approximately 3,770 troops for the Kosovo mission.

In addition, NATO provided capacity-building support to the security organisations in Kosovo through the NATO Advisory and Liaison Team — a civilian and military team of approximately 40 personnel from 15 countries. In 2021, the team continued to offer advice and assistance in areas such as logistics, procurement, budget execution, human resources management and strategic communications.

NATO supports the European Union-facilitated dialogue between Belgrade and Pristina, and welcomed the continued efforts in 2021. This dialogue remains the main vehicle for reaching a long-lasting political solution in Kosovo and the Western Balkans as a whole.



*With NATO's capacity-building team in Pristina, I contributed to the development of the security organisations in Kosovo, which successfully continued throughout 2021 despite the pandemic. The local hospitality was a highlight!*

**Blanca Hereza Atienza (Spain)**

Policy and Programmes Officer,  
NATO Advisory and Liaison Team  
KFOR Headquarters, Kosovo

## NATO Operations and Activities at Sea

Through its operations at sea, NATO contributes to deterrence and defence but also to fighting terrorism and enhancing stability. It works together with partners and other international organisations to enhance maritime situational awareness, build maritime capacity and ultimately provide a safe and secure maritime environment.

In 2021, NATO's Standing Naval Forces continued to represent an important instrument of diplomacy and presence at sea. Through training, exercises and port visits, these forces engaged with partners and contributed to maritime situational awareness.

Operation Sea Guardian in the Mediterranean also supported maritime situational awareness, as well as efforts to counter the threat of terrorism in the region by hailing and boarding suspect vessels. In addition, the operation contributed to regional maritime security capacity building through training, exercises, key leader engagements and port visits. Operation Sea Guardian undertook a total

of six focused operations, involving surface and subsurface vessels and maritime patrol aircraft. These operations gathered information about maritime activities in the region to help identify potential security concerns.

In the Aegean Sea, NATO contributed to ongoing international efforts to address the refugee and migrant crisis. Allied ships regularly provided information, surveillance and reconnaissance to help Greece, Turkey and the European Union's Border and Coast Guard Agency (FRONTEX) take more effective action to prevent human trafficking.

NATO remained engaged in the fight against piracy off the Horn of Africa by maintaining maritime situational awareness and continuing to invest in long-term partnerships with counter-piracy actors. This type of engagement remains important as piracy, while severely reduced, has not yet been eliminated.

## NATO Standing Maritime Presence 2021

**4** NATO Standing Maritime Groups:

**76** different ships

**21** exercises

**131** port visits in **26** Allied and Partner countries

**Groups spent:**

more than **11,000** hour patrolling the Aegean Sea

**286** days in the Baltic Sea




**104** days in the Black Sea

**Groups conducted:**

**8** Historical Ordnance Disposal Operations

finding **73** mines

and **27** other pieces of ordnance

-  Visited Countries
-  Major Exercise / Operation
-  Standing Naval Forces (Areas of Deployment)





NATO Mission Iraq and contributing partners from the international community wrap up an Iraqi-led Crisis Management and Protection of Civilians workshop at the al-Nahrain Centre for Strategic Studies. Baghdad, Iraq, November 2021.



A member of NATO's Kosovo Force exercises realistic first aid procedures with a member of the Kosovo Police during Exercise Swift Rescue. The aim of the exercise was to test and strengthen the technical and tactical procedures used during a security crisis. Pristina, Kosovo, June 2021.

## Human Security

NATO's commitment to safeguarding freedom and security has guided the Alliance for more than 70 years. Over the decades, challenges to Allies' shared security — and the contexts in which NATO addresses these challenges — have evolved. Increasingly, challenges to security occur and must be addressed in spaces inseparable from civilian populations. To ensure that NATO remains prepared to address security challenges in these difficult settings, the Alliance is pursuing a human security approach to its operations, missions and activities.

For NATO, the notion of human security directly links Alliance values to NATO practice, focusing on how to mitigate risks and threats to populations in conflict or crisis areas. NATO's human security agenda includes the protection of civilians, children and armed conflict, combatting human trafficking, preventing and responding to conflict-related sexual violence, and protecting cultural property.

Throughout 2021, NATO continued to hone its approach to human security both through policy and doctrine development, as well as through exercises and information exchange. Several exercises in 2021 featured human security, including Steadfast Defender 2021, Steadfast Jupiter 2021 and Steadfast Leda 2021.

NATO's continuing work to prevent and respond to conflict-related sexual violence resulted in a new policy that was endorsed by NATO Leaders at the Brussels Summit in June. The policy underscores NATO's support for the international community's

efforts to end impunity for conflict-related sexual violence and outlines specific actions that NATO will take to prevent and respond to this crime. The new policy builds on NATO's experience in the field, and its development was informed by extensive consultation with a range of experts from the United Nations, other international organisations and civil society. In addition, NATO's 2021 policy on battlefield evidence has embedded considerations on supporting law enforcement and ending impunity for conflict-related sexual violence.



The Commander of the NATO Kosovo Force Multinational Specialized Unit, Colonel Stefano Fedele, and the Mayor of North Mitrovica, Mr Milan Radojevic, deliver several packages to students and their families living in North Mitrovica. Civil-military cooperation teams are established in all Kosovo Force sub-units with the aim of assessing the needs of local communities and providing aid to those who need it most. North Mitrovica, Kosovo, September 2021.



Medics from Montenegro and Bosnia and Herzegovina load a simulated casualty into an ambulance in Ohrid, North Macedonia during consequence management exercise North Macedonia 2021. The exercise was organised and executed by NATO's Euro-Atlantic Disaster Response Coordination Centre. Ohrid, North Macedonia, September 2021.

## Partnerships: Shared Security through Cooperation and Dialogue

NATO's partnerships are essential to the way NATO works. Partnerships play an important role in supporting NATO's three core tasks of collective defence, crisis management and cooperative security. They contribute to stability in the Euro-Atlantic area and to the pursuit of NATO's political and military objectives. The Alliance's partnerships are based on reciprocity, mutual benefit and mutual respect.

NATO has developed formal partnerships with 40 countries worldwide and several international organisations. The Alliance continues to rely on political dialogue and practical cooperation to develop its partnerships, promote security and tackle shared challenges. Eighteen partners currently have missions to NATO Headquarters in Brussels.

Partners are engaged in many of NATO's core activities, from shaping policy to building defence capacity, developing interoperability and managing crises. In 2021, partners participated in NATO-led exercises and contributed personnel to the NATO Command Structure. Partners also supported NATO missions, including in Afghanistan, Iraq and Kosovo. In addition, partners contributed financially to NATO-led Trust Funds and offered in-kind support, for example through NATO's Partnership Training and Education Centres. Partners have also contributed to improving NATO's strategic awareness related to terrorist threats through thematic consultations and sharing information.

In 2021, NATO kept most of its liaison offices open (in Belgrade, Chisinau, Kyiv, Sarajevo and Tbilisi, and in Kuwait, New York and Vienna), while adjusting to local COVID-19 precautionary measures and adopting alternative ways of working. In 2021, Russia suspended its mission to NATO, and required NATO to close down the NATO Information Office in Moscow and suspend the work of the Military Liaison Mission, also in Moscow.



NATO Deputy Secretary General Mircea Geoană meets with First Vice Minister of Foreign Affairs of the Republic of Korea Choi Jong Kun. Brussels, Belgium, October 2021.





Press conference following the meeting between NATO Secretary General Jens Stoltenberg (right) and Prime Minister of Georgia Irakli Garibashvili. Brussels, Belgium, December 2021.

## NATO's Open Door

NATO's door to membership remains open to all European democracies that share the values of the Alliance (individual liberty, democracy and the rule of law), are willing and able to assume the responsibilities and obligations of membership, are in a position to further the principles of the North Atlantic Treaty, and whose inclusion can contribute to the security of the North Atlantic area. Every country must be free to choose its own security arrangements, including whether or not to join any treaty or alliance like NATO.

Decisions on enlargement are for NATO itself and require the consensus of all its members.

Throughout 2021, NATO continued to support Bosnia and Herzegovina's reform efforts based on its reform programme, which the country submitted in December 2019. Allies also remained committed to supporting eventual NATO membership of Georgia and Ukraine, in line with decisions taken at the 2008 Bucharest Summit and subsequent summits, and monitored the implementation of the Annual National Programmes of both countries to this end.

In the context of the NATO 2030 agenda, Allies agreed on recommendations to enhance their support to all three NATO aspirant countries in preparing for membership, without prejudging future decisions of the Alliance. Key recommendations concern enhanced political engagement and resources for capacity-building programmes and focused practical cooperation.



NATO Deputy Secretary General Mircea Geoană participating in the Crimea Platform Inaugural Summit. Kyiv, Ukraine, August 2021.





Left to right: Supreme Commander of the Swedish Armed Forces General Micael Bydén with Chair of the NATO Military Committee Admiral Rob Bauer and NATO Secretary General Jens Stoltenberg. Berga Naval Base, Sweden, October 2021.

## *Bilateral and Regional Partnerships: An Overview*

For almost 30 years, NATO has developed a network of partnerships with non-member countries from the Euro-Atlantic area, the Mediterranean and the Gulf region and other areas across the globe.

Each partner determines its objectives, as well as the pace, scope and focus of its bilateral partnership with NATO. These are set out in bilateral cooperation documents and tailored to each partner's interests and capacities, while also reflecting NATO's own priorities.

Since 2014, NATO also maintains the Partnership Interoperability Initiative, focused on preserving and deepening interoperability developed with partners during NATO-led operations and missions. The initiative provides a platform for cooperation between Allies and partners that have contributed to NATO operations or have taken concrete steps to deepen their interoperability with NATO. The format of this platform cuts across traditional, geographical frameworks for cooperation. In this format, Allies and partners discuss projects and issues that affect interoperability for future crisis management, such as command and control systems, education and training, exercises or logistics. On this basis, NATO established "enhanced opportunities" status for six partners: Australia, Finland, Georgia, Jordan, Sweden and Ukraine. Through this status, these countries have increased opportunities to engage with the Alliance as well as an easier process for participating in exercises and enabling regular consultation on security matters.

In 2021, NATO introduced a more strategic approach to its cooperation with non-member countries, as well as a new generation of agreements — the Individually Tailored Partnership Programmes — which will guide NATO's cooperation with its individual partners over a four-year cycle. Partners aspiring to NATO membership also develop an Annual National Programme/Reform Programme focused on comprehensive democratic, security and defence reforms.

**In the Euro-Atlantic area**, Allies engage in relations with 20 partner countries<sup>12</sup> through the Euro-Atlantic Partnership Council and the Partnership for Peace — a major programme of bilateral cooperation. Among these countries, NATO has developed specific structures for its relationships with Russia,<sup>13</sup> Ukraine and Georgia.

<sup>12</sup> Armenia, Austria, Azerbaijan, Belarus, Bosnia and Herzegovina, Finland, Georgia, Ireland, Kazakhstan, Kyrgyz Republic, Malta, the Republic of Moldova, Russia, Serbia, Sweden, Switzerland, Tajikistan, Turkmenistan, Ukraine, Uzbekistan.

<sup>13</sup> In April 2014, following Russia's illegal and illegitimate annexation of Crimea, NATO decided to suspend all practical civilian and military cooperation with Russia, but to maintain political contacts at the level of ambassadors and above.

## Cooperation with Ukraine

Throughout 2021, Allies remained firm in their support for Ukraine's sovereignty and territorial integrity. In April, the NATO-Ukraine Commission convened an extraordinary meeting to discuss the Russian military build-up near Ukraine. As a result, NATO stepped up its support to enhance Ukraine's situational awareness, strategic messaging and efforts to counter Russian hybrid tactics and disinformation.

In July, the NATO-Ukraine Commission received a briefing by then Deputy Prime Minister Oleksii Reznikov on the situation in eastern Ukraine. Russia's threatening military build-up was the backdrop for a meeting of NATO Foreign Ministers with Ukraine and Georgia in Riga, Latvia in December. Allied Ministers made clear that any future Russian aggression would come at a high price and have serious political and economic consequences for Russia. On 16 December, the North Atlantic Council issued a joint statement on the situation in and around Ukraine, expressing grave concern for the "substantial, unprovoked, and unjustified Russian military build-up on the borders of Ukraine." The statement called on "Russia to immediately de-escalate, pursue diplomatic channels, and abide by its international commitments." It also reiterated "support for the territorial integrity and sovereignty of Ukraine within its internationally recognised borders." At the June Brussels Summit, Allied Heads of State and Government reiterated the decision concerning Ukraine's aspirations for NATO membership made at the 2008 Bucharest Summit.

NATO's practical cooperation with Ukraine grew in 2021. NATO continued to support Ukraine through its 16 practical assistance programmes under the Comprehensive Assistance Package. For instance, the NATO-Ukraine Professional Development Programme helped Ukraine establish and develop the Department of Euro-Atlantic Integration of the National Academy of the National Guard of Ukraine in Kharkiv and continued to build the capacity of the training centre at the Verkhovna Rada of Ukraine.

Moreover, in cooperation with the National Agency of Ukraine on Civil Service and the Ukrainian School of Governance, the Programme began developing an ambitious nation-wide course on the Euro-Atlantic Integration of Ukraine. The Military Career Transition Programme continued to work closely with the Ministry for Veterans Affairs of Ukraine, focusing on the introduction of modern human resources management practices into the Ukrainian system.



President of Ukraine Volodymyr Zelenskyy (left) meets with NATO Secretary General Jens Stoltenberg. Brussels, Belgium, December 2021.

Over the years, Ukraine has supported numerous NATO missions and operations, including peace-support operations in Bosnia and Herzegovina. Ukraine continues to contribute to NATO's Kosovo Force, including with a heavy engineering unit with counter-improvised explosive devices capabilities. Ukraine was a consistent contributor to NATO's mission in Afghanistan, providing medical personnel to support provincial reconstruction teams and instructors to the NATO training mission. In addition, Ukraine helped to train, advise and assist Afghan security forces. Ukraine has also deployed ships in support of NATO's counter-terrorist maritime surveillance operation in the Mediterranean Sea, in addition to supporting NATO's maritime situational awareness in and around the Black Sea.

The NATO-Ukraine table-top exercise Coherent Resilience 20<sup>14</sup>, held in Odesa in September, helped Ukraine to be better prepared and more resilient to hybrid attacks against its critical infrastructure. Representatives from 15 NATO and partner countries participated in the exercise along with around 100 experts from Ukrainian state, regional and local bodies.

NATO supported Ukraine's capacity-building in the field of strategic communications, in line with the 2015 NATO-Ukraine Strategic Communications Partnership Roadmap. In 2021, the Kyiv-based NATO Information and Documentation Centre supported 24 public diplomacy projects and initiatives, and arranged 28 media engagements. It continued its cultural diplomacy outreach (with six art exhibits at its Creative Space promoting Ukrainian artists), as well as its advisory and practical support to Ukrainian counterparts on strategic communications. The Centre facilitated cooperation between the Secretariat of the National Security and Defence Council of Ukraine and the NATO Strategic Communications Centre of Excellence in Riga, enabling exchanges in the area of strategic communications capabilities development and research.

<sup>14</sup> Coherent Resilience 20 was part of the Black Sea security package adopted by NATO Foreign Ministers in 2019 and was executed in September 2021.



A sniper from the Swedish Army Ranger Battalion gets a little help from his spotter during the 2021 European Best Sniper Competition. The US-organised competition gathered sniper teams from 14 NATO Allies and partners. Hohenfels Training Area, Germany, August 2021.

## Cooperation with Finland and Sweden

Maintaining the high level of interoperability between the armed forces of NATO Allies and partners Finland and Sweden is a priority.

In 2021, Sweden and Finland continued to contribute to NATO-led operations and missions in Afghanistan, Iraq and Kosovo, and to support NATO's work on Women, Peace and Security and human security.

Political dialogue remained strong. Finnish and Swedish Ministers participated in the NATO Defence Ministers' meetings in February and October 2021, as well as the NATO Foreign Ministers' meetings in March and December 2021.

The North Atlantic Council made an historic first visit to Finland and Sweden in October 2021, underlining the close partnership between NATO and its two partners, notably on matters pertaining to security in the Baltic Sea region and in the High North. In Finland, the Council met President Sauli Niinistö and attended a dinner with Prime Minister Saana Marin. The Council also met Foreign Minister Pekka Haavisto, Minister of Interior Maria Ohisalo, Defence Minister Antti Kaikkonen, senior Members of Parliament and Commander of the Finnish Defence Forces Gen. Timo Kivinen. The Council was briefed by representatives from the European Centre of Excellence for Countering Hybrid Threats and visited the Jaeger Regiment at

Santahamina. In Sweden, the Council met Foreign Minister Ann Linde, Defence Minister Peter Hultqvist, Minister for Home Affairs Mikael Damberg, senior Members of Parliament and Swedish Commander in Chief Gen. Micael Bydén, and observed naval, air and amphibious units from Sweden and Finland engaged in the SWENEX exercise.



Finnish Air Force F/A-18 Hornet in flight. NATO members Germany, Italy and Poland trained with fighter jets from NATO partners Finland and Sweden during a NATO air force exercise, Ramstein Alloy 2021. Baltic region, April 2021.



## NATO Engagement and Cooperation in the Western Balkans

In 2021, NATO's work in the Western Balkans remained focused on political engagement, wide-ranging practical partnership cooperation, and support to reform processes, including through its Open Door policy. NATO's cooperation with Bosnia and Herzegovina, an aspiring NATO member, continued within the framework of the Reform Programme. With Serbia, NATO engaged in a broad spectrum of partnership projects in areas such as defence institution and capacity building, interoperability and scientific cooperation.

NATO maintained its presence in the region through its operation in Kosovo, as well as the NATO Advisory and Liaison Team, also in Kosovo; and through the NATO Headquarters in Sarajevo (Bosnia and Herzegovina) and the Military Liaison Office in Belgrade (Serbia). NATO continued to provide support to the European Union-led operation EUFOR ALTHEA in maintaining a safe and secure environment in Bosnia and Herzegovina, on the basis of the 2003 'Berlin Plus' arrangements, which provide for the European Union

to draw upon NATO's assets and capabilities for operations in which the Alliance would not be militarily involved. Throughout 2021, NATO and individual Allies continued to provide support and assistance across the Western Balkans, helping countries deal with the consequences of the COVID-19 pandemic.

At the Brussels Summit in June 2021, NATO reaffirmed its commitment to the stability and security of the Western Balkans, and to the Euro-Atlantic aspirations of the countries of the region. Heads of State and Government pledged to "intensify efforts in the region and enhance political dialogue and practical cooperation to support reform efforts, promote regional peace and stability, and counter the malign influence of outside actors".

NATO Foreign Ministers, together with Finland, Sweden and the High Representative of the European Union, discussed the Western Balkans at a dedicated session during their meetings in Riga in December 2021. They reaffirmed their shared commitment and readiness to engage jointly in the region.



On 22 February, Tunisia received 100,000 FFP2 disposable masks and 15,000 disposable suits for biological protection, from NATO's Pandemic Response Trust Fund. The donation was coordinated by NATO's Euro-Atlantic Disaster Response Coordination Centre in response to Tunisia's request for international assistance and was made possible with financial contributions by Belgium, Germany and Norway. The purchase and transportation of the medical items were coordinated by the NATO Support and Procurement Agency. Tunisia, February 2021.

NATO also has an extensive network of partners in the **Middle East and North Africa**, through the Mediterranean Dialogue<sup>15</sup> and the Istanbul Cooperation Initiative.<sup>16</sup>

In 2021, NATO and its regional partners continued to increase practical cooperation, with a focus on key areas such as counter-terrorism, strategic communications, small arms and light weapons, counter-improvised explosive device training, ammunition management, good governance, crisis management, civil preparedness, as well as Women, Peace and Security.

With an enhanced NATO presence at the Kuwait-based NATO-Istanbul Cooperation Initiative Regional Centre, NATO continued to provide training opportunities to the Gulf countries and to organise public diplomacy events around key topics of mutual interest. Since its inauguration in 2017, the Centre has hosted over 1,600 participants from the Gulf and several hundred experts from NATO countries.

NATO and its regional partners worked together to fight the COVID-19 pandemic, including through the delivery of vital medical equipment to Jordan and Tunisia via NATO's Euro-Atlantic Disaster Response Coordination Centre. Istanbul Cooperation Initiative partners were instrumental in supporting the evacuation of Allied



*I'm particularly grateful to our Middle East and North Africa partners for proactively sharing their experiences and lessons learned from the COVID-19 pandemic and for the invaluable support provided during the Afghanistan evacuations.*

**Leila Schilthuis (United States)**

Political Officer,  
Middle East and North Africa Section  
NATO Headquarters, Brussels, Belgium

troops and Afghans from Kabul airport in the summer of 2021. Their logistical support proved invaluable to the Alliance, allowing for the completion of the largest air-based evacuation in history.

15 Algeria, Egypt, Israel, Jordan, Mauritania, Morocco and Tunisia.

16 Bahrain, Kuwait, Qatar and the United Arab Emirates.

## Mauritania and G5 Sahel

At the 2021 NATO Brussels Summit, Allies recognised the deteriorating situation in the Sahel region is of importance to NATO's collective security. They reaffirmed that NATO's approach to issues in the Sahel are focused on the Alliance's long-standing partnership with Mauritania, in place since 1995.

In 2021, political dialogue and practical cooperation with Mauritania increased, including through advice, training and capacity-building activities to support Mauritanian national defence, security structures and institutions.

Throughout 2021, the Alliance also continued to engage in dialogue with other relevant NATO partners in the region. They include international and regional organisations and other entities, such as the African Union, G5 Sahel, the European Union and the United Nations.



Joint press conference by NATO Secretary General Jens Stoltenberg (right) and President of the Islamic Republic of Mauritania Mohamed Ould Ghazouani. Brussels, Belgium, July 2021.

The Alliance has also developed active cooperation with a range of countries that are not part of these regional partnership frameworks. Referred to as

“partners across the globe”. They include Australia, Colombia, Iraq, Japan, the Republic of Korea, Mongolia, New Zealand and Pakistan.

## Asia-Pacific Partners

At the Brussels Summit in June 2021, NATO committed to enhancing political dialogue and practical cooperation with its long-standing Asia-Pacific partners — Australia, Japan, New Zealand and the Republic of Korea — to promote cooperative security and support the rules-based international order.

NATO and these partners discuss common approaches to global security challenges where NATO's interests are affected, share perspectives through political engagement and seek concrete areas for cooperation to address shared concerns. In 2021, NATO Allies and Asia-Pacific partners continued their political dialogue and practical cooperation on a range of issues, including in areas such as cyber defence, resilience, and science and technology. They were also actively engaged in NATO's efforts in Afghanistan, either by sending troops or by contributing to the Afghan National Army Trust Fund.



## Relations with China

NATO maintains a constructive dialogue with China with a view to defending the security interests of the Alliance.

China's stated ambitions and assertive behaviour present systemic challenges to the rules-based international order and to areas relevant to Alliance security. NATO is concerned about China's rapidly expanding nuclear arsenal, publicly declared military-civil fusion strategy, opaque implementation of its military modernisation and military cooperation with Russia, including in Russian exercises in the Euro-Atlantic area.

NATO believes China must uphold its international commitments and act responsibly in the international system, including in the space, cyberspace and maritime domains, in keeping with its role as a global power.

In 2021, NATO continued to engage with China, including with a second meeting between NATO Secretary General Jens Stoltenberg and Minister of Foreign Affairs Wang Yi in September, and two rounds of high-level staff talks with Beijing, one of which was focused on arms control, disarmament and non-proliferation. In addition, Deputy Secretary General Mircea Geoană and China's Ambassador to the European Union Zhang Ming have continued their regular meetings and have discussed a range of topics including Afghanistan, NATO 2030, NATO-Russia relations and climate change.

## Boosting Training and Capacity-Building

The Alliance runs a number of defence-institution and capacity-building programmes with partners. These include initiatives to strengthen interoperability, enhance partners' ability to participate in NATO-

led operations, support defence reform, good governance, and professional military education through advising, assisting, training and mentoring.

**NATO's Planning and Review Process** is one of the Alliance's main instruments to promote the development of forces and capabilities by partners who want to be able to cooperate with NATO forces. It also supports partner nations in the reform and transformation of their defence and security-related institutions and forces. This process is a defence planning mechanism that provides a practical tool to guide defence and security reform, transformation, modernisation, capability development and interoperability. Through this mechanism, NATO experts work with partners to establish planning goals and assess progress. In 2021, 15 partners participated actively in the process. Despite the constraints imposed by the COVID-19 pandemic, five out of the 15 participating partners were able to develop and agree new partnership goals with NATO.



Operators from the Ukrainian Special Purpose Unit await exfiltration via helicopter following a simulated assault on an oil rig during Exercise Night Hawk 2021. Hosted by Denmark, Night Hawk brought together special operations forces from 13 NATO Allies and partners to test their ability to work together through a series of complex counter-terrorism and hybrid warfare scenarios. Denmark, October 2021.

Another key instrument for building capacity is **NATO's Defence and Related Security Capacity Building Initiative**. This programme assists partners with strategic advice on defence and security sector reform to build viable, effective and resilient defence institutions. The goal is to help

partners develop defence capabilities for local forces through education and training. Drawing from NATO's extensive expertise in providing advice, support, training, education and mentoring activities, NATO's support enhances partners' resilience and security.

## Background: NATO's Defence Capacity Building Initiative

This initiative reinforces NATO's commitment to partners and helps promote peace and stability by providing support to countries requesting assistance from NATO. Assistance ranges from strategic advice on defence and security sector reform and institution-building, to development of local forces through education and training, or advice and assistance in specialised areas such as logistics or cyber defence.

The initiative was launched in September 2014 at the NATO Summit in Wales. It builds on NATO's extensive track record and expertise in advising, assisting, training and mentoring countries that require defence and related security capacity building support. It uses NATO's unique defence expertise to provide and coordinate practical specialised support. This support is offered to recipient nations in a package, which is demand-driven and tailored to the individual countries' needs. Defence and Related Security Capacity Building Packages are implemented with the support of Allies and partners, who provide advisors, trainers and coordinators to work with recipient countries, and help fund projects. A dedicated Defence and Related Security Capacity Building Trust Fund has been in place since 2015, to provide financial support to the initiative. In 2021, good progress continued on the defence capacity building packages for Georgia, Iraq, Jordan, the Republic of Moldova, Tunisia and the United Nations.

### Georgia

Practical cooperation between NATO and Georgia, under the framework of the Substantial NATO-Georgia Package, continued to strengthen Georgia's defence capabilities and build interoperability with the Alliance. This helps Georgia advance in its preparations towards eventual membership in the Alliance.

Progress was made in the new military medical capacity development initiative, military police, military engineering, special operations forces and crisis management. Projects on the establishment of a cyber laboratory and the improvement of maritime and airspace situational awareness were also developed.

Some 35 resident and visiting experts, provided by Allies and partners, continued to support the

implementation of the Substantial NATO-Georgia package in 2021. Through the Defence and Related Security Capacity Building Trust Fund projects, Allies funded education and training, including for Georgia's military police, as well as exercises and equipment.

Georgia contributed to NATO's Resolute Support Mission in Afghanistan until July 2021. It subsequently supported the evacuation from Afghanistan as a transit location for more than 60 flights and 5,000 evacuees. Georgia also continued to contribute to the NATO Response Force.

### Iraq

(see NATO Mission Iraq, page 87)

## Jordan

In 2021, NATO continued to support the National Centre for Security and Crisis Management to coordinate Jordan's national response to COVID-19. The Centre was able to conduct, with NATO support, a successful large-scale national crisis management exercise in November 2021 with the participation of over 3,250 participants.

NATO also continued to provide online and in-person crisis management courses. A total of more than 400 Jordanian personnel have benefitted from the crisis management training, education and advising activities. Significant progress was achieved in the field of Women, Peace and Security, particularly with the inauguration of the Military Women's Training Center in June.

Work also advanced in the area of border security, including through the development of best practices for border security in contested environments, in cooperation with the NATO Defence against Terrorism Centre of Excellence and the United Nations Counter-Terrorism Centre/Border Security and Management Global Programme.

The The Defence and Related Security Capacity Building Package for Jordan went through a comprehensive review in the first half of 2021. By agreeing to an updated package in June 2021, Allies demonstrated their commitment to supporting Jordan in its efforts to modernise and increase the resilience of its armed forces. The package increases the scope and ambition of NATO defence capacity building support in Jordan. It consists of 15 initiatives, including some that are specifically aimed at supporting Jordan in its counter-terrorism efforts, such as strategic communications, small arms and light weapons, and the development of a curriculum for Jordan's counter-terrorism education and training. Work began in late 2021 on implementing some of the new areas agreed in the 2021 package, including on English language courses, training to improve the interoperability of the Jordanian Special Operations Forces and building integrity, which was identified as a separate area of cooperation in the updated package.

Meanwhile, Jordan continued to contribute to the NATO Response Force.

## Republic of Moldova

In 2021, NATO continued providing tailored support for Moldova's defence reform and modernisation efforts through the Planning and Review Process and with assistance under the Defence and Related Security Capacity Building Initiative.

Some 10 resident and visiting experts, provided by Allies, have continued to advise the Moldovan Ministry of Defence and main staff on the development of strategic-level documents and guidance for defence reforms. Experts advised on the implementation and periodic revisions of the transformation of the National Army, consolidation of the defence planning process as well as financial management. In March 2021, NATO provided information technology equipment to Moldova's Ministry of Defence. The equipment was installed in the Ministry's Transformation Directorate, helping to move the Moldovan defence transformation effort forward.

Moldova continued to contribute 42 troops to the Kosovo Force.

## Tunisia

In 2021, the capacity-building support to the Tunisian Armed Forces focused on implementing the partnership goals identified under the framework of the NATO Planning and Review Process. Work continued towards improving the interoperability of selected Tunisian army, navy and air force units. Cooperation also progressed on cyber defence, English language training and building integrity.

Regarding chemical, biological, radiological and nuclear defence, capacity-building support continued for the delivery of a deployable capability for the detection, identification and monitoring of chemical agents through NATO's Science for Peace and Security Programme. Another NATO multi-year project focused on establishing a more effective, vigorous and sustainable counter-improvised explosive device capability.



## Investing in Training, Education and Interoperability

Training and education are among NATO's best tools to help stabilise partners in the Alliance's neighbourhood.

**NATO's Partnership Training and Education Centres** provide vital support for NATO's practical cooperation with partners. There are 33 Centres, 17 of which are based in 12 NATO countries with 16 located in 14 partner countries. In 2021, the Centres conducted some 700 courses, adapting successfully to the ongoing COVID-19 pandemic by conducting their education and training activities virtually.

NATO also supports military education in 15 partner nations through the **Defence Education Enhancement Programme**. The programme helps partners build, develop and reform their professional military education institutions by establishing validated common references for military education. In 2021, the programme sponsored 308 events — online and in-person — involving 1,172 Allied and 724 partner subject matter experts, and reaching out to over 1,809 partner faculty and students.

Achievements of the Defence Education Enhancement Programme in 2021 included:

- Publishing a comprehensive "NATO Strategy for Distance Learning Support" course that helps military academies and schools transform resident curricula into online courses, and to empower their faculty to operate in a virtual environment.
- Conducting a five-month e-Instructor Certification Programme to enable faculty from seven Allied and 14 partner military schools to educate their peers in online teaching.
- Assisting faculty from the National Defence University of Serbia to revise their cyber defence curricula in cooperation with experts from Austria, Canada and Ireland.
- Providing advice and practical support in reforming the Non-Commissioned Officer Corps, a priority of the Ministry of Defence of the Republic of Moldova.

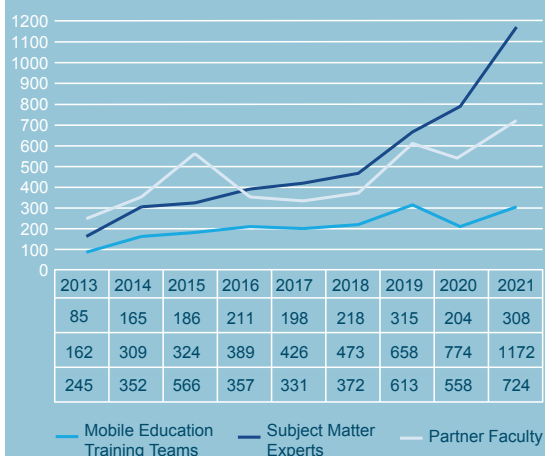


*I'm so proud of the Defence Education Enhancement Programme moving to the next level in 2021, despite the pandemic. We advanced with virtual/hybrid solutions. And the key takeaway is the importance of the team growing together.*

**Gabriela Lurwig (Hungary)**

Programme Assistant,  
Defence Education Enhancement Programme  
NATO Headquarters, Brussels, Belgium

### Defence Education Enhancement Programme Events





A core team composed of personnel from NATO Building Integrity and NATO Allied Joint Force Command Naples deliver an intensive and customised training programme for future Building Integrity trainers. The purpose of the training was to enhance national capabilities related to building integrity and good governance in the defence and security sector and to support the Iraqi Ministry of Defence in its anti-corruption efforts. Baghdad, Iraq, July 2021.

### *Building Integrity: Strengthening Good Governance*

Since 2007, NATO has been engaged in building efficient and effective defence and security institutions that embed the principles of integrity, transparency and accountability in the management of human and financial resources and in the context of missions and operations.

At the Brussels Summit in June, Allies restated their strong commitment to NATO building integrity efforts, recalling that corruption and poor governance undermine democracy, the rule of law and economic development, and erode public trust in defence institutions as well as operational effectiveness.

During 2021, the NATO Building Integrity Trust Fund was led by Norway, the United Kingdom, Switzerland and the European Union. It focused on enhancing strategic and institutional support as well as practical cooperation and dialogue with NATO Allies and partner countries. The programme supported the participation of 14,513 national representatives in more than 110 projects.

Milestones in 2021 included:

- Completing 6,583 NATO building integrity awareness online courses.
- Developing three tailored institutional train-the-trainers programmes with three modules of four weeks each for the Ministerial Training and Development Centre of the Ministry of Defence of

Iraq and four for the Ministry of Internal Affairs of Ukraine.

- Conducting four peer-to-peer events for Georgia and Ukraine.
- Translating 58 new linguistic versions of NATO building integrity publications, including the NATO reference curriculum, the NATO building integrity self-assessment questionnaire and the guides for good governance and the human resources management glossary.



A sample of 2021 building integrity activities.

## NATO Defense College in Rome Celebrates 70th Anniversary

The NATO Defense College in Rome offers strategic-level courses on politico-military issues designed to prepare selected personnel for NATO and NATO-related appointments.

Virtually all of the College's activities are open to participants from the Partnership for Peace programme, Mediterranean Dialogue, Istanbul Cooperation Initiative as well as partners across the globe, and they may also include participants from other countries.

The College's Research Division also provides senior NATO officials with fresh perspectives on issues relevant to the Alliance by drawing on the ideas of top academics, experts and practitioners, and through reports from conferences and workshops that focus on the major issues challenging the Alliance.

Seventy years ago, General Dwight D. Eisenhower addressed the North Atlantic Council with words that would change the path of education for NATO. His vision was to establish a NATO Defense College "for the training of individuals who will be needed to serve in key capacities in NATO Organizations". After months of preparations, in November of that same year (1951), the first senior course was inaugurated.

Since 1951, some 15,000 graduates, women and men, from over 80 countries have passed through the College's classrooms and corridors.

In 2021, the NATO Defense College celebrated its 70th anniversary. Over the years, the College has developed a reputation as a leading provider of world-class education on nearly every aspect of international security.



NATO Secretary General Jens Stoltenberg speaks about the 70<sup>th</sup> anniversary of the NATO Defense College. Rome, Italy, November 2021.





Virtual closing ceremony of the Science for Peace and Security Multi-Year Project "Implementation of a Terahertz Imaging and Detection System". Terahertz (THz) radiation is a promising technology with strong penetrating capabilities. It allows screening through many non-conductive materials such as skin, clothing, paper and plastics. Kicked off in 2017, the project was led by scientists from Algeria, France and Sweden. From left to right: NATO Assistant Secretary General for Emerging Security Challenges David van Weel and NATO Science for Peace and Security Advisor Claudio Palestini. Brussels, Belgium, May 2021.

## Advancing Science for Peace and Security

The Science for Peace and Security Programme is one of NATO's largest efforts supporting partnerships and providing opportunities for practical cooperation on security-related civil science and innovation.

The programme engages scientists from NATO and its partner nations to implement activities in areas such as technological innovation, climate change and security, and resilience.

In 2021, the programme:

- Supported 20 new cooperative activities involving scientists and experts from NATO and partner countries.
- Kicked off 24 and completed 16 multi-year projects.
- Conducted 17 advanced research workshops and training courses.

In 2021, the programme continued supporting NATO's Counter-Terrorism Action Plan through the DEXTER Programme — short for "Detection of Explosives and firearms to counter Terrorism". This programme seeks to develop an integrated system to detect explosives and firearms in public spaces and will allow the identification of carriers of these items remotely and in real time, without affecting



*I am proud of our extensive cooperative activities engaging scientists in NATO and partner countries. Their research underpins NATO's goals with deliverables in key areas, including advanced technology, climate security and counter-terrorism.*

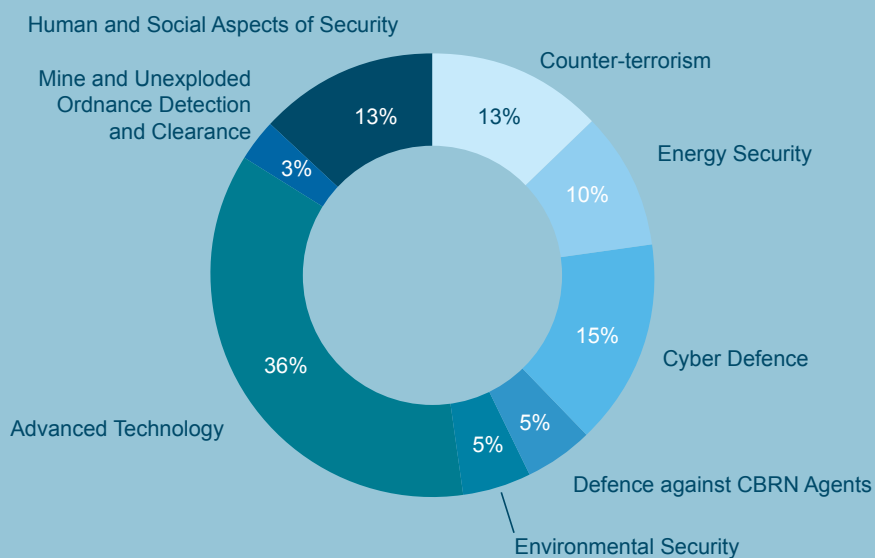
**Ettore Marchesoni (Italy)**

Programme Officer, Science for Peace and Security Programme  
NATO Headquarters, Brussels, Belgium

the passengers' traffic. These results will help protect mass transit facilities, critical infrastructure and mass gathering venues from terrorist threats, thereby bringing direct benefits to the populations of NATO and partner countries.

In the field of emerging and disruptive technologies, the programme also expanded its portfolio of activities on quantum technologies. For instance,

## Completed Activities in 2021 by Science for Peace and Security Key Priority Area



This chart reflects the thematic focus of Science for Peace and Security Programme activities completed in 2021.

using existing underwater fibre infrastructure between Italy and Malta, it started work to set up a solution that will enable entities to communicate securely in an encrypted cyber space using a Quantum Key Distribution system. This system will allow data to be sent over classical networks, while the keys to decrypt the information will be transmitted through quantum means, making them intrinsically secure and resilient against attacks.

Contributing to NATO's work on climate change and security, 2021 saw the completion of a project that developed plant-based solutions to the decontamination of former military sites. New multi-year research projects were launched to enhance energy generation and storage systems, for

instance by investigating high-efficiency solar cells and innovative lithium-free batteries, and to develop a novel and sustainable technology to reduce greenhouse gas emissions, such as CO<sub>2</sub>.

NATO's Science for Peace and Security Programme continued to contribute to the Alliance's response to the COVID-19 pandemic. Researchers supported by the programme advanced their investigation of new tools for the rapid and large-scale diagnosis of COVID-19. Moreover, the programme launched a new project to improve workplace safety by developing a nanotechnology-based platform to monitor the COVID-19 virus and other toxic biological agents.

### Trust Funds

Trust Funds are designed to provide additional voluntary financial resources from Allies, partners and international organisations to assist partners and implement projects.

In 2021, a series of Trust Funds provided assistance to partners in areas such as defence transformation,

demilitarisation and capacity-building. Such Trust Funds included the NATO Trust Funds, the Building Integrity Trust Fund, Trust Funds in support of Ukraine, and the Defence and Related Security Capacity Building Trust Fund. The latter assists NATO's Defence and Related Security Capacity Building Initiative.

The Defence and Related Security Capacity Building Trust Fund currently supports projects for five recipient countries (Georgia, Iraq, Jordan, Republic of Moldova and Tunisia) and for the United Nations Peacekeeping Training package. Since the establishment of the Trust Fund in 2015, 25 Allies and five partner nations (Finland, Ireland, Japan, Sweden and Switzerland) have contributed with more than EUR 30 million. Currently, this Trust Fund has spent or committed approximately EUR 17.5

million on 55 projects, and over 25 new projects are under consideration or development.

Funded projects include support to the NATO-Georgia Joint Training and Evaluation Centre, the Defence Institution Building School in Georgia, defence planning capacity building activities for the Iraqi Ministry of Defence, crisis management training and development and the NATO Codification System for Jordan, and tailored intelligence courses for Tunisia.

## Cooperation with other International Organisations at a Glance

NATO is strongly committed to multilateralism and close cooperation with other international organisations. The Alliance engages with the European Union, the United Nations, the Organization for Security and Co-operation in Europe and the African Union. It also maintains regular dialogue with other organisations including the World Bank and the International Committee of the Red Cross.

### The European Union

In 2021, NATO and the European Union deepened their long-standing strategic partnership by continuing to implement the 74 proposals for common action following the Joint Declarations signed by the NATO Secretary General and the Presidents of the European Council and European Commission in 2016 and 2018.

Political dialogue between the two organisations remained robust, with regular interaction between the NATO Secretary General and his European Union counterparts, participation in respective ministerial meetings, and mutual briefings. The North Atlantic Council had four meetings with the European Union Political and Security Committee to discuss new technologies, China, Afghanistan and Operation ALTHEA. In November 2021, NATO Secretary General Jens Stoltenberg visited Latvia and Lithuania together with President of the European Commission Ursula von der Leyen, demonstrating solidarity with NATO Allies and European Union member states in the Baltic region.

Practical cooperation continued to intensify taking into account the challenges posed by the COVID-19 pandemic. In addition to the ongoing dialogue on

military mobility, NATO and European Union staffs set up a dedicated dialogue on resilience and civil preparedness. Cooperation also intensified between the two organisations' strategic communications teams to counter hostile information activities. NATO and European Union staffs maintained regular contact and information exchange to advance a shared understanding of cyber threats. Coordination of efforts on defence and related security capacity building for partners also continued, with a particular emphasis on countries where both NATO and the European Union have offices, namely Georgia, the Republic of Moldova and Ukraine. Building on the



*2021 was an important year for the NATO-EU partnership. I was proud to facilitate the increased tempo of political dialogue on strategic issues and to help identify concrete steps to broaden our cooperation.*

**Lisa Picheny (France)**

NATO-EU Affairs Officer, Multilateral Organisations Team  
NATO Headquarters, Brussels, Belgium



## NATO and the European Union Cooperate on more than 70 Measures

These include:

- Cooperation in the maritime field and on military mobility to ensure that NATO forces can cross borders faster and more easily, when needed.
- Parallel and coordinated military exercises.
- Efforts to build resilience regarding hybrid threats, ranging from countering disinformation to civil preparedness.
- Cooperation to ensure that capability development efforts are coherent and mutually reinforcing.
- Exchange of information on cyber threats and the sharing of best practices on cyber security.
- Support for local capacities of partner countries in the defence and security sectors.
- Promoting the role of women in peace and security.

first-ever meeting of the NATO Secretary General with the College of European Union Commissioners in December 2020, and on the political guidance stemming from the June 2021 NATO Summit, NATO and the European Union have been looking into enhancing their cooperation including on resilience issues, emerging and disruptive technologies, the security implications of climate change, disinformation and growing geostrategic competition.

### The Organization for Security and Co-operation in Europe

The Organization for Security and Co-operation in Europe has remained a key partner for NATO and an important platform for security dialogue, in particular on arms control and confidence and security building measures, including with Russia.

Political dialogue between the two organisations remained sustained and multi-faceted, supported by the NATO Liaison Office in Vienna. It touched on the latest developments in Eastern Europe, the Western Balkans, the South Caucasus, Central

Asia and Afghanistan, as well as on cross-cutting issues including counter-terrorism, climate change and security, combatting human trafficking, and the Women, Peace and Security agenda.

### The United Nations

Cooperation between NATO and the United Nations developed at a robust pace throughout 2021.

NATO continued its support for peacekeeping operations with its multi-year training package to further strengthen the United Nations' capacity to mount and sustain peacekeeping efforts by enhancing the operational performance, safety and security of United Nations Peacekeepers.

NATO supports the United Nations in four areas: military performance evaluation, medical care, counter-improvised explosive devices, and signals and information and communications technology. The provision of NATO's expertise and trainers to the United Nations was also supported through funds allocated by Allies and partners to the Defence and Related Security Capacity Building Trust Fund.

NATO-United Nations cooperation on human security issues remains central to the relationship. The United Nations remained closely engaged with NATO as the Alliance prepared its Policy on Preventing and Responding to Conflict-Related Sexual Violence, which was endorsed by NATO Leaders at their Summit in June.

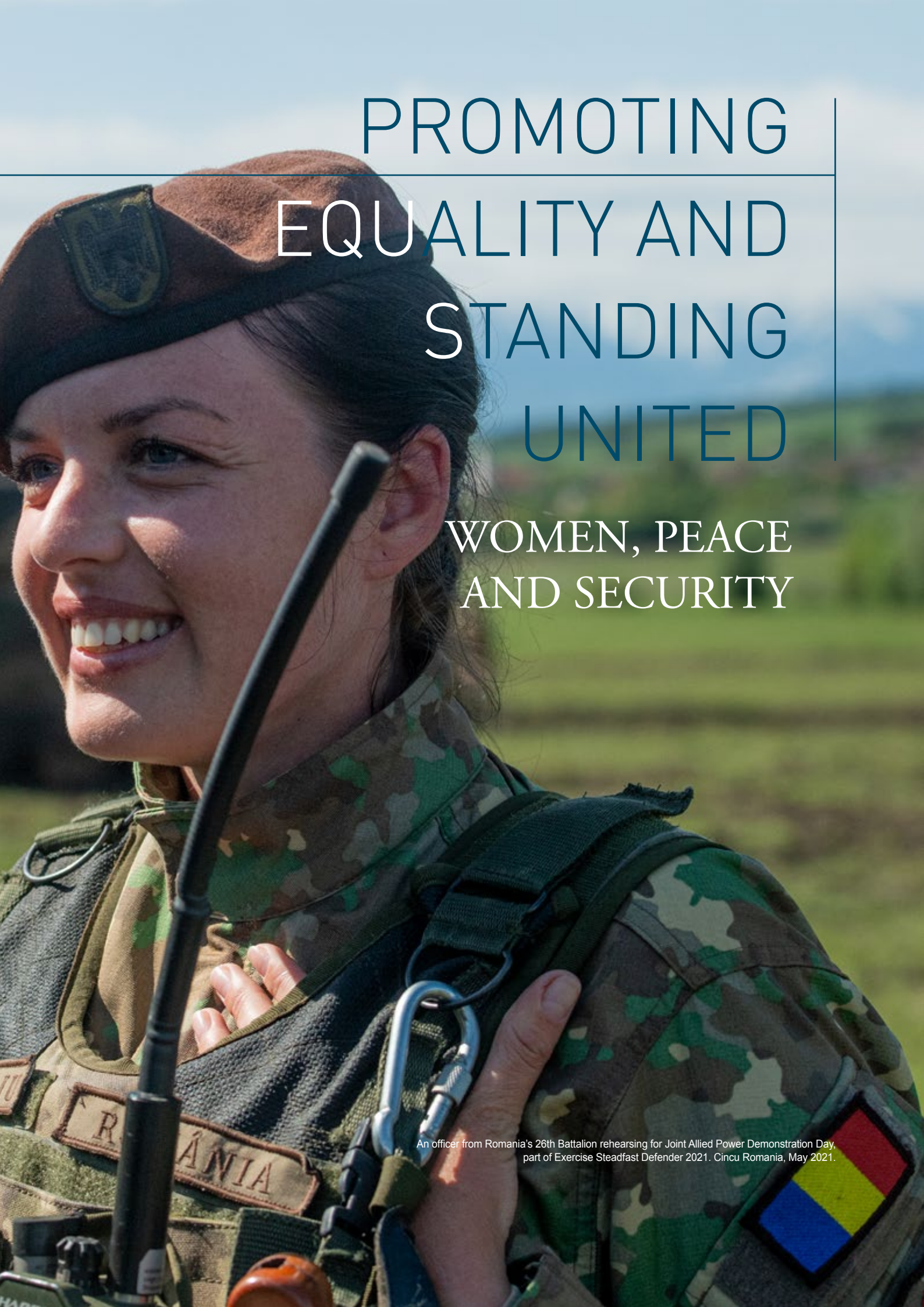
### The African Union

The African Union is an important multilateral partner for NATO. From a one-off request for the Darfur crisis in 2005, the NATO-African Union relationship has evolved, now including nascent political dialogue alongside a mature practical cooperation framework open both to the African Union and its constituent Regional Economic Communities.

In 2021, practical cooperation was heavily affected by the COVID-19 pandemic, essentially meaning that training support, operational support and structural assistance were scaled back. However, NATO's Senior Military Liaison Officer in Addis Ababa was invited to participate in African Union-led workshops and events linked to the African Stand-by Force and Security Sector Reform.







PROMOTING  
EQUALITY AND  
STANDING  
UNITED

WOMEN, PEACE  
AND SECURITY

An officer from Romania's 26th Battalion rehearsing for Joint Allied Power Demonstration Day, part of Exercise Steadfast Defender 2021. Cincu Romania, May 2021.





UK soldier climbing out of ice-cold water during ice jump exercise in Estonia. February 2021.

*The best way to protect our security and way of life is to stand united.  
And draw on all of the talents that our societies have to offer.  
This matters because the more diverse and gender-equal we are,  
the more effective we are at defending our values and our people.*

NATO Secretary General Jens Stoltenberg, Women Political Leaders Summit. 21 June 2021.

In 2021, NATO refined its focus on Women, Peace and Security, and laid a strong foundation for continued progress to advance gender equality and improve Alliance effectiveness. Meaningful progress has been made in adapting the way NATO thinks and acts since the adoption of its first policy on Women, Peace and Security in 2007, which framed how NATO would contribute to the implementation of UN Security Council Resolution 1325. This and subsequent UN resolutions on Women, Peace and Security have informed NATO's policies ever since.

The current policy, adopted in 2018, is built on three pillars: integration, inclusiveness and integrity. NATO recognises the disproportionate impact of conflict on women and the importance of their contributions to discussions and decisions around peace and security. NATO's approach is characterised by questioning assumptions about the security status quo and applying a gender lens to all that NATO does in the pursuit of equitable peace and stability.

Across NATO, a robust network of people support the delivery of NATO's Women, Peace and Security agenda. NATO Gender Advisors, at strategic and



*I felt immense fulfilment when my division received the 2021 NATO Gender Integration Award, reflecting our commitment to promoting gender equality and inclusiveness as integral parts of our work on NATO's defence plans and policies!*

**Trent McBain (Canada)**

Country Defence Rapporteur  
and Gender Focal Point,  
Defence Policy and Planning Division  
NATO Headquarters, Brussels, Belgium

operational levels, provide guidance to military leadership on the planning, execution and evaluation of gender perspectives throughout all activities, missions and operations. Additionally, NATO gender advisors contribute to the enhanced integration of gender components in exercises and drive efforts to establish gender integration as a capability.

In parallel, focal points throughout NATO's military and civilian structures help inform new ways of thinking about policies and programmes, and guide the inclusion of gender perspectives in their respective areas of work. In 2021, new focal points were established at the NATO Support and Procurement Agency and the Science and Technology Organization — boosting gender integration across NATO bodies.

Gender equality is a key focus of NATO's cooperation with other international organisations — in particular the African Union, the European Union, the Organization for Security and Co-operation in Europe and the United Nations — as well as with civil society. This close cooperation allows NATO and its partners to learn from and build on each other's experiences, both in member and partner countries and in areas such as Kosovo where NATO is leading operations.

Regular meetings with NATO's Civil Society Advisory Panel — comprised of members from a range of Allied and partner countries — provided a forum for consultation on topics including combatting human trafficking, women's perceptions of security and defence, and the future of NATO's work on Women, Peace and Security.

At the Brussels Summit in June, NATO Allies reaffirmed their commitment to further advancing gender equality and integrating gender perspectives in all that NATO does, across political, civilian and military structures, from policies and planning, training and education, to missions and operations. In October, NATO Defence Ministers endorsed NATO's 2021–2025 Action Plan on Women, Peace and Security. From climate change and resilience to innovation and capacity-building, NATO aims to integrate gender perspectives across all policy areas to support a more modern and agile Alliance. The new action plan strengthens cooperation with partners and civil society, and steps up training for civilian and military personnel. Its objectives are



In a NATO-led online conference on gender equality and leadership, NATO Deputy Secretary General Mircea Geoaană called for more women in leadership positions, including at NATO. Left to right: David Angell, Permanent Representative of Canada to NATO; Muriel Domenach, Permanent Representative of France to NATO; Miguel Fernández-Palacios, Permanent Representative of Spain to NATO; Baiba Braže, NATO Assistant Secretary General for Public Diplomacy; and Mircea Geoaană, NATO Deputy Secretary General. Brussels, Belgium, March 2021.

concrete — laying the groundwork for continued progress to improve peace and security for all.

Throughout 2021, a number of developments across a range of policy areas demonstrated the integration of gender perspectives in action. Among them:

- The Alliance's new Artificial Intelligence Strategy (October) included provisions on bias mitigation in all applications and data sets.
- NATO's new Climate Change and Security Action Plan (June) accounted for the differential impact that climate change can have on women.
- The NATO Science and Technology Organization published a research report on women in the armed forces (May). It consolidated the findings of 20 years of NATO Science and Technology Organization collaborative research related to the employment of women in the armed forces, and it supported NATO's commitment to gender equality and women's inclusion across Alliance structures and in national armed forces.
- NATO continued to adopt gender-inclusive language in its documents and across its structures. In 2021, the Alliance discontinued the use of the term "manpower" in favour of "workforce". In addition, the term "chairman" of the NATO Military Committee was replaced with the more inclusive "chair".





Norwegian aircraft technician during a deployment of Norwegian F-35s to NATO's Icelandic Air Policing. Keflavik Air Base, Iceland, March, 2021.

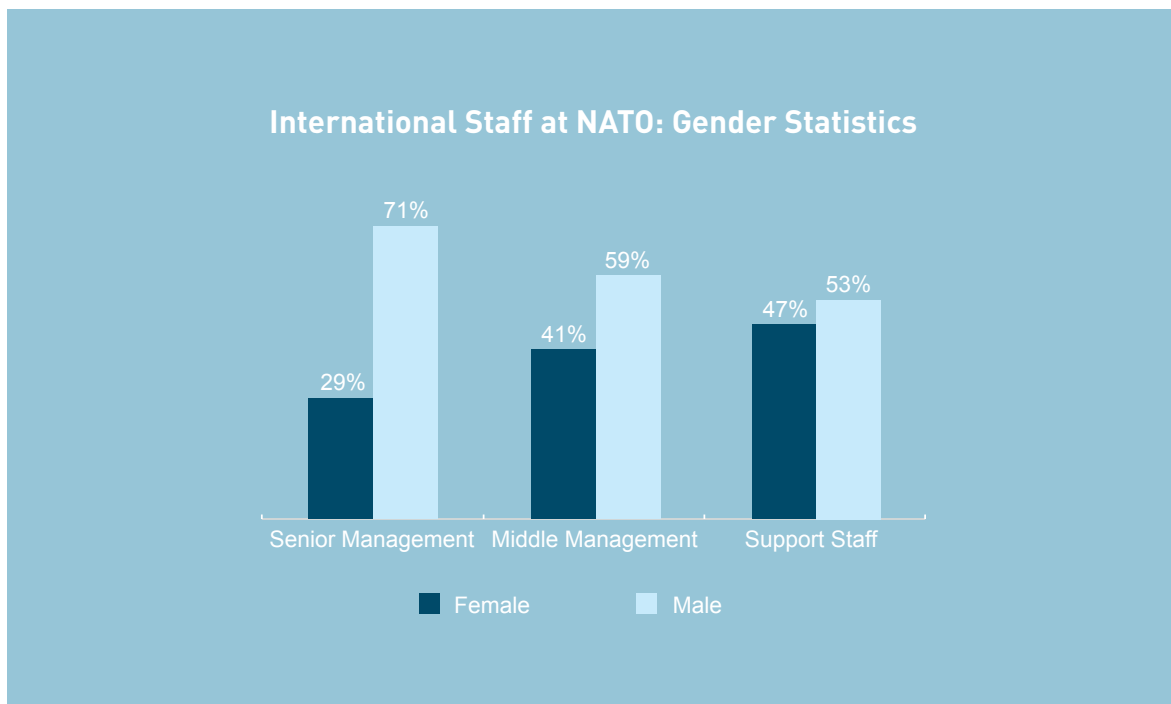


Two radar operators develop their skills by tracking aircraft targets onboard Italian destroyer Andrea Doria during Exercise Steadfast Defender 2021. Atlantic Ocean, west of Lisbon, Portugal, May 2021.

## Gender Balance by the Numbers

The full and meaningful participation of women as well as their visibility across the Alliance are central to NATO's work on Women, Peace and Security. While the measures of gender equality extend far beyond the number of women in an organisation, inclusiveness is a key principle of NATO's policy. Part of this work is to identify barriers to entry and retention as well as the conditions affecting women's application to and success in roles at NATO, such as shifting mindsets and enhancing the safety and accessibility of the work environment.

In 2021, women served, on average, in 12% of full-time roles across the armed forces of NATO Allies — double the percentage as recently as 20 years ago — and Allies have reported a steady increase of women serving in officer ranks. Within NATO's International Staff, the number of women in middle management has increased, and women occupied nearly one-third of senior management positions in 2021.





Allied Joint Force Command Naples Commander Admiral Robert P. Burke and Brigadier General Pamela McGaha during the NATO Headquarters Sarajevo change of command ceremony. Brigadier General McGaha arrives from her role as the Commanding General of 143rd Sustainment Command in Orlando, Florida. The 143rd is the largest expeditionary sustainment command in the US Army, with more than 8,135 soldiers, over 100 civilians and 90 units across 10 states. Sarajevo, Bosnia and Herzegovina, December 2021.

### **Life after Service: Is It Harder for Women?**

Recognising the disproportionate impact that conflict has on women and girls, and the vital roles women play in peace and security, NATO and its partners are committed to applying Women, Peace and Security principles to all that they do.

One priority is advancing women's participation and integration into military service, which includes supporting military women making the transition from active duty to civilian life. On 4 November 2021, with support from the NATO Science for Peace and Security Programme, Canadian, Ukrainian and US experts held an online advanced research workshop to support more successful reintegration of women soldiers into civilian life in Ukraine, a NATO partner country.

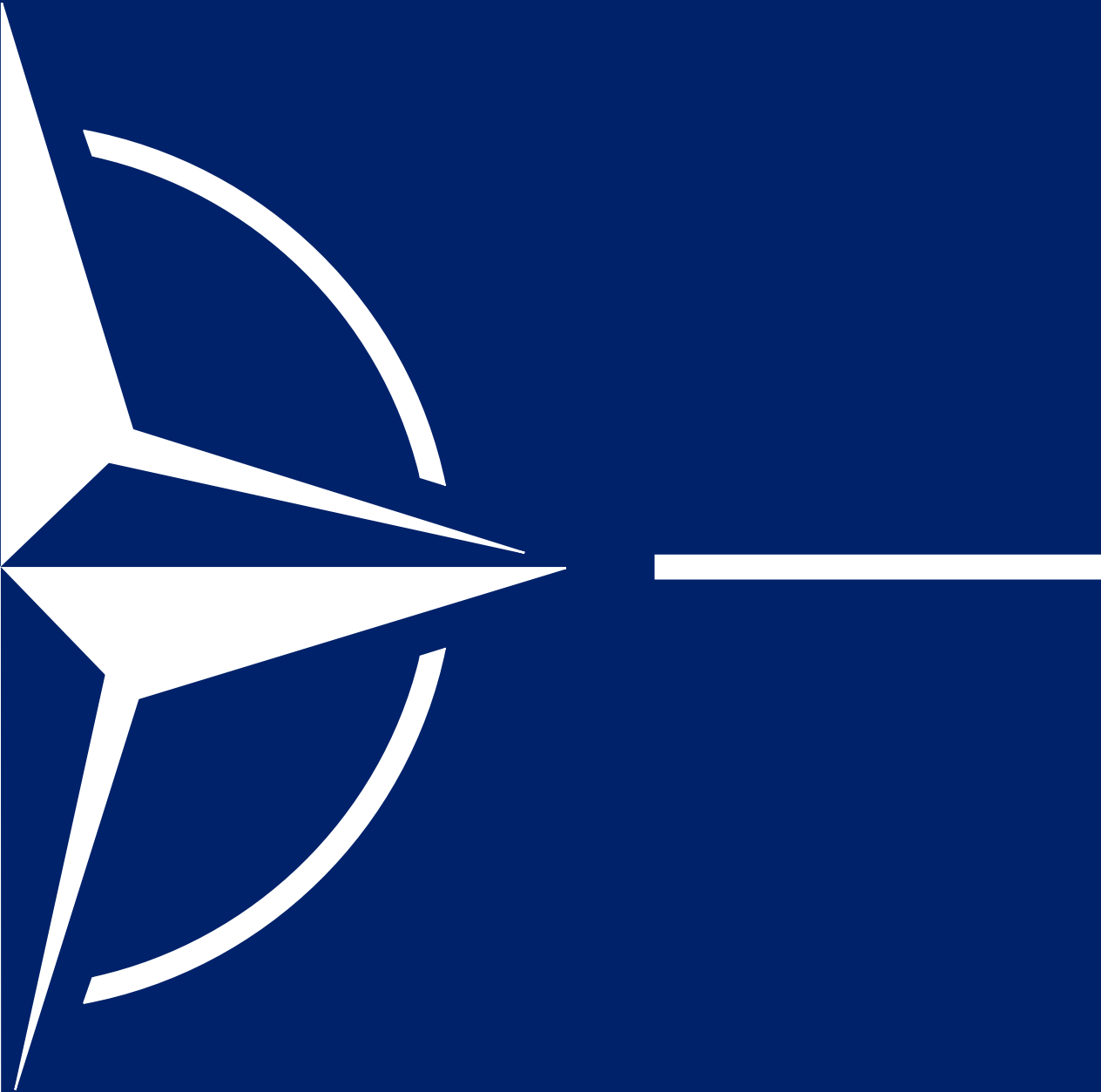
Scientists, mental health professionals and policymakers, joined by former members of Ukraine's Joint Force Operations who shared their experiences of returning to civilian life, assessed research that could best support women soldiers' reintegration. Existing research, which focuses primarily on men in the military, shows that most soldiers reintegrate successfully into civilian life, yet some experience severe difficulties in developing a civilian identity, employment, finances, mental health or other life areas.

To better understand how women soldiers experience reintegration, workshop participants discussed applying a gender lens to translate existing research. This fresh perspective will guide the development of effective policy and new research to support women in their military-to-civilian reintegration, which will benefit women not only in Ukraine but across the Alliance.





# ORGANISATION



The NATO flag.

*NATO is more than an idea. It is an idea nested in a strong institution.  
This creates patterns of cooperation. Cultural and personal links.  
It has kept us all safe for over seven decades.  
Never have so many people been so secure and so prosperous for so long.*

NATO Secretary General Jens Stoltenberg, NATO's Outlook Towards 2030 and Beyond.  
Riga, Latvia, 30 November 2021.

## NATO Headquarters

NATO Headquarters in Brussels houses the Alliance's International Staff and International Military Staff, along with 30 Allied delegations and military representations, 18 partner missions and staff from several NATO agencies. It is the central forum for the discussions and consultations that shape NATO policy and practice.



*Launching the NATO Headquarters' Sustainability Roadmap in 2021 was a step towards a greener NATO, in line with NATO 2030 and the agenda for climate change and security. Look out for more awareness and engagement events on climate change in 2022!*

**Maria L'Episcopo (Italy)**

Project Manager,  
Infrastructure and Facilities Management  
NATO Headquarters, Brussels, Belgium



NATO Secretary General Jens Stoltenberg gives a doorstep statement at NATO Headquarters during the October meeting of Defence Ministers. Brussels, Belgium, October 2021.



Ceremony at NATO Headquarters, hosted by the Italian and the Polish delegations to NATO, marking International Holocaust Remembrance Day. Brussels, Belgium, January 2021.



North Atlantic Council meeting with Allied National Security Advisers. Brussels, Belgium, October 2021.

## North Atlantic Council

The North Atlantic Council is the main political decision-making body in NATO. It brings together high-level representatives from 30 Allied countries across Europe and North America to consult and coordinate on issues of common interest and concern.

Because decisions are made on the basis of consensus, the policies agreed in the Council are considered the expression of the collective will of all NATO Allies. Consensus decision-making is a fundamental principle that has been accepted as the sole basis for decision-making in NATO since the creation of the Alliance in 1949. Consensus decision-making means that there is no voting at

NATO. Consultations take place until a decision that is acceptable to all is reached. In general, this negotiation process is rapid since members consult each other on a regular basis and, therefore, often know and understand each other's positions in advance.

The Council is chaired by the Secretary General. Its decisions have the same status whether or not the meeting takes place during a Summit of NATO Heads of State and Government or in permanent session at the level of Ambassadors.

## International Staff

NATO's International Staff — which consisted of 1,154 civilians in 2021 — supports the Alliance's decision-making process by facilitating dialogue, policy development, and policy and programme implementation. In 2021, NATO continued to implement the Human Resources Strategy (2019–2023), a roadmap for NATO-wide human resources projects and programmes, designed to attract and develop highly talented people from diverse backgrounds.

NATO is committed to building a staff that represents the citizens it serves and reflects the diversity found in Allied nations. It strives to ensure an inclusive and equitable workplace for all staff.



*The breadth of work in the IS Office of Legal Affairs is very challenging. Most rewarding in 2021 was the legal support provided in the context of NATO's withdrawal from Afghanistan as well as in support of the creation of DIANA.*

**Nadia Marsan (Canada)**

Senior Assistant Legal Advisor,  
Office of Legal Affairs  
NATO Headquarters, Brussels, Belgium



Concrete steps adopted in 2021 to continue to promote diversity and inclusion included:

- Ensuring a positive and psychologically safe working environment that enables staff to do their best work on a daily basis. The implementation of the Policy on the Prevention, Management and Combatting of Harassment, Bullying and Discrimination (November 2020) in the workplace continued. NATO-wide communication and training campaigns for senior leaders and managers focused on increasing awareness and trust that NATO is committed to preventing and addressing harassment, bullying and discrimination. In addition, a network of Persons of Confidence was established across the NATO International Staff and other NATO bodies.
- Establishing Staff Resources Groups to integrate perspectives of staff from diverse backgrounds — including staff of colour, members of the LGBTQ+ community, working parents and young professionals — into NATO's work. These groups act in an advisory capacity.
- Delivering its first-ever internal conference on LGBTQ+ perspectives in the workplace on 19 March 2021. The online event brought together around 130 participants across civilian and military staff, as well as national delegations, to discuss the experiences and challenges of LGBTQ+ employees.
- Launching the 6th cycle of the NATO Mentoring Programme. The 2021 edition of the programme saw the highest level of participation from senior leadership ever — a clear indication that NATO is committed to advancing diversity and inclusion. All staff members were invited to participate in the programme, with priority access given to women, young professionals (under the age of 35) and staff from focus nations (that is, nations with less than a 1% presence on the International Staff).



NATO Headquarters hosted its first-ever conference on LGBTQ+ perspectives in the workplace. The conference was organised by the staff-led "Proud @ NATO" volunteer group. The online event brought together 130 participants across civilian and military staffs, as well as national delegations, to discuss the experiences and challenges of LGBTQ+ people at work. Brussels, Belgium, March 2021.

Other International Staff-related highlights from 2021 included:

- Onboarding the first cadre of young professionals. These new staffers began working in six different NATO bodies. Each participant has a three-year assignment, rotating into a different NATO body each year. These young professionals will work in varied and important areas that deliver on the key priorities of the Alliance.



- Revising the teleworking policy to add flexibility to working arrangements during the COVID-19 pandemic.
- Developing an action plan to address areas for improvement, including professional development and growth, career advancement, diversity and inclusion, ways of working, and the mental and physical wellbeing of staff.

## COVID-19 Adjustments and Business Continuity

In the COVID-19 context, the importance of business continuity cannot be overstated. Throughout the pandemic, NATO's core programmes have been delivered by resilient staff members within adapted facilities using enhanced technology. Several NATO-wide business continuity tools were developed in 2021 and are available to practitioners. These include guidelines that provide tailored advice on implementing policy requirements, a maturity model that allows a structured assessment across NATO, and an awareness and competency framework that offers the building blocks for a business-continuity mindset in the organisational culture.

In 2021, NATO Headquarters took consolidation measures in the conference areas to maximise NATO's ability to meet in spite of the pandemic. Conference rooms were adapted, particularly ahead of the June Summit, and videoconferencing was both increased and diversified.

The Business Continuity Office worked with multiple stakeholders to develop a robust business continuity management system, building on risk analysis, international standards and lessons from COVID-19. The business continuity capabilities and procedures were tested in a live exercise in December 2021.

## NATO Military Authorities

In 2021, over 6,200 military personnel and 850 civilians worked collectively across the International Military Staff and the headquarters of the NATO Command Structure. Military personnel are provided to NATO by the countries they serve and are supported through their national defence budgets. All 30 Allies are present within NATO's military structures.

The **Military Committee** is the senior military authority within NATO. It is composed of the Chiefs of Defence of NATO member countries and presided by the Chair of the Military Committee, Admiral Rob Bauer from the Royal Netherlands Navy (since June 2021). The Chair is NATO's most senior military officer. He is the principal military adviser to the Secretary General and the conduit through which consensus-based advice from NATO's 30 Chiefs of Defence is brought forward to the political decision-making bodies of NATO.

The NATO Chiefs of Defence meet at least three times a year as a group. On a day-to-day basis, the Military Committee meets in permanent session with military representatives who act on behalf of their Chiefs of Defence. The role of the Military Committee is to discuss, deliberate and act on matters of military importance, working in the best interest of the Alliance, while at the same time representing



The Chair of the NATO Military Committee, Admiral Rob Bauer, during a virtual meeting of NATO Chiefs of Defence. Brussels, Belgium, December 2021.



Director General of the NATO International Military Staff, Lieutenant General Hans-Werner Wiermann, addressing NATO Partner Military Representatives during a discussion around NATO's 2022 Strategic Concept. Brussels, Belgium, October 2021.

national perspectives and positions. The Military Committee provides the North Atlantic Council, NATO's highest political authority, with unfettered consensus-based military advice. The Committee works closely with NATO's Strategic Commanders to bring plans, issues and recommendations forward for political consideration.

The **International Military Staff** is the executive body of the Military Committee. An independent body within NATO, it comprises approximately 500 dedicated military and civilian personnel from NATO's member states and partner countries. Under the leadership of the Director General, Lieutenant General Hans-Werner Wiermann from the German Armed Forces (since July 2019), members of the International Military Staff work for the common interest of the Alliance. They are responsible for preparing assessments and analyses on NATO military issues, identifying areas of strategic and operational interest, and proposing courses of action. They also ensure that NATO decisions and policies on military matters are implemented by the appropriate NATO military bodies.

The **NATO Command Structure** and the **NATO Force Structure** enable the Alliance to carry out its core functions. The Command Structure's strategic role is to command and control the Alliance's joint operations. It consists primarily of Allied Command Operations, Allied Command Transformation and their subordinate commands and headquarters.



*My team and I developed and demonstrated a methodology to express the primary concerns of Allied Chiefs of Defence, helping them to transform these concerns into sequenced and coordinated future actions for NATO.*

**Lieutenant Colonel Richard Showalter  
(United States)**

Staff Officer, Strategic Analysis and Planning  
Cell, Policy and Capabilities Division,  
NATO International Military Staff  
NATO Headquarters, Brussels, Belgium





NATO Secretary General Jens Stoltenberg and Supreme Allied Commander Transformation General Philippe Lavigne during the Change of Command Ceremony at Allied Command Transformation. Norfolk (Virginia), United States, September 2021.



General Tod Wolters, Supreme Allied Commander Europe (SACEUR), speaking at the 184th Military Committee in Chiefs of Defence session. Brussels, Belgium, January 2021.

**Allied Command Operations** has its main headquarters in Mons, Belgium and other, subordinate commands headquarters exist across several NATO nations. Under the Command of the Supreme Allied Commander Europe (SACEUR), General Tod D. Wolters, United States Air Force (since May 2019), it is responsible for the planning and execution of all Alliance operations and missions. SACEUR also assumes the overall command of operations at the strategic level and issues strategic military direction to the subordinate commanders.

**Allied Command Transformation** has its main headquarters in Norfolk, Virginia, in the United States, with subordinate commands in other NATO nations. Under the leadership of the Supreme Allied Commander Transformation, General Philippe Lavigne, French Air and Space Force (since September 2021), it leads the transformation of NATO's military structure, forces, capabilities and doctrine. This command also develops innovative concepts, undertakes experimentation and promotes interoperability throughout the Alliance to improve NATO's military effectiveness.

**The NATO Force Structure** encompasses national and multinational forces as well as their associated operational headquarters, placed at the Alliance's disposal on a permanent or temporary basis under specified readiness criteria. These provide a pool of forces to meet the Alliance's requirements of conducting and sustaining operations.

## NATO Funding

The costs of running NATO are funded through both direct and indirect contributions by its Allies. Indirect contributions are by far the largest type of contributions and include Allies' participation in NATO-led operations and missions.

Direct contributions are those made to finance capabilities and initiatives that serve all 30 Allies, such as NATO-wide air defence or command and control systems. Costs for direct contributions are borne collectively through common funding, with all 30 members contributing according to an agreed cost-share formula, broadly based on nations' Gross National Incomes. Discussions on fairer burden-sharing among the Allies throughout 2019 culminated in the adjustment of cost-share formulas applied between 2020 and 2024.

Common funding finances NATO's principal budgets and programmes: the Civil Budget, the Military Budget and the NATO Security Investment Programme. A commonly agreed set of financial regulations and an accounting framework are in place to ensure the proper management of funds provided by nations, and corresponding financial statements are made available to the public.

Each NATO military capability is financed through a combination of common funding, joint funding, multinational funding and national funding. Participating nations, in cooperation with the NATO Military Authorities, identify the requirements, the priorities and the funding arrangements, and NATO provides political and military oversight. The common funding process is overseen by the North Atlantic Council, managed by the Resource Policy and Planning Board, and implemented by the Budget Committee and the Investment Committee.

### Civil Budget for 2021

The North Atlantic Council approves the Civil Budget and ensures expenditures are aligned with the Alliance's political priorities. The Civil Budget funds personnel expenses, operating costs, and capital and programme expenditures of the International Staff at NATO Headquarters. The core Civil Budget, excluding pension liabilities, was agreed at EUR 218 million, a 3.2% increase compared to 2020.

In 2021, the International Staff continued improving overall accountability and transparency of its



*I am proud to be part of a team supporting Allies' decision-making on the common-funded Military and Civil Budgets for which Allies collectively provide almost €2 billion to resource NATO's facilities, capabilities and workforce.*

**Lorna Hayes (United Kingdom)**

Officer, Committees Secretariat,  
NATO Office of Resources  
NATO Headquarters, Brussels, Belgium

resources management through an Objective-Based Budgeting framework that allows Allies to directly match the resources provided to the Civil Budget with the outputs delivered during the financial year.

### Military Budget for 2021

The Military Budget covers the operating and maintenance costs of the NATO Command Structure and other NATO military entities. It is composed of 37 separate budgets, financed through contributions from Allies' national defence budgets according to agreed cost-share formulas, typically from national defence ministries.

The Military Budget is approved by the North Atlantic Council, overseen by the Budget Committee — with representatives from all NATO member countries — and implemented by the individual budget holders. In all cases, the provision of military staff remains a nationally funded responsibility. The military budget ceiling for 2021 was EUR 1.6 billion.

### The NATO Security Investment Programme

The NATO Security Investment Programme supports NATO's mission through the delivery of common-funded capabilities to the two NATO

Strategic Commands: Allied Command Operations and Allied Command Transformation.

Established in 1951, the Programme is executed through capability packages and capability programme plans, approved by the North Atlantic Council and implemented by NATO Allies and agencies. Annual funding is over EUR 700 million, with over 3,000 common-funded projects worth almost EUR 16 billion

## Agencies and Organisations

The Alliance is served by a number of different agencies. These manage essential tasks such as communications, logistical support and capability development.

### NATO Communications and Information Agency

The NATO Communications and Information Agency helps NATO maintain its technological edge. It is responsible for ensuring NATO has the secure networks, communications and software needed to guarantee peace and stability for one billion citizens. The Agency also runs the NATO Cyber Security Centre, which defends NATO's networks around the clock from cyber attacks and malicious activity, monitoring, identifying and preventing potential threats. On request, the Agency also helps Allies and partner countries boost their capabilities in areas such as cyber defence.

The Agency's civilian and military staff members support NATO operations, ensuring that troops

under implementation in 2021. The NATO Security Investment Programme delivered capabilities such as satellite communications, cyber security, surveillance and control. Additional investments were devoted to supporting upgrades to NATO and Allied airbases, bulk-fuel infrastructure, and facilities to support training, reception and onward movement of NATO forces.

are provided with mission-critical, secure communications and that commanders get the right information to make the right decisions at the right time. Throughout 2021, the Agency continued to provide several key services, including satellite communications and expertise, communications and information systems, and cyber security. Agency experts also supported NATO operations by maintaining critical communications in Afghanistan until the conclusion of NATO's Resolute Support Mission in September.

In 2021, the Agency delivered technology and expertise to support NATO and national exercises, including Exercise Formidable Shield 2021, BALTOPS and Steadfast Cobalt. The Agency also organised a first NATO counter-drone exercise in the Netherlands in November to ensure that commercial systems from different NATO nations can work together, interoperably, to counter threats posed by drones. In the same year as NATO's landmark Strategy on Artificial Intelligence was approved, the Agency established a secure environment to develop artificial intelligence, dubbed "Sandi".

A counter-drone exercise organised by the NATO Communications and Information Agency. Vredepeel, the Netherlands, November 2021.





With Sandi, NATO can develop artificial intelligence solutions to analyse classified data. Sandi was used to host NATO's first classified data hackathon, with military and government staff from three NATO operational commands and five Allies exploring complex datasets, to gain a better understanding of operational exercise data.

Relationships with commercial companies, academia and not-for-profit organisations continued to be a top priority for the Agency in 2021. It worked on a daily

basis with a wide network of commercial companies, academia and research institutes to explain NATO's needs and ensure the best technologies are harnessed for the benefit of the Alliance.

To foster ongoing dialogue with industry, the Agency hosted in June 2021 a two-day virtual industry conference — the NATO Innovation and Technology conference called NITEC Connect. As part of the event, the Agency also hosted a NATO Space Pitch Day in partnership with the NATO Space Centre.

In May, NATO Secretary General Jens Stoltenberg and Prime Minister of Portugal António Costa officially opened the new NATO Communications and Information Academy, a world-class training facility for NATO Allies and partners in Oeiras, Portugal. The academy is a strategic asset for NATO, where civilian and military staff from across the Alliance can receive training on NATO systems, and build and sharpen cyber defence skills. Operators trained in the Academy will go on to maintain NATO's information technology and communications systems, as well as its ballistic missile and cyber defences. The Academy builds on a 60-year legacy of communications and information systems training in NATO. Robust training is key to future-proofing the Alliance as part of NATO's 2030 agenda.



NATO Secretary General Jens Stoltenberg (left) and Prime Minister of Portugal António Costa speak at the inauguration of the new NATO Communications and Information Academy. Oeiras, Portugal, May 2021.

Optical fibre course at the NATO Communications and Information Academy. The new Academy is a world-class training facility for NATO Allies and partners in Oeiras, Portugal, October 2021.





NATO Alliance Ground Surveillance Force officers during a virtual training demonstration. The NATO Support and Procurement Agency engaged with its industry partner, Northrop Grumman, to test the preliminary development of virtual and augmented reality training modules. Sigonella, Italy, March 2021. Photo by Dion Houston (US Army).

Six top qualifying teams pitched their proposals to improve space situational awareness. The Agency's Pitch Day offered an opportunity to explore the vast potential of dual-use technologies for Alliance defence and security. In 2021, the Agency signed its first four agreements with not-for-profits. These will expand NATO's access to relevant expertise and services from not-for-profits such as national defence labs, academic, scientific and research institutions across NATO nations.

### NATO Support and Procurement Agency

The NATO Support and Procurement Agency brings together, in a single organisation, acquisition, logistics, medical and infrastructure capabilities, operational and systems support, as well as services to NATO Allies, NATO Military Authorities and partner nations. The Agency is headquartered in Luxembourg, with main operational centres in France, Hungary and Italy. It employs more than 1,550 international civilian personnel and oversees approximately 400 contractors supporting NATO's missions. As a customer-funded agency, it operates on a "no profit — no loss" basis and provides multinational solutions for its customers. Essential

to its success is the capability to consolidate customer requirements and achieve economies of scale for cost-effective solutions. In 2021, the Agency's operational turnover was in excess of EUR 3.2 billion. This figure is the amount of business activity the Agency carries out on behalf of NATO Allies and partners with defence industries through multinational competition.

In 2021, the Agency supported NATO Allies and partners with key relief acquisition and transport efforts in response to the COVID-19 pandemic. In this context, the Agency continued to effectively manage the NATO Pandemic Response Trust Fund.

In addition, the Agency managed the Strategic Airlift International Solution programme, which provides NATO participating nations with assured access to strategic transport aircraft for outsized cargo. In July 2021, COVID-19 related support was provided to Namibia on behalf of Germany with the delivery of 70 tonnes of medical supplies. The relief effort was coordinated by the European Union's Civil Protection Mechanism and the mission was executed by the NATO-supported Strategic Airlift International Solution.





Between 2021 and 2022, the NATO Support and Procurement Agency will deliver 18 field hospitals to the Italian Armed Forces, from which nine will be high-tech treatment centres (16 for the Army, one for the Navy and one for the Air Force). The first facility is already operational and in use by the Italian Army. Cecchignola Military Compound, Rome, Italy, March 2021.

In January 2021, the Agency helped Italy acquire portable medical isolation chambers for use in hospitals, field camps and safe transport, in addition to intensive care unit ventilators and protective medical supplies. In March 2021, the Agency delivered four containerised Role 2 Medical Treatment Facilities and two Role 2 Advanced Hospital projects to the Italian Army, increasing the hospital infrastructure and strengthening its response capacity.

The Agency manages the NATO Airlift Management Programme, based in Hungary, which owns, manages and supports a fleet of three C-17 aircraft. In 2021, the programme supported the Strategic Airlift Capability, delivering 2,252 flight hours and transporting critical medical supplies in response to the COVID-19 pandemic and in support of the Resolute Support Mission in Afghanistan. In August, the Strategic Airlift Capability played an important role in the urgent evacuation from Afghanistan, conducting 17 missions to evacuate over 2,500 personnel, including NATO contractors and their families.

The Agency also continued to support NATO operations in the Balkans, as well as military exercises, by providing deployable camps, base support and food services. In addition to supporting select exercises, the Agency helped with construction engineering projects and multinational solutions in support of NATO's deterrence and defence programmes.

In 2021, the Agency supported efforts by the Central Europe Pipeline System to manage the 24/7 operational activity, maintenance and financing of

the largest NATO pipeline and storage network. In 2021, the pipeline's distribution network supported member nations as well as NATO-led operations and exercises, including: Operation Allies Refuge, Exercise Defender-Europe 2021, Exercise Immediate Response, Exercise Saber Guardian, Exercise Swift Response, Exercise Atlantic Resolve and NATO Exercise Steadfast Defender 2021.



*In 2021, it was a privilege and a rewarding experience to work for NSPA, contributing to fulfill the requirements of our quality management system and to improve occupational health and safety for the Agency's staff.*

**Brie Bedford Witherspoon (United States)**

Process and Quality Officer,  
Communications Air  
and Missile Defense Programme  
NATO Support and Procurement Agency  
(NSPA), Luxembourg





The Multinational Multi Role Tanker Transport fleet continues to grow: On 31 August 2021, the fifth A330 of a fleet of nine arrives at its Main Operating Base in Eindhoven, the Netherlands.

In 2021, some of the Agency's flagship programmes achieved significant milestones:

- The **Multinational Multi Role Tanker Transport Fleet** grew with the delivery of the fourth aircraft in April and the fifth aircraft in August. This is an example of strong collaboration between the Organisation for Joint Armament Cooperation and the Agency, as well as of excellent cooperation between six participating Allies, the European Union and NATO to develop an important new capability for air-to-air refuelling.
- In October, the Agency signed a follow-on contract with the International Aerospace Management Company for the provision of Depot Level Maintenance services to the **Airborne Warning and Control System** fleet for another 10 years, starting January 2022.
- Also in October, the Agency was tasked by the participating nations<sup>17</sup> to act as the executing agent for the concept stage of the **Next Generation Rotorcraft Capability** programme. This programme offers a multinational framework for participants to combine efforts towards the design, development and acquisition of the next generation of medium multi-role rotorcraft capabilities.

## Science and Technology Organization

The NATO Science and Technology Organization delivers innovation, advice and scientific solutions to meet the Alliance's evolving needs.

The Organization comprises three staff entities: the Centre for Maritime Research and Experimentation in La Spezia, Italy; the Collaboration Support Office in Paris, France; and the Office of the Chief Scientist at NATO Headquarters in Brussels, Belgium. All committees and staff entities are governed by the NATO Science and Technology Board. The NATO Chief Scientist chairs the Board and serves as the scientific advisor to NATO's senior leadership.

In 2021, the Organization included a network of some 6,000 active scientists and engineers with a research portfolio of approximately 300 ongoing activities. These activities spanned the range of physical, information and human sciences and application over all five of NATO's operational domains (land, sea, air, cyber and space). Research areas include advanced vehicle technologies; systems analysis; human factors and medicine; system concepts and integration; modelling and simulation; information systems; sensors and electronics; and maritime research and experimentation.

<sup>17</sup> France, Germany, Greece and Italy, with the United Kingdom in the lead, are the participating nations. The Netherlands, Spain and the United States are observer nations.

## The NATO Science and Technology Organization in 2021

In 2021, the NATO Science and Technology Organization carried out activities in many areas. Highlights are described below:

- Developing the first high-level, space-focused technology roadmap to ensure that future NATO space research activities are conducted in coordination with the operational community and address acquisition, operational, legal as well as policy aspects.
- Delivering a technical guide on best available technology and site management practices to avoid or minimise environmental impact of live-fire training.
- Developing a mission-oriented research roadmap for artificial intelligence and big data for military decision-making, focused on the main capability areas of inform and consult, command & control.
- Maturing Modelling and Simulation as a Service technologies as the solution architecture for distributed synthetic training systems that will enhance the realism of simulations for concept evaluation, training and mission preparation.
- Enhancing the precision of acoustic threat detection in urban environments by combining advanced acoustic sensors and algorithms with distributed processing.
- Conducting a horizon scan of the most promising biotechnologies and capabilities for human augmentation and enhancement, including areas such as warfighter performance and systems; military medicine; force protection; and security and compliance.

## The Young Scientist Award

The scientific committees in the NATO Science and Technology Organization annually recognise young scientists. These awards are designed to encourage participation of promising young researchers and to enrich diversity in the NATO science and technology community. The 2021 winners worked on topics such as cognitive and imaging radar, rocket propulsion systems and military operations in extreme conditions. One of the 2021 Young Scientist award winners was Mr Paolo de Heer from the Netherlands Organisation for Applied Scientific Research (TNO). Mr De Heer has been a key driver of the Organisation's research on multi-agent reinforcement learning using simulated quantum annealing.



Mr Paolo de Heer receives the NATO Modelling Simulation Group Young Scientist Award 2021 from Mr Niels Krarup-Hansen, Chair of the Awards Committee, at the Symposium "Towards Training and Decision Support for Complex Multi-Domain Operations" held in Amsterdam, the Netherlands, 21–22 October 2021.

## Improving Transparency: Archives and Information Management

NATO is committed to transparency and openness. In 2021, the Alliance declassified and publicly disclosed 17,088 historical NATO documents. In addition to the historical material, the number of current documents made available to the public continued to increase, including the Green Defence Framework, the Artificial Intelligence Strategy and financial documents produced by the International Board of Auditors for NATO. The public disclosure programme also regularly reviews thematic collections of particular interest, ensuring that thematic disclosures align with areas of interest to academics and the general public. To support the commemoration of the 70th anniversary of the Supreme Headquarters Allied Powers Europe (SHAPE) and NATO's presence in Italy, the Allied Forces Southern Europe and Allied Land Forces Southern Europe histories were disclosed and the SHAPE histories were re-issued.

Improving access to NATO's resources is an important part of the transparency effort. In 2021, NATO's Declassified Centre and Archives Reading Room reopened in a refreshed format and continued improvements to the materials available on ArchivesOnline.



*Commemorating NATO milestones like the 70th anniversary of SHAPE gave me unique opportunities to creatively showcase rarely seen archival documents, photos and film in ways that enhance our understanding of NATO's foundations.*

**Nicholas Nguyen (Canada)**

Public Disclosure Officer, NATO Archives  
NATO Headquarters, Brussels, Belgium

Lord Hastings Lionel "Pug" Ismay was NATO's first Secretary General (1952–1957), a position he was initially reluctant to accept. He was nominated for the position by Prime Minister Winston Churchill, who encouraged Ismay to accept the job with these words: "NATO provided the best, if not the only, hope for peace in our time." Churchill also told Ismay: "It is your duty to accept, Pug." By the end of his tenure, Ismay had become the Organization's biggest advocate.









## Kosovo Force

The NATO-led KFOR mission is to contribute to maintaining a safe and secure environment and freedom of movement for all communities in Kosovo, as mandated by the United Nations Security Council Resolution 1244 of 1999. In carrying out its activities, NATO cooperates with and assists the United Nations, the European Union and other international actors, as appropriate, to support the development of a stable and peaceful Kosovo. KFOR also supports the development of professional, democratic and multi-ethnic security structures in Kosovo.

Commander: Major General Ferenc Kajári (Hungary)

### 28 Troop-contributing Nations (as of November 2021)

Albania	25	Moldova	41
Armenia	40	Montenegro	1
Austria	240	North Macedonia	64
Bulgaria	25	Poland	247
Canada	5	Romania	50
Croatia	134	Slovenia	193
Czech Republic	8	Sweden	2
Denmark	35	Switzerland	187
Finland	20	Turkey	309
Germany	68	Ukraine	40
Greece	109	United Kingdom	35
Hungary	469	United States	635
Ireland	13	Total Strength:	3,770
Italy	638		
Latvia	136		
Lithuania	1		



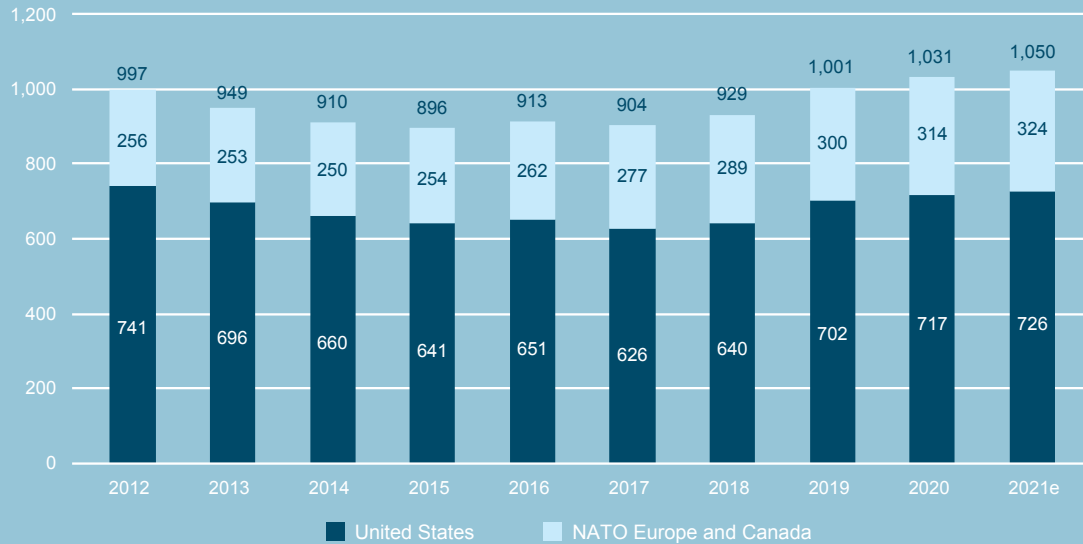
## Defence Expenditure of NATO Countries (2014–2021)

NATO collects defence expenditure data from Allies and publishes it on a regular basis. Each Ally's Ministry of Defence reports current and estimated future defence expenditure according to an agreed definition. The amounts represent payments by a national government that have been or will be made during the course of the fiscal year to meet the needs of its armed forces, those of Allies or of the Alliance. In the figures and tables that follow, NATO also uses economic and demographic information available from the Directorate-General for Economic and Financial Affairs of the European Commission and the Organisation for Economic Cooperation and Development.

In view of differences between these sources and national Gross Domestic Product forecasts, and also the definition of NATO defence expenditure and national definitions, the figures shown in this report may considerably diverge from those that are referenced by media, published by national authorities or given in national budgets. Equipment expenditure includes expenditure on major equipment as well as on research and development devoted to major equipment. Personnel expenditure includes pensions paid to retirees.

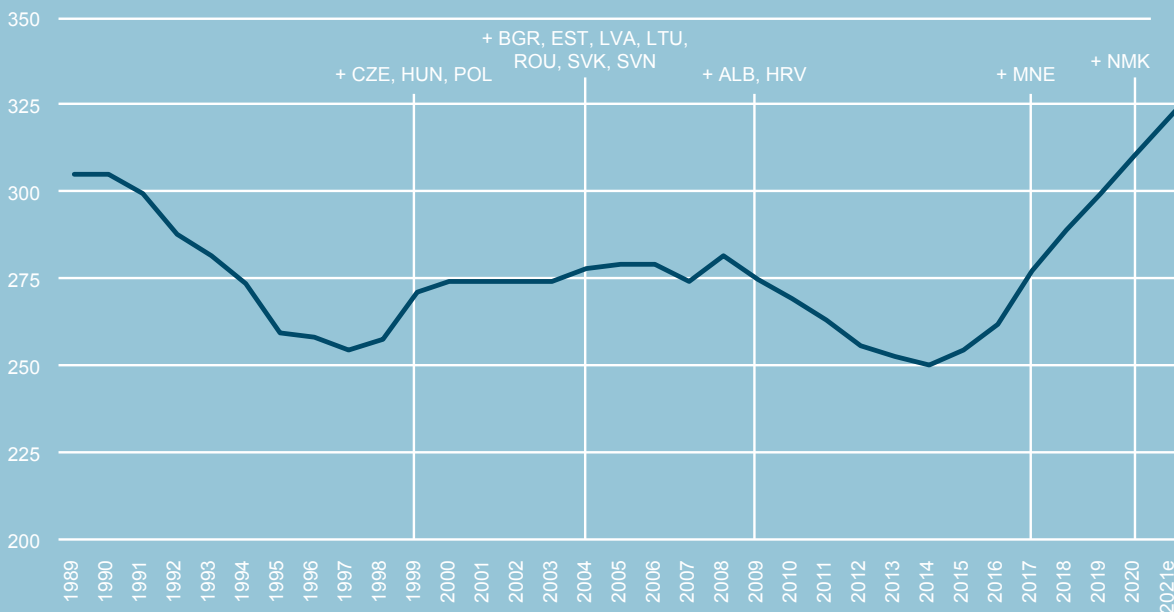
The cut-off date for information used in this report was 7 February 2022. Figures for 2021 are estimates.

**Graph 1: Defence expenditure**  
(billion US dollars, based on 2015 prices and exchange rates)



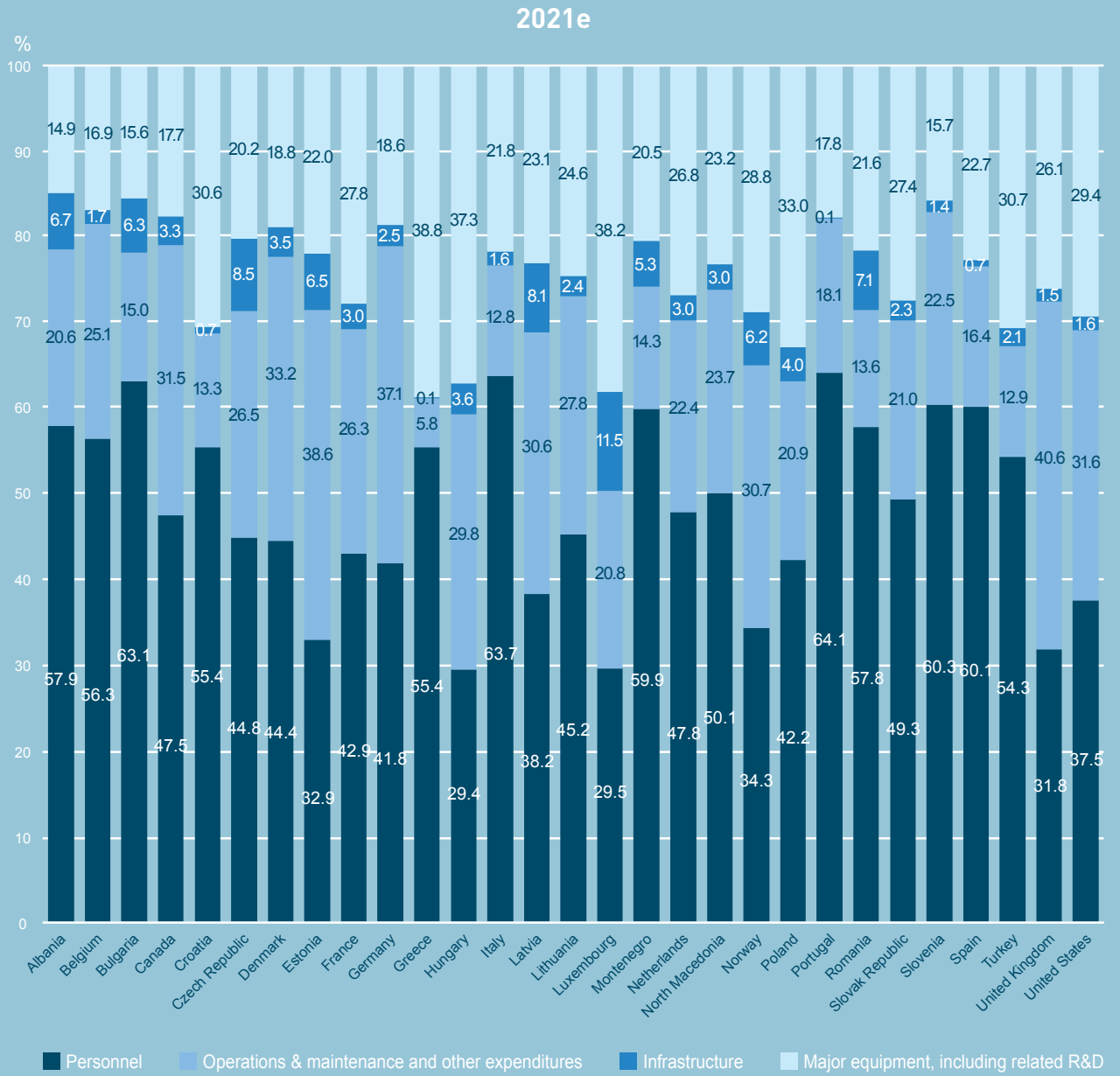
Notes: Figures for 2021 are estimates. The NATO Europe and Canada aggregate from 2017 onwards includes Montenegro, which became an Ally on 5 June 2017, and from 2020 onwards includes North Macedonia, which became an Ally on 27 March 2020.

**Graph 2: NATO Europe and Canada - defence expenditure**  
(billion US dollars, based on 2015 prices and exchange rates)



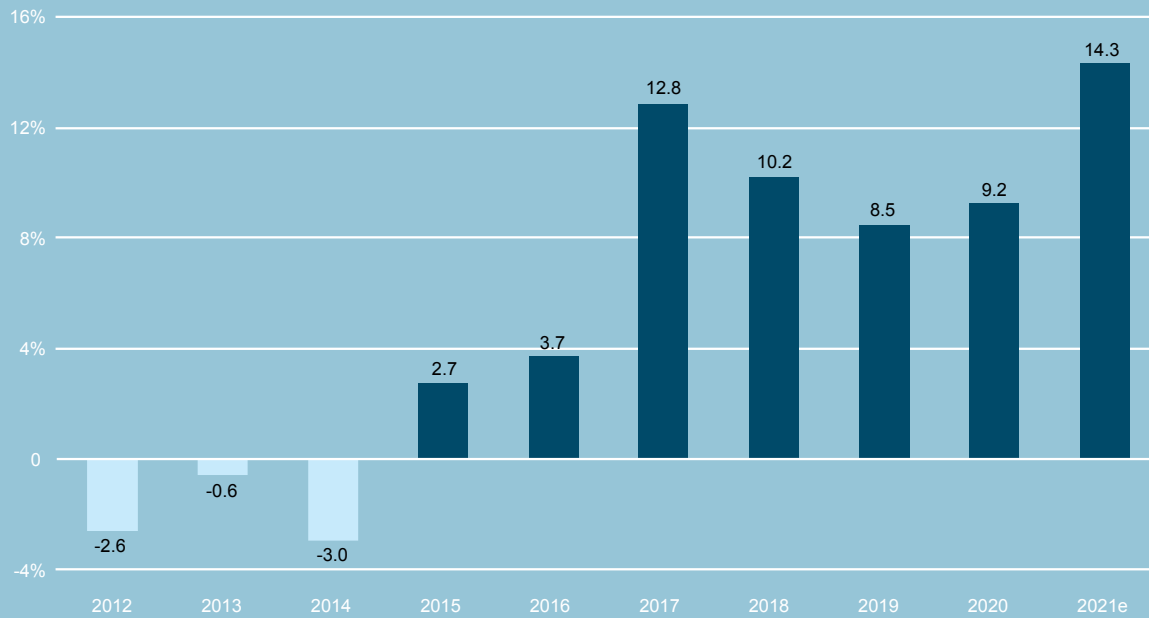
Notes: Figures for 2021 are estimates. Includes enlargements which took place in: 1999 (3 Allies), 2004 (7 Allies), 2009 (2 Allies), 2017 (1 Ally) and 2020 (1 Ally).

**Graph 3: Main categories of defence expenditure (%)**  
(percentage of total defence expenditure)





**Graph 4: NATO Europe and Canada - major equipment expenditure**  
(annual real change, based on 2015 prices and exchange rates)



Notes: Figures for 2021 are estimates. The NATO Europe and Canada aggregate from 2017 onwards includes Montenegro, which became an Ally on 5 June 2017, and from 2020 onwards includes North Macedonia, which became an Ally on 27 March 2020.

**Table 1: Defence expenditure (million national currency units)**

Country	Currency unit (million)	2014	2015	2016	2017	2018	2019	2020	2021e
<b>Current prices</b>									
Albania	Leks	18,788	16,671	16,250	17,199	18,995	21,670	21,348	24,685
Belgium	Euros	3,913	3,789	3,848	3,932	4,101	4,253	4,665	5,358
Bulgaria	Leva	1,102	1,116	1,186	1,255	1,593	3,771	1,920	2,099
Canada	Canadian dollars	20,076	23,900	23,474	30,761	29,025	29,949	31,644	33,674
Croatia	Kunas	6,113	6,057	5,696	6,120	6,068	6,634	6,487	9,062
Czech Republic	Koruny	41,003	47,264	45,598	52,805	59,752	68,373	74,257	85,383
Denmark	Kroner	22,769	22,633	24,190	24,961	28,787	29,929	31,962	34,586
Estonia	Euros	386	418	450	479	521	569	630	646
France	Euros	39,149	39,199	39,950	40,852	42,748	44,361	46,018	47,807
Germany	Euros	34,749	35,898	37,598	40,265	42,127	46,936	51,392	53,033
Greece	Euros	3,939	4,073	4,190	4,208	4,560	4,483	4,812	6,496
Hungary	Forint	281,402	316,338	362,798	468,765	436,500	636,566	852,321	927,965
Italy	Euros	18,427	17,642	20,226	21,166	21,702	21,042	26,360	27,395
Latvia*	Euros	221	254	364	430	601	618	651	699
Lithuania*	Euros	322	425	575	724	895	977	1,030	1,103
Luxembourg	Euros	190	225	213	288	301	341	373	387
Montenegro	Euros	52	51	56	58	64	66	72	77
Netherlands	Euros	7,788	7,816	8,234	8,539	9,456	10,771	11,237	12,300
North Macedonia	Denars	5,743	5,853	5,770	5,532	6,232	8,029	8,303	10,804
Norway	Kroner	48,660	49,529	54,022	56,664	61,349	66,318	68,054	71,174
Poland*	Zlotys	31,874	39,940	37,082	37,558	42,824	45,404	52,110	59,491
Portugal	Euros	2,263	2,384	2,364	2,424	2,750	2,947	2,867	3,282
Romania*	New Lei	9,014	10,337	10,738	14,765	17,183	19,527	21,431	22,027
Slovak Republic	Euros	752	889	907	935	1,098	1,610	1,796	1,677
Slovenia	Euros	366	361	406	422	463	511	498	624
Spain	Euros	9,508	10,000	9,014	10,528	11,172	11,281	11,240	12,208
Turkey	Liras	29,727	32,522	38,203	47,323	68,300	79,987	93,910	108,426
United Kingdom	Pounds	39,902	38,940	41,590	43,257	45,202	46,509	49,495	52,291
United States	US dollars	653,942	641,253	656,059	642,933	672,255	730,149	784,952	811,140
<b>Constant 2015 prices</b>									
Albania	Leks	18,894	16,671	16,354	17,061	18,569	20,928	20,710	23,632
Belgium	Euros	3,965	3,789	3,775	3,789	3,892	3,967	4,296	4,775
Bulgaria	Leva	1,134	1,116	1,148	1,159	1,411	3,174	1,551	1,633
Canada	Canadian dollars	19,900	23,900	23,299	29,767	27,602	28,012	29,370	29,097
Croatia	Kunas	6,118	6,057	5,700	6,055	5,885	6,313	6,180	8,432
Czech Republic	Koruny	41,410	47,264	45,083	51,539	56,861	62,629	65,154	71,507
Denmark	Kroner	22,868	22,633	24,129	24,606	28,215	29,119	30,394	32,431
Estonia	Euros	389	418	440	451	472	499	555	559
France	Euros	39,595	39,199	39,743	40,430	41,890	42,922	43,427	44,778
Germany	Euros	35,394	35,898	37,105	39,147	40,164	43,846	47,259	47,329
Greece	Euros	3,927	4,073	4,214	4,221	4,581	4,492	4,863	6,396
Hungary	Forint	289,228	316,338	357,803	445,003	395,350	550,319	694,538	704,921
Italy	Euros	18,734	17,642	19,769	20,511	21,079	20,253	25,078	25,685
Latvia*	Euros	221	254	361	414	557	559	589	600
Lithuania*	Euros	322	425	566	684	816	868	902	925
Luxembourg	Euros	195	225	216	286	293	329	346	343
Montenegro	Euros	53	51	54	53	57	57	63	66
Netherlands	Euros	7,796	7,816	8,162	8,340	9,041	10,020	10,234	10,995
North Macedonia	Denars	5,858	5,853	5,577	5,201	5,637	7,183	7,363	9,403
Norway	Kroner	47,271	49,529	54,831	55,326	56,164	61,002	64,940	59,041
Poland*	Zlotys	32,185	39,940	36,967	36,758	41,414	42,550	46,909	51,539
Portugal	Euros	2,309	2,384	2,324	2,348	2,616	2,755	2,630	2,984
Romania*	New Lei	9,308	10,337	10,482	13,768	15,089	16,057	16,984	16,806
Slovak Republic	Euros	750	889	912	928	1,069	1,528	1,666	1,522
Slovenia	Euros	370	361	403	413	443	479	461	563
Spain	Euros	9,560	10,000	8,985	10,360	10,858	10,823	10,666	11,406
Turkey	Liras	32,059	32,522	35,330	39,434	48,863	50,259	51,388	48,099
United Kingdom	Pounds	40,106	38,940	40,814	41,692	42,712	43,079	43,306	45,388
United States	US dollars	660,062	641,253	651,201	626,328	640,277	701,563	716,886	725,709

Notes: Figures for 2021 are estimates.

\* These Allies have national laws or political agreements which call for 2% of GDP to be spent on defence annually, consequently future estimates are expected to change accordingly. For past years Allies defence spending was based on the then available GDP data and Allies may, therefore, have met the 2% guideline when using those figures. (In 2018, Lithuania met 2% using November 2018 OECD figures).

**Table 2: Defence expenditure (million US dollars)**

Country	2014	2015	2016	2017	2018	2019	2020	2021e
<b>Current prices and exchange rates</b>								
Albania	178	132	131	145	176	197	197	241
Belgium	5,200	4,204	4,258	4,441	4,845	4,761	5,324	6,400
Bulgaria	747	633	671	724	962	2,159	1,121	1,282
Canada	18,172	18,689	17,708	23,700	22,399	22,572	23,595	26,919
Croatia	1,064	883	837	924	966	1,002	981	1,445
Czech Republic	1,975	1,921	1,866	2,259	2,750	2,982	3,199	3,972
Denmark	4,057	3,364	3,593	3,780	4,559	4,487	4,886	5,551
Estonia	514	463	497	541	615	637	719	771
France	52,022	43,496	44,209	46,133	50,507	49,667	52,520	57,098
Germany	46,176	39,833	41,606	45,470	49,772	52,549	58,652	63,339
Greece	5,234	4,520	4,637	4,752	5,388	5,019	5,492	7,758
Hungary	1,210	1,132	1,289	1,708	1,615	2,190	2,767	3,140
Italy	24,487	19,576	22,382	23,902	25,641	23,559	30,084	32,719
Latvia*	294	282	403	485	710	692	743	835
Lithuania*	428	471	636	817	1,057	1,094	1,176	1,318
Luxembourg	253	250	236	326	356	381	426	462
Montenegro	69	57	62	65	75	74	83	92
Netherlands	10,349	8,673	9,112	9,643	11,172	12,060	12,824	14,690
North Macedonia	124	105	104	101	120	146	154	209
Norway	7,722	6,142	6,431	6,850	7,544	7,536	7,228	8,234
Poland*	10,107	10,588	9,397	9,940	11,857	11,824	13,363	15,401
Portugal	3,007	2,645	2,616	2,738	3,249	3,299	3,273	3,920
Romania*	2,691	2,581	2,645	3,643	4,359	4,608	5,050	5,348
Slovak Republic	999	987	1,004	1,056	1,298	1,802	2,049	2,003
Slovenia	487	401	449	477	547	572	568	745
Spain	12,634	11,096	9,975	11,889	13,200	12,630	12,828	14,581
Turkey	13,577	11,953	12,644	12,971	14,168	14,089	13,396	13,014
United Kingdom	65,692	59,505	56,362	55,719	60,380	59,399	63,500	72,706
United States	653,942	641,253	656,059	642,933	672,255	730,149	784,952	811,140
<b>NATO Europe and Canada</b>	<b>289,275</b>	<b>254,423</b>	<b>255,595</b>	<b>275,100</b>	<b>300,167</b>	<b>301,841</b>	<b>326,195</b>	<b>364,192</b>
<b>NATO Total</b>	<b>943,217</b>	<b>895,676</b>	<b>911,654</b>	<b>918,033</b>	<b>972,422</b>	<b>1,031,990</b>	<b>1,111,147</b>	<b>1,175,332</b>
<b>Constant 2015 prices and exchange rates</b>								
Albania	150	132	130	135	147	166	164	188
Belgium	4,400	4,204	4,189	4,204	4,319	4,401	4,767	5,298
Bulgaria	643	633	650	657	800	1,799	879	925
Canada	15,562	18,689	18,219	23,278	21,585	21,905	22,967	22,754
Croatia	892	883	831	883	858	920	901	1,230
Czech Republic	1,683	1,921	1,833	2,095	2,312	2,546	2,649	2,907
Denmark	3,399	3,364	3,586	3,657	4,194	4,328	4,518	4,820
Estonia	431	463	488	501	523	553	616	620
France	43,936	43,496	44,100	44,862	46,482	47,627	48,188	49,686
Germany	39,274	39,833	41,173	43,438	44,567	48,653	52,440	52,518
Greece	4,358	4,520	4,676	4,683	5,084	4,985	5,396	7,097
Hungary	1,035	1,132	1,281	1,593	1,415	1,970	2,486	2,524
Italy	20,788	19,576	21,936	22,759	23,390	22,473	27,827	28,501
Latvia*	246	282	401	459	618	620	653	666
Lithuania*	357	471	628	759	906	963	1,001	1,027
Luxembourg	216	250	239	317	325	366	384	381
Montenegro	59	57	59	59	63	64	70	73
Netherlands	8,650	8,673	9,057	9,254	10,032	11,119	11,356	12,200
North Macedonia	106	105	100	94	102	129	133	169
Norway	5,862	6,142	6,799	6,861	6,965	7,565	8,053	7,321
Poland*	8,532	10,588	9,800	9,745	10,979	11,280	12,436	13,663
Portugal	2,562	2,645	2,579	2,605	2,902	3,057	2,918	3,311
Romania*	2,324	2,581	2,617	3,437	3,767	4,009	4,240	4,196
Slovak Republic	832	987	1,012	1,030	1,186	1,696	1,848	1,688
Slovenia	411	401	447	458	491	531	511	625
Spain	10,608	11,096	9,970	11,495	12,049	12,009	11,835	12,656
Turkey	11,783	11,953	12,985	14,494	17,959	18,472	18,887	17,679
United Kingdom	61,287	59,505	62,368	63,710	65,270	65,830	66,176	69,358
United States	660,062	641,253	651,201	626,328	640,277	701,563	716,886	725,709
<b>NATO Europe and Canada</b>	<b>250,220</b>	<b>254,423</b>	<b>261,995</b>	<b>277,428</b>	<b>289,187</b>	<b>299,909</b>	<b>314,300</b>	<b>324,081</b>
<b>NATO Total</b>	<b>910,283</b>	<b>895,676</b>	<b>913,195</b>	<b>903,755</b>	<b>929,464</b>	<b>1,001,472</b>	<b>1,031,186</b>	<b>1,049,790</b>

Notes: Figures for 2021 are estimates. The NATO Europe and Canada and NATO Total aggregates from 2017 onwards include Montenegro, which became an Ally on 5 June 2017, and from 2020 onwards include North Macedonia, which became an Ally on 27 March 2020.

\* These Allies have national laws or political agreements which call for 2% of GDP to be spent on defence annually, consequently future estimates are expected to change accordingly. For past years Allies defence spending was based on the then available GDP data and Allies may, therefore, have met the 2% guideline when using those figures. (In 2018, Lithuania met 2% using November 2018 OECD figures).



**Table 3: Defence expenditure as a share of GDP and annual real change (based on 2015 prices)**

Country	2014	2015	2016	2017	2018	2019	2020	2021e
<b>Share of real GDP (%)</b>								
Albania	1.35	1.16	1.10	1.11	1.16	1.28	1.32	1.41
Belgium	0.97	0.91	0.89	0.88	0.89	0.89	1.02	1.07
Bulgaria	1.31	1.25	1.24	1.22	1.45	3.13	1.60	1.62
Canada	1.01	1.20	1.16	1.44	1.30	1.30	1.44	1.36
Croatia	1.82	1.76	1.60	1.64	1.55	1.61	1.71	2.16
Czech Republic	0.94	1.02	0.95	1.03	1.10	1.18	1.30	1.40
Denmark	1.15	1.11	1.15	1.14	1.28	1.28	1.38	1.40
Estonia	1.93	2.03	2.07	2.01	2.02	2.05	2.35	2.16
France	1.82	1.78	1.79	1.78	1.81	1.82	2.00	1.93
Germany	1.19	1.19	1.20	1.23	1.25	1.35	1.53	1.49
Greece	2.22	2.31	2.40	2.38	2.54	2.45	2.91	3.59
Hungary	0.86	0.90	1.00	1.19	1.01	1.34	1.78	1.69
Italy	1.14	1.07	1.18	1.20	1.23	1.17	1.60	1.54
Latvia*	0.94	1.03	1.44	1.59	2.06	2.02	2.20	2.16
Lithuania*	0.88	1.14	1.48	1.71	1.97	2.00	2.08	2.03
Luxembourg	0.37	0.42	0.38	0.50	0.50	0.54	0.58	0.54
Montenegro	1.50	1.40	1.42	1.34	1.37	1.33	1.73	1.63
Netherlands	1.15	1.13	1.16	1.15	1.22	1.32	1.41	1.45
North Macedonia	1.09	1.05	0.97	0.89	0.94	1.16	1.25	1.54
Norway	1.55	1.59	1.74	1.72	1.73	1.86	2.00	1.74
Poland*	1.86	2.22	1.99	1.89	2.02	1.98	2.24	2.34
Portugal	1.31	1.33	1.27	1.24	1.34	1.37	1.43	1.55
Romania*	1.35	1.45	1.41	1.72	1.81	1.84	2.03	1.88
Slovak Republic	0.99	1.11	1.12	1.11	1.23	1.71	1.95	1.73
Slovenia	0.97	0.93	1.00	0.98	1.01	1.06	1.06	1.22
Spain	0.92	0.93	0.81	0.91	0.93	0.91	1.00	1.03
Turkey	1.45	1.38	1.45	1.51	1.82	1.85	1.86	1.60
United Kingdom	2.13	2.01	2.06	2.06	2.08	2.06	2.30	2.25
United States	3.72	3.52	3.52	3.31	3.29	3.52	3.72	3.57
<b>NATO Europe and Canada</b>	<b>1.43</b>	<b>1.42</b>	<b>1.44</b>	<b>1.48</b>	<b>1.51</b>	<b>1.54</b>	<b>1.72</b>	<b>1.69</b>
<b>NATO Total</b>	<b>2.58</b>	<b>2.48</b>	<b>2.48</b>	<b>2.40</b>	<b>2.41</b>	<b>2.54</b>	<b>2.75</b>	<b>2.65</b>
<b>Annual real change (%)</b>								
Albania	-2.74	-11.76	-1.90	4.32	8.84	12.71	-1.04	14.11
Belgium	-2.25	-4.44	-0.36	0.36	2.72	1.92	8.29	11.16
Bulgaria	-9.08	-1.56	2.80	0.96	21.80	124.95	-51.13	5.25
Canada	4.95	20.10	-2.52	27.76	-7.27	1.48	4.85	-0.93
Croatia	25.91	-0.99	-5.90	6.22	-2.81	7.27	-2.09	36.44
Czech Republic	-4.91	14.14	-4.61	14.32	10.32	10.14	4.03	9.75
Denmark	-4.84	-1.03	6.61	1.98	14.67	3.20	4.38	6.70
Estonia	3.75	7.41	5.25	2.68	4.46	5.76	11.36	0.66
France	-1.21	-1.00	1.39	1.73	3.61	2.46	1.18	3.11
Germany	-1.39	1.42	3.36	5.50	2.60	9.17	7.78	0.15
Greece	0.44	3.72	3.47	0.15	8.55	-1.94	8.25	31.51
Hungary	-5.31	9.37	13.11	24.37	-11.16	39.20	26.21	1.49
Italy	-9.81	-5.83	12.05	3.75	2.77	-3.92	23.83	2.42
Latvia*	2.39	14.66	42.29	14.61	34.53	0.37	5.33	1.97
Lithuania*	19.38	31.96	33.13	20.84	19.38	6.36	3.96	2.54
Luxembourg	5.25	15.54	-4.05	32.34	2.62	12.44	5.08	-0.93
Montenegro	4.49	-3.50	4.33	-1.34	7.29	1.36	10.02	3.91
Netherlands	0.19	0.26	4.43	2.17	8.41	10.83	2.13	7.44
North Macedonia	-3.58	-0.09	-4.71	-6.75	8.40	27.42	2.50	27.70
Norway	5.35	4.78	10.70	0.90	1.51	8.61	6.46	-9.08
Poland*	11.39	24.10	-7.45	-0.56	12.67	2.74	10.24	9.87
Portugal	-8.52	3.25	-2.51	1.03	11.40	5.32	-4.54	13.48
Romania*	8.52	11.06	1.40	31.35	9.60	6.41	5.78	-1.05
Slovak Republic	3.25	18.61	2.51	1.80	15.18	42.97	8.97	-8.64
Slovenia	-4.42	-2.37	11.42	2.45	7.31	8.13	-3.77	22.24
Spain	0.36	4.60	-10.15	15.30	4.81	-0.32	-1.45	6.94
Turkey	0.78	1.44	8.64	11.61	23.91	2.86	2.25	-6.40
United Kingdom	-1.37	-2.91	4.81	2.15	2.45	0.86	0.53	4.81
United States	-5.20	-2.85	1.55	-3.82	2.23	9.57	2.18	1.23
<b>NATO Europe and Canada</b>	<b>-0.95</b>	<b>1.68</b>	<b>2.98</b>	<b>5.89</b>	<b>4.24</b>	<b>3.71</b>	<b>4.80</b>	<b>3.11</b>
<b>NATO Total</b>	<b>-4.07</b>	<b>-1.60</b>	<b>1.96</b>	<b>-1.03</b>	<b>2.84</b>	<b>7.75</b>	<b>2.97</b>	<b>1.80</b>

Notes: Figures for 2021 are estimates. The NATO Europe and Canada and NATO Total aggregates from 2017 onwards include Montenegro, which became an Ally on 5 June 2017, and from 2020 onwards include North Macedonia, which became an Ally on 27 March 2020.

\* These Allies have national laws and political agreements which call for 2% of GDP to be spent on defence annually, consequently estimates are expected to change accordingly. For the past years, Allies' defence spending was based on the then available GDP data and Allies may, therefore, have met the 2% guideline when using those figures (In 2018, Lithuania met 2% using November 2018 OECD figures).

**Table 4: Defence expenditure real change 2014-2021**

Country	2014	2021e	Real change 2014-2021e (%)	Share of real GDP 2014 (%)	Share of real GDP 2021e (%)
<b>Million US dollars (2015 prices and exchange rates)</b>					
Albania	150	188	25.08	1.35	1.41
Belgium	4,400	5,298	20.42	0.97	1.07
Bulgaria	643	925	43.98	1.31	1.62
Canada	15,562	22,754	46.22	1.01	1.36
Croatia	892	1,230	37.83	1.82	2.16
Czech Republic	1,683	2,907	72.68	0.94	1.40
Denmark	3,399	4,820	41.82	1.15	1.40
Estonia	431	620	43.75	1.93	2.16
France	43,936	49,686	13.09	1.82	1.93
Germany	39,274	52,518	33.72	1.19	1.49
Greece	4,358	7,097	62.86	2.22	3.59
Hungary	1,035	2,524	143.73	0.86	1.69
Italy	20,788	28,501	37.10	1.14	1.54
Latvia	246	666	171.17	0.94	2.16
Lithuania	357	1,027	187.34	0.88	2.03
Luxembourg	216	381	76.21	0.37	0.54
Montenegro	59	73	23.48	1.50	1.63
Netherlands	8,650	12,200	41.04	1.15	1.45
North Macedonia	106	169	60.52	1.09	1.54
Norway	5,862	7,321	24.90	1.55	1.74
Poland	8,532	13,663	60.14	1.86	2.34
Portugal	2,562	3,311	29.24	1.31	1.55
Romania	2,324	4,196	80.56	1.35	1.88
Slovak Republic	832	1,688	102.90	0.99	1.73
Slovenia	411	625	52.11	0.97	1.22
Spain	10,608	12,656	19.31	0.92	1.03
Turkey	11,783	17,679	50.03	1.45	1.60
United Kingdom	61,287	69,358	13.17	2.13	2.25
United States	660,062	725,709	9.95	3.72	3.57

Notes: Figures for 2021 are estimates.

**Table 5: Real GDP**

Country	2014	2015	2016	2017	2018	2019	2020	2021e
<b>Billion US dollars (2015 prices and exchange rates)</b>								
Albania	11	11	12	12	13	13	12	13
Belgium	453	462	468	476	484	495	467	495
Bulgaria	49	51	52	54	55	57	55	57
Canada	1,546	1,557	1,572	1,620	1,659	1,690	1,600	1,677
Croatia	49	50	52	54	55	57	53	57
Czech Republic	178	188	193	203	210	216	203	208
Denmark	296	303	313	321	328	338	328	344
Estonia	22	23	24	25	26	27	26	29
France	2,414	2,439	2,464	2,525	2,571	2,618	2,409	2,573
Germany	3,313	3,355	3,426	3,529	3,568	3,607	3,429	3,527
Greece	196	196	195	197	200	204	185	198
Hungary	121	125	128	133	141	147	140	150
Iceland	17	18	19	19	20	21	19	20
Italy	1,824	1,836	1,861	1,894	1,909	1,917	1,744	1,854
Latvia	26	27	28	29	30	31	30	31
Lithuania	41	41	42	44	46	48	48	51
Luxembourg	59	60	63	64	65	67	66	70
Montenegro	4	4	4	4	5	5	4	4
Netherlands	751	766	782	806	824	840	808	843
North Macedonia	10	10	10	10	11	11	11	11
Norway	378	386	390	399	403	406	404	420
Poland	458	477	492	516	544	570	555	585
Portugal	196	199	203	211	217	222	204	213
Romania	173	178	186	200	209	217	209	223
Slovak Republic	84	89	90	93	97	99	95	98
Slovenia	42	43	44	47	49	50	48	51
Spain	1,152	1,196	1,232	1,269	1,298	1,325	1,181	1,234
Turkey	815	864	893	960	988	997	1,015	1,107
United Kingdom	2,882	2,957	3,024	3,089	3,140	3,192	2,883	3,082
United States	17,726	18,206	18,510	18,927	19,480	19,925	19,247	20,317
<b>NATO Europe and Canada</b>	<b>17,546</b>	<b>17,897</b>	<b>18,250</b>	<b>18,791</b>	<b>19,153</b>	<b>19,477</b>	<b>18,232</b>	<b>19,227</b>
<b>NATO Total</b>	<b>35,272</b>	<b>36,103</b>	<b>36,760</b>	<b>37,718</b>	<b>38,633</b>	<b>39,402</b>	<b>37,479</b>	<b>39,544</b>

Notes: Figures for 2021 are estimates. The NATO Europe and Canada and NATO Total aggregates from 2017 onwards include Montenegro, which became an Ally on 5 June 2017, and from 2020 onwards include North Macedonia, which became an Ally on 27 March 2020.



**Table 6: GDP per capita and defence expenditure per capita**  
(2015 prices and exchange rates)

Country	2014	2015	2016	2017	2018	2019	2020	2021e
<b>GDP per capita (thousand US dollars)</b>								
Albania	3.9	4.0	4.1	4.3	4.4	4.5	4.4	4.7
Belgium	40.4	41.0	41.3	41.8	42.4	43.1	40.5	42.8
Bulgaria	6.8	7.1	7.3	7.6	7.9	8.2	7.9	8.3
Canada	43.6	43.6	43.5	44.3	44.8	45.0	42.1	43.7
Croatia	11.6	11.9	12.4	13.0	13.5	14.1	13.0	14.1
Czech Republic	16.9	17.8	18.2	19.2	19.7	20.2	19.0	19.4
Denmark	52.4	53.3	54.5	55.7	56.7	58.0	56.3	58.9
Estonia	17.0	17.4	17.9	18.9	19.6	20.3	19.7	21.6
France	36.4	36.6	36.9	37.6	38.2	38.7	35.5	37.8
Germany	40.9	41.1	41.6	42.7	43.0	43.4	41.2	42.4
Greece	18.0	18.1	18.1	18.3	18.6	19.0	17.3	18.5
Hungary	12.2	12.7	13.0	13.6	14.4	15.1	14.4	15.4
Iceland	51.2	53.0	55.5	56.5	57.7	57.8	53.5	55.6
Italy	30.0	30.2	30.7	31.3	31.6	31.8	29.0	31.0
Latvia	13.2	13.8	14.2	14.9	15.6	16.1	15.6	16.4
Lithuania	13.9	14.3	14.8	15.7	16.4	17.2	17.2	18.1
Luxembourg	105.1	105.4	107.9	107.0	107.0	108.3	104.7	109.9
Montenegro	6.3	6.5	6.7	7.0	7.4	7.7	6.5	7.2
Netherlands	44.5	45.2	45.9	47.0	47.8	48.4	46.3	48.1
North Macedonia	4.7	4.9	5.0	5.0	5.2	5.3	5.1	5.3
Norway	73.7	74.3	74.5	75.6	76.0	76.0	75.0	77.6
Poland	11.9	12.4	12.8	13.4	14.2	14.8	14.5	15.3
Portugal	18.8	19.3	19.7	20.4	21.1	21.6	19.8	20.7
Romania	8.7	9.0	9.4	10.2	10.7	11.2	10.8	11.7
Slovak Republic	15.5	16.3	16.6	17.1	17.7	18.2	17.4	17.9
Slovenia	20.5	20.9	21.5	22.6	23.5	24.1	22.9	24.1
Spain	24.8	25.8	26.5	27.3	27.8	28.1	24.9	25.9
Turkey	10.6	11.0	11.3	12.0	12.1	12.1	12.2	13.1
United Kingdom	44.6	45.4	46.1	46.8	47.3	47.8	42.9	45.6
United States	55.6	56.7	57.3	58.2	59.6	60.7	58.3	61.2
<b>NATO Europe and Canada</b>	<b>29.3</b>	<b>29.7</b>	<b>30.2</b>	<b>30.9</b>	<b>31.4</b>	<b>31.8</b>	<b>29.5</b>	<b>31.1</b>
<b>NATO Total</b>	<b>38.4</b>	<b>39.1</b>	<b>39.6</b>	<b>40.4</b>	<b>41.2</b>	<b>41.8</b>	<b>39.6</b>	<b>41.6</b>
<b>Defence expenditure per capita (US dollars)</b>								
Albania	52	46	45	47	51	58	58	66
Belgium	393	373	370	370	378	383	413	458
Bulgaria	89	88	91	93	114	258	127	134
Canada	439	523	505	637	582	583	604	592
Croatia	211	210	199	214	210	226	223	305
Czech Republic	160	182	173	198	218	239	248	271
Denmark	602	592	626	634	724	744	775	825
Estonia	328	353	371	381	397	418	464	466
France	663	653	660	668	690	704	711	731
Germany	485	488	500	526	538	586	631	631
Greece	400	418	434	435	474	465	504	664
Hungary	105	115	131	163	145	202	255	259
Italy	342	322	362	376	387	372	463	476
Latvia	123	142	204	237	321	324	344	353
Lithuania	122	162	219	268	323	345	358	367
Luxembourg	387	438	410	531	534	588	609	594
Montenegro	95	92	95	94	101	102	113	117
Netherlands	513	512	532	540	582	641	651	696
North Macedonia	51	51	48	45	49	62	64	82
Norway	1,141	1,183	1,299	1,300	1,311	1,414	1,497	1,353
Poland	222	275	255	254	286	294	324	357
Portugal	246	255	250	253	282	297	283	321
Romania	117	130	133	175	193	207	220	220
Slovak Republic	154	182	186	189	218	311	338	309
Slovenia	199	194	216	222	237	254	243	295
Spain	228	239	215	247	258	255	250	266
Turkey	153	153	164	180	221	224	227	210
United Kingdom	949	914	950	965	982	986	985	1,026
United States	2,072	1,998	2,015	1,926	1,958	2,135	2,171	2,187
<b>NATO Europe and Canada</b>	<b>417</b>	<b>422</b>	<b>433</b>	<b>456</b>	<b>474</b>	<b>489</b>	<b>509</b>	<b>523</b>
<b>NATO Total</b>	<b>991</b>	<b>970</b>	<b>984</b>	<b>968</b>	<b>991</b>	<b>1,063</b>	<b>1,088</b>	<b>1,104</b>

Notes: Figures for 2021 are estimates. The NATO Europe and Canada and NATO Total aggregates from 2017 onwards include Montenegro, which became an Ally on 5 June 2017, and from 2020 onwards include North Macedonia, which became an Ally on 27 March 2020.

**Table 7: Military personnel (Thousands)**

Country	2014	2015	2016	2017	2018	2019	2020	2021e
Albania	6.7	6.2	5.8	6.8	6.8	6.8	6.7	6.6
Belgium	30.5	29.7	28.8	27.8	26.5	23.3	22.8	22.7
Bulgaria	27.5	24.9	24.7	24.3	24.4	24.6	25.0	26.0
Canada	65.9	70.3	70.5	68.2	70.3	69.4	71.0	71.1
Croatia	15.4	15.1	14.8	14.8	15.0	14.8	14.7	14.4
Czech Republic	20.2	21.5	22.7	23.8	24.7	25.3	26.1	26.4
Denmark	16.9	17.2	17.3	16.7	17.2	16.3	16.9	17.0
Estonia	6.3	6.0	6.1	6.0	6.2	6.3	6.7	6.8
France	207.0	204.8	208.1	208.2	208.2	207.8	207.6	207.5
Germany	178.8	177.2	177.9	179.8	181.5	183.8	183.9	184.8
Greece	107.3	104.4	106.0	106.9	109.2	102.5	106.6	109.7
Hungary	17.5	17.4	17.9	18.7	19.9	18.9	19.8	19.8
Italy	183.5	178.4	176.3	174.6	174.1	176.4	173.4	175.3
Latvia	4.6	4.8	5.2	5.5	5.9	6.0	6.4	6.6
Lithuania	8.6	11.8	11.8	13.5	14.3	14.9	15.1	16.7
Luxembourg	0.8	0.8	0.8	0.8	0.9	0.9	0.8	0.8
Montenegro	1.9	1.7	1.5	1.5	1.5	1.5	1.9	1.7
Netherlands	41.2	40.6	40.0	39.5	39.3	39.7	40.4	40.8
North Macedonia	6.5	6.8	6.6	6.3	6.5	6.4	6.4	6.1
Norway	21.0	20.9	20.5	20.2	20.2	19.2	20.6	22.2
Poland	99.0	98.9	101.6	105.3	109.5	113.1	116.2	121.0
Portugal	30.7	28.3	29.8	27.8	26.9	23.8	23.7	24.1
Romania	65.1	64.5	63.4	64.0	64.0	64.5	66.4	68.6
Slovak Republic	12.4	12.4	12.2	12.2	12.2	12.7	13.1	13.1
Slovenia	6.8	6.6	6.5	6.3	6.2	6.0	6.0	6.0
Spain	121.8	121.6	121.0	117.7	117.4	117.0	118.7	119.0
Turkey	426.6	384.8	359.3	416.7	444.3	441.8	433.0	439.1
United Kingdom	168.7	141.4	139.5	149.4	146.6	144.0	147.3	156.2
United States	1,338.2	1,314.1	1,301.4	1,305.9	1,317.4	1,339.0	1,346.0	1,351.5
<b>NATO Europe and Canada</b>	<b>1,891</b>	<b>1,811</b>	<b>1,788</b>	<b>1,857</b>	<b>1,893</b>	<b>1,881</b>	<b>1,897</b>	<b>1,930</b>
<b>NATO Total</b>	<b>3,229</b>	<b>3,125</b>	<b>3,090</b>	<b>3,163</b>	<b>3,210</b>	<b>3,220</b>	<b>3,243</b>	<b>3,282</b>

Notes: Figures for 2021 are estimates. The NATO Europe and Canada and NATO Total aggregates from 2017 onwards include Montenegro, which became an Ally on 5 June 2017, and from 2020 onwards include North Macedonia, which became an Ally on 27 March 2020.

**Table 8a: Distribution of defence expenditure by main category**  
(percentage of total defence expenditure)

Country	2014	2015	2016	2017	2018	2019	2020	2021e
<b>Equipment (a)</b>								
Albania	16.65	8.92	8.01	6.96	9.42	14.61	15.00	14.86
Belgium	3.52	3.44	4.72	6.52	10.15	11.06	13.88	16.85
Bulgaria	1.03	3.47	9.15	8.10	9.65	59.74	8.44	15.58
Canada	13.03	10.47	10.61	10.70	11.94	13.84	14.66	17.66
Croatia	5.56	8.01	7.51	5.69	3.37	6.55	9.06	30.60
Czech Republic	6.53	11.75	6.70	11.55	11.16	16.44	17.31	20.23
Denmark	10.99	11.50	13.68	10.39	11.66	16.21	17.65	18.83
Estonia	22.15	12.82	17.86	19.22	16.51	15.50	23.00	22.05
France	24.64	25.04	24.44	24.17	23.66	24.45	26.62	27.79
Germany	12.94	11.93	12.21	11.77	12.36	14.69	17.45	18.60
Greece	8.17	10.40	13.45	11.28	11.03	11.55	10.70	38.78
Hungary	7.76	9.75	13.37	18.54	12.63	36.46	45.57	37.16
Italy	10.92	9.72	19.09	20.68	19.13	17.00	18.56	21.79
Latvia	7.55	13.60	19.05	15.01	31.85	21.65	20.53	23.07
Lithuania	14.06	21.55	30.06	31.61	36.98	37.57	33.71	24.62
Luxembourg	22.61	33.33	30.07	42.06	45.18	49.71	50.15	38.18
Montenegro	7.46	5.43	4.46	4.97	11.14	14.96	20.96	20.54
Netherlands	10.68	11.16	14.14	14.75	16.39	20.36	22.16	26.83
North Macedonia	5.92	11.13	8.37	6.47	11.09	13.82	11.53	23.22
Norway	20.42	21.83	23.37	24.63	25.60	28.76	28.41	28.84
Poland	18.84	33.20	21.62	22.04	27.51	23.36	29.31	32.96
Portugal	8.43	8.70	9.95	11.42	15.48	16.61	17.36	17.77
Romania	15.77	19.65	20.43	33.34	33.47	25.59	23.12	21.57
Slovak Republic	11.12	18.28	15.32	17.74	22.27	40.07	31.84	27.44
Slovenia	0.66	1.85	1.02	4.04	5.98	7.11	5.69	15.72
Spain	13.49	14.82	6.65	20.39	21.83	21.02	19.43	22.75
Turkey	25.08	25.13	25.55	30.30	37.64	34.32	30.73	30.71
United Kingdom	22.82	21.75	21.24	22.29	22.25	22.85	23.83	26.13
United States	25.97	25.41	25.05	25.73	27.06	27.51	29.25	29.35
<b>Personnel (b)</b>								
Albania	68.05	78.15	68.05	68.20	70.70	62.89	64.41	57.90
Belgium	77.84	78.23	76.80	75.20	70.69	68.38	63.58	56.32
Bulgaria	72.84	73.66	65.64	68.33	62.99	29.42	63.79	63.12
Canada	50.90	53.76	53.11	57.37	51.02	49.54	50.95	47.50
Croatia	76.55	72.28	75.40	71.72	76.96	73.71	76.15	55.44
Czech Republic	61.40	55.27	61.97	56.11	54.57	51.82	49.72	44.82
Denmark	51.27	52.01	49.51	47.01	49.88	48.25	46.07	44.41
Estonia	38.62	39.56	38.70	34.89	33.83	34.18	32.67	32.86
France	48.59	47.79	47.94	47.98	46.90	45.78	44.01	42.91
Germany	50.67	49.86	48.35	48.96	47.99	45.26	42.22	41.81
Greece	77.18	72.05	73.13	76.56	78.76	77.08	74.58	55.37
Hungary	49.77	48.21	49.66	37.13	42.33	35.37	27.18	29.43
Italy	76.41	77.55	70.79	67.58	68.16	70.21	67.52	63.75
Latvia	52.97	50.06	43.87	38.59	34.32	33.53	37.15	38.24
Lithuania	57.53	48.49	45.50	40.79	37.47	40.02	41.33	45.22
Luxembourg	49.31	42.77	45.56	34.40	33.42	30.76	30.13	29.48
Montenegro	78.53	78.03	75.32	80.87	73.50	71.39	64.66	59.90
Netherlands	56.50	55.51	51.77	52.19	51.16	49.11	48.37	47.79
North Macedonia	72.49	70.95	71.26	75.25	71.53	61.93	63.33	50.08
Norway	40.64	39.96	38.60	37.08	36.43	34.78	34.51	34.30
Poland	51.45	41.96	47.15	50.04	46.14	46.91	44.71	42.16
Portugal	81.27	81.90	81.38	80.19	74.75	70.51	71.15	64.10
Romania	71.15	63.30	65.01	54.67	54.48	57.90	59.20	57.80
Slovak Republic	69.14	56.24	58.72	58.21	54.74	40.81	42.34	49.27
Slovenia	82.31	82.23	76.03	75.04	72.38	69.07	72.75	60.33
Spain	67.34	65.18	72.61	61.64	59.64	61.86	62.54	60.12
Turkey	56.88	56.82	57.60	51.02	45.18	48.38	50.64	54.26
United Kingdom	36.59	36.80	35.27	34.54	33.75	34.07	33.80	31.80
United States	35.45	36.64	45.01	41.53	39.74	38.93	37.38	37.47

Notes: Figures for 2021 are estimates.

(a) Equipment expenditure includes major equipment expenditure and R&D devoted to major equipment.

(b) Personnel expenditure includes military and civilian expenditure and pensions.



**Table 8b: Distribution of defence expenditure by main category**  
(percentage of total defence expenditure)

Country	2014	2015	2016	2017	2018	2019	2020	2021e
<b>Infrastructure (c)</b>								
Albania	0.86	1.40	1.37	0.92	1.09	1.64	1.39	6.65
Belgium	1.81	0.93	0.96	1.05	1.43	1.19	1.00	1.70
Bulgaria	0.63	1.27	0.63	0.83	2.62	1.09	7.71	6.33
Canada	3.81	3.63	3.03	2.98	3.58	2.72	3.03	3.32
Croatia	1.24	1.98	1.26	3.59	1.00	1.41	1.53	0.71
Czech Republic	2.34	3.32	3.91	3.99	5.31	5.27	7.41	8.45
Denmark	0.97	1.09	2.16	1.95	1.49	1.85	1.84	3.53
Estonia	8.20	8.45	12.15	11.27	8.52	6.13	6.65	6.49
France	2.33	2.80	2.70	2.88	3.51	3.12	2.88	3.03
Germany	3.75	3.60	3.39	4.06	4.15	3.99	3.78	2.50
Greece	1.10	0.65	0.58	0.79	0.62	0.20	0.18	0.09
Hungary	1.07	1.21	1.13	1.31	1.68	2.64	1.41	3.59
Italy	1.40	1.30	0.70	0.94	1.29	0.67	0.97	1.63
Latvia	8.89	6.64	12.83	15.02	6.45	10.30	11.85	8.11
Lithuania	2.17	2.16	3.59	3.92	2.24	2.40	1.25	2.40
Luxembourg	10.26	7.79	6.64	4.64	5.05	3.16	3.42	11.53
Montenegro	0.96	2.47	2.41	0.88	1.86	1.48	1.33	5.26
Netherlands	4.77	3.19	3.90	3.02	3.46	3.26	3.14	2.99
North Macedonia	1.24	1.67	1.28	1.01	0.95	3.89	2.78	3.04
Norway	5.71	5.30	6.56	6.93	6.67	5.87	6.55	6.19
Poland	5.47	4.74	4.62	4.21	3.45	4.78	4.31	4.00
Portugal	0.11	0.25	0.06	0.03	0.05	0.11	0.08	0.07
Romania	1.09	1.27	2.77	2.09	1.54	3.53	4.29	7.06
Slovak Republic	0.57	1.99	3.75	2.97	2.00	1.17	5.21	2.32
Slovenia	0.65	0.61	1.14	0.45	1.40	0.57	1.10	1.43
Spain	0.66	0.97	0.97	0.68	0.64	0.98	1.07	0.73
Turkey	2.77	2.56	2.42	2.95	2.53	2.26	2.22	2.09
United Kingdom	1.95	1.63	1.87	2.25	2.99	2.11	1.72	1.49
United States	1.71	1.45	1.22	1.23	1.17	1.28	1.33	1.58
<b>Other (d)</b>								
Albania	14.44	11.53	22.57	23.92	18.79	20.86	19.20	20.59
Belgium	16.83	17.40	17.52	17.23	17.72	19.36	21.54	25.13
Bulgaria	25.51	21.60	24.57	22.74	24.74	9.74	20.05	14.97
Canada	32.26	32.14	33.25	28.95	33.46	33.90	31.36	31.52
Croatia	16.65	17.73	15.83	18.99	18.67	18.33	13.27	13.26
Czech Republic	29.73	29.65	27.43	28.35	28.95	26.47	25.56	26.50
Denmark	36.78	35.40	34.65	40.66	36.97	33.69	34.44	33.23
Estonia	31.03	39.18	31.30	34.62	41.14	44.20	37.68	38.60
France	24.43	24.37	24.92	24.97	25.92	26.65	26.49	26.27
Germany	32.63	34.61	36.05	35.20	35.49	36.06	36.55	37.09
Greece	13.55	16.90	12.84	11.37	9.60	11.17	14.55	5.76
Hungary	41.40	40.83	35.84	43.01	43.36	25.53	25.84	29.82
Italy	11.27	11.42	9.42	10.80	11.43	12.11	12.95	12.84
Latvia	30.59	29.69	24.25	31.38	27.38	34.51	30.46	30.58
Lithuania	26.24	27.79	20.85	23.67	23.30	20.01	23.71	27.76
Luxembourg	17.82	16.11	17.73	18.90	16.35	16.37	16.30	20.80
Montenegro	13.06	14.07	17.80	13.27	13.50	12.16	13.06	14.30
Netherlands	28.05	30.14	30.20	30.04	28.99	27.27	26.33	22.40
North Macedonia	20.34	16.25	19.09	17.26	16.43	20.36	22.37	23.66
Norway	33.24	32.90	31.46	31.36	31.30	30.59	30.53	30.67
Poland	24.24	20.11	26.61	23.71	22.89	24.95	21.67	20.88
Portugal	10.19	9.15	8.61	8.35	9.72	12.77	11.41	18.06
Romania	11.98	15.78	11.79	9.90	10.51	12.99	13.38	13.57
Slovak Republic	19.16	23.49	22.22	21.08	20.99	17.95	20.60	20.98
Slovenia	16.38	15.31	21.80	20.47	20.24	23.25	20.46	22.52
Spain	18.50	19.03	19.78	17.28	17.89	16.14	16.96	16.41
Turkey	15.27	15.49	14.43	15.73	14.65	15.04	16.41	12.94
United Kingdom	38.63	39.82	41.62	40.92	41.01	40.97	40.65	40.59
United States	36.87	36.51	28.73	31.52	32.03	32.28	32.04	31.59

Notes: Figures for 2021 are estimates.

(c) Infrastructure expenditure includes NATO common infrastructure and national military construction.

(d) Other expenditure includes operations and maintenance expenditure, other R&D expenditure and expenditure not allocated among above-mentioned categories.

## NATO defence expenditure

NATO defines defence expenditure as payments made by a national government specifically to meet the needs of its armed forces, those of Allies or of the Alliance. A major component of defence expenditure is payments for Armed Forces financed from within the Ministry of Defence (MoD) budget. Armed Forces include Land, Maritime and Air forces as well as Joint formations such as Administration and Command, Special Operations Forces, Medical Service, Logistic Command, Space Command, Cyber Command, etc. They might also include “Other Forces” like Ministry of Interior troops, national police forces, gendarmerie, carabinieri, coast guards etc. In such cases, expenditure is included only in proportion to the forces that are trained in military tactics, are equipped as a military force, can operate under direct military authority in deployed operations, and can, realistically, be deployed outside national territory in support of a military force. Also, expenditure on Other Forces financed through the budgets of ministries other than MoD is included in defence expenditure.

Pension payments made directly by the government to retired military and civilian employees of military departments is included regardless of whether these payments are made from the budget of the MoD or other ministries.

Expenditure for peacekeeping and humanitarian operations (paid by MoD or other ministries), the destruction of weapons, equipment and ammunition, contributions to eligible NATO-managed trust funds, and the costs associated with inspection and control of equipment destruction are included in defence expenditure.

Research and development (R&D) costs are included in defence expenditure. R&D costs also include expenditure for those projects that do not successfully lead to production of equipment.

Expenditure for the military component of mixed civilian-military activities is included, but only when the military component can be specifically accounted for or estimated.

Expenditure on NATO common infrastructure is included in the total defence expenditure of each Ally only to the extent of that nation’s net contribution.

War damage payments and spending on civil defence are both excluded from the NATO definition of defence expenditure.

NATO uses United States dollars (USD) as the common currency denominator. The exchange rate applied to each Ally is the average annual rate published by the International Monetary Fund (IMF).

### **Note to readers:**

Iceland has no armed forces. For nations of the Euro zone, and Montenegro, monetary values in national currency are expressed in Euros for all years. Latvia adopted the Euro from 2014 and Lithuania from 2015. Montenegro joined the Alliance in 2017 and North Macedonia in 2020.

To avoid any ambiguity, the fiscal year has been designated by the year which includes the highest number of months: e.g. 2021 represents the fiscal year 2021/2022 for Canada and United Kingdom, and the fiscal year 2020/2021 for the United States. Because of rounding, the total figures may differ from the sum of their components.

**Conventional signs:**

e	estimated
-	nil
..	not available
	break in continuity of series
.	decimal point

**Nomenclature of NATO defence expenditure:**

1	Operating costs
1.1	Military personnel
1.1.1	Pay and allowances
1.1.2	Employer's contributions to retirement funds
1.1.3	Other
1.2	Civilian personnel
1.2.1	Pay and allowances
1.2.2	Employer's contributions to retirement funds
1.3	Pensions
1.3.1	Paid to military retirees
1.3.2	Paid to civilian retirees
1.4	Operations and maintenance
1.4.1	Ammunition and explosives (excluding nuclear)
1.4.2	Petroleum products
1.4.3	Spare parts
1.4.4	Other equipment and supplies
1.4.5	Rents
1.4.6	Other operations and maintenance
2	Procurement and construction
2.1	Major equipment
2.1.1	Missile systems
2.1.2	Missiles (conventional weapons)
2.1.3	Nuclear weapons
2.1.4	Aircraft
2.1.5	Artillery
2.1.6	Combat vehicles
2.1.7	Engineering equipment
2.1.8	Weapons and small arms
2.1.9	Transport vehicles
2.1.10	Ships and harbour craft
2.1.11	Electronic and communications equipment
2.2	National military construction
2.3	NATO common infrastructure
2.3.1	Expenditure as host country
2.3.2	Payments to other countries
2.3.3	Receipts from other countries
2.3.4	Land and utilities

3	Research and development
3.1	Devoted to major equipment
3.2	Other
4	Other expenditure
5	Total
6	Statistical discrepancy
7	Adjusted total

**Main categories of defence expenditure:**

- Equipment (Table 8a) — lines 2.1 + 3.1
- Personnel (Table 8a) — lines 1.1 + 1.2 + 1.3
- Infrastructure (Table 8b) — lines 2.2 + 2.3
- Other (Table 8b) — lines 1.4 + 3.2 + 4









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