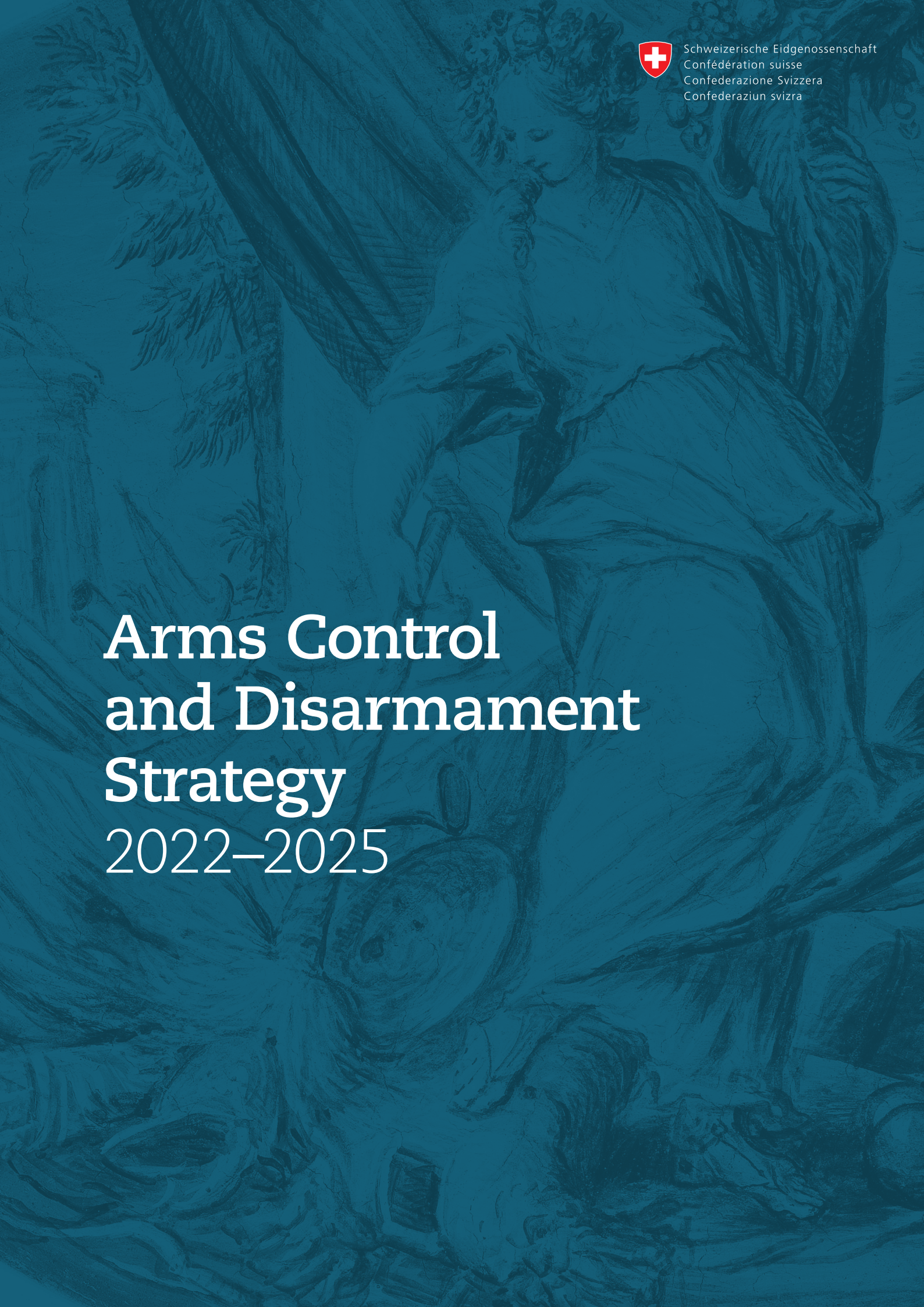

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Arms Control and Disarmament Strategy 2022–2025

Foreign Policy Strategy
2020–23

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Arms Control and Disarmament Strategy 2022–25

This report, which was approved by the Federal Council on 2 February 2022, is a thematic strategy following up on the Foreign Policy Strategy 2020–23 (FPS 2020–23). The adoption of an Arms Control and Disarmament Strategy is a measure that the Federal Council has undertaken as part of its annual objectives for 2021. This Federal Council report also fulfils postulate 21.3012 of the National Council's Security Policy Committee.

Foreword

Must weapons be destroyed to ensure peace? That is what the fresco by painter Francesco Antonio Giorgioli at Heidegg Castle in the canton of Lucerne, featured on the cover page, seems to imply. This allegory conveys a universal, age-old aspiration – ending armed violence and thereby ensuring our prosperity. While the face of Medusa evokes the horrors of Ypres or Hiroshima, I also see in this painting humankind's determination to limit the impact of conflicts. Arms control and disarmament are political expressions of the sometimes contradictory attitude that tolerates war as unavoidable, but at the same time strives to limit its scope.

Switzerland was spared the bloody conflicts that ravaged our continent during the last century. It was in Geneva – the city of peace and the headquarters of the International Committee of the Red Cross (ICRC) – that one of the first modern arms control agreements was negotiated: the 1925 Protocol prohibiting the use of chemical and biological weapons. Since then, many treaties and conventions have been adopted in Geneva, putting the city of Calvin at the forefront of global disarmament efforts. It was no coincidence that Presidents Biden and Putin in 2021 chose Geneva as a venue for reaffirming that a nuclear war could never be won and must never be fought.

These are trying times for arms control and disarmament. On the one hand, new global power relations – particularly the geopolitical rivalry between the major powers – are making these efforts more difficult. On the other, new technologies and developments brought about by digitalisation are profoundly transforming the nature of conflict and crisis management. As a result, we must rethink arms control and develop innovative approaches. Switzerland intends to contribute to these reflections.

For the first time, the Federal Council has published a strategy for its arms control and disarmament policy, defining fields of action, objectives and measures for the period 2022–2025. It attaches great importance to maintaining and developing the international arms control and disarmament architecture. The elimination of weapons of mass destruction and the reduction of the impact of armed violence remain key aims of the Federal Council. At the same time, it will also focus more heavily on new areas, such as cyberspace and outer space. Switzerland seeks to critically assess and challenge old truths in order to give fresh impetus to stalled processes. It wishes to play a more proactive role in developing norms governing the use of new technologies in conflict – such as lethal autonomous weapons systems.

This strategy was developed with the involvement of various actors. It is intended to further strengthen the coherence of Swiss policy in this area. Its implementation, like that of other strategies, will be guided by a whole-of-Switzerland approach to allow Swiss foreign policy to realise its full potential in the field of arms control and disarmament.

Ignazio Cassis
President of the Swiss Confederation
Head of the Federal Department of Foreign Affairs

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Summary

The external conditions for arms control, disarmament and non-proliferation have shifted dramatically due to geopolitical changes and rapid – sometimes groundbreaking – technological advances. Currently, tendencies toward polarisation and erosion prevail in many areas. Some agreements have been terminated, while others are no longer being complied with or updated. In still other cases, negotiations have been dragging on for years without any significant progress. At the same time, the means and methods of conducting warfare are constantly evolving due to scientific and technological developments. Digitalisation and new technologies present challenges, but also opportunities for arms control and disarmament.

The Federal Council intends to keep pace with these developments by formulating an Arms Control and Disarmament Strategy for the first time. The aim is to further strengthen Switzerland's position as a credible and proactive actor in this field – an actor that supports viable solutions and thus contributes to enhancing security in Europe and around the world. Switzerland will continue tried-and-tested practices and build on existing strengths, while at the same time exploring new thematic areas and adopting innovative approaches.

The strategy covers the period 2022–2025. Firstly, it describes changes in the geopolitical environment and the most relevant technological trends. On this basis, the Federal Council positions Switzerland as an actor in arms control and disarmament and defines the principles governing its actions. Five priority fields of action are identified:

1. Nuclear weapons
2. Chemical and biological weapons
3. Conventional weapons
4. Autonomous weapons
5. Cyberspace and outer space

The Federal Council sets out targets and measures for each of these fields of action. Coherence amongst the federal departments involved is of paramount importance here. The implementation of the strategy will be managed within the Federal Administration through several formal and informal coordination bodies in the various sub-areas. Moreover, joint monitoring of all federal actors involved will be carried out annually to assess the state of progress toward the targets. The strategy also identifies the partners that play a key role in implementation, including scientific research organisations, the private sector and NGOs. A glossary ensures conceptual clarity.

The Federal Council's strategy also fulfils postulate 21.3012, submitted by the National Council's Security Policy Committee on 25 January 2021. This postulate tasks the Federal Council with assessing how an operational doctrine for future autonomous weapons systems and artificial intelligence in security infrastructure could be formulated while taking international ethical standards into account, and with identifying opportunities for Switzerland to promote relevant ethical standards internationally. While section 4.4 presents the topic in a broader context, the Federal Council looks at individual aspects in greater detail in Annex 3.

1 Introduction

1.1 Why a strategy?

Switzerland has long been active in the field of arms control, disarmament and non-proliferation (ADN).[1] The country's core foreign and security policy documents since the 1990s have attached great importance to this topic. Switzerland has forged its own distinctive profile over the decades, particularly regarding normative, humanitarian, scientific and technological aspects. International Geneva has also positioned itself accordingly.

Effective international ADN agreements are in Switzerland's foreign, security and economic policy interests. They contribute significantly to global and regional stability. However, many areas of ADN are currently in crisis. Some international agreements have been terminated, while others are no longer being complied with or updated. In other cases, negotiations have been dragging on for years or even decades without significant progress. While the picture is not entirely gloomy, erosion is indeed the overriding trend.

The crisis in the ADN architecture can be attributed mainly to geopolitical changes. Increasing fragmentation on the global political stage, the rise of China and, in particular, the growing competition between the major powers are jeopardising past achievements in the sphere of ADN that largely date back to the Cold War period and its specific circumstances.

The general conditions for arms control and disarmament are changing dramatically, not least due to the rapid, sometimes groundbreaking, technological developments of the past 20 years. Digitalisation and new technologies have created not only challenges, but also opportunities for ADN. This is true in particular for Switzerland and International Geneva, as the Federal Council outlines in its Digital Foreign Policy Strategy 2021–2024.

Finally, the domestic political dimension, which comes to the fore in various ADN-related issues, must also be taken into account. For example, the question of how best to achieve the goal of nuclear disarmament under current conditions is a matter of political controversy. Furthermore, some ADN agreements are implemented at the national level by means of export controls, which can have a direct and indirect impact on Switzerland as a business location and centre of research activities. Also, the security policy implications of ADN agreements must be kept in mind, especially with regard to Switzerland's defence capability. In all these areas, the national interests must be weighed carefully.

This means ADN must adapt to the reality of new political, technological and social realities. The Federal Council wishes to meet this challenge by setting out its first ever ADN strategy and by defining Switzerland's fields of action with specific targets and measures. The strategy seeks to continue measures that have proven successful while providing a fresh impetus to adopt new approaches and to take advantage of upcoming opportunities, such as Switzerland's candidacy for the UN Security Council for 2023/24. The strategy also aims to leverage Switzerland's strengths in this area even more than in the past. It replaces the previous report on Switzerland's arms control, disarmament and non-proliferation policy that the Federal Council has presented once each legislative period since 1995.

The Federal Council's strategy also fulfils postulate 21.3012 of the National Council's Security Policy Committee of 25 January 2021. This postulate tasks the Federal Council with assessing how an operational doctrine for future autonomous weapons systems and artificial intelligence in the security infrastructure could be shaped, taking account of international ethical standards, and with identifying opportunities to promote them internationally.[2]

1 The term "Arms Control and Disarmament Strategy" is used for the sake of simplicity. Nevertheless, efforts to control and, where applicable, to stop the proliferation of weapons and goods that can be used for civilian and military purposes are core components of this thematic field as well. See glossary.

2 Section 4.4 and Annex 3.

1.2 How did we get here?

The foundations of contemporary arms control and disarmament architecture began to coalesce in the mid-20th century. The two world wars, the creation of the UN and the Cold War continue to shape ADN to the present day. Initially, the atrocities of past conflicts led to the realisation that ways had to be found to prevent war and restrict or prohibit the use of certain weapons. The 1925 Geneva Protocol banned the use of poison gas and biological weapons in armed conflicts. In 1949, the Geneva Conventions established additional pillars of international humanitarian law (IHL).

The beginning of the **Cold War** between the West, under US leadership, and the former Soviet Union ushered in an era of bipolar block-building and armament. In particular, both states amassed huge arsenals of nuclear weapons. Yet the growing awareness that this arms race created the danger of mutual destruction presented by this arms race, as well as other overlapping interests, led both sides to initiate multilateral negotiations. Their aim was initially to limit certain tests, then to curtail the deployment of such weapons, and in 1968, to restrict their possession to a few states through the Treaty on the Non-Proliferation of Nuclear Weapons (NPT), which still plays a central role today.

During the 1970s and 1980s, the US and the former Soviet Union followed up with a series of bilateral treaties on the limitation and reduction of their strategic nuclear arsenals, such as the SALT, ABM, INF and START treaties.[3] Both states also supported the ban on biological weapons under international law, as embodied in the Biological Weapons Convention (BWC) of 1972. In parallel, a system of export control regimes was created to restrict the proliferation of weapons of mass destruction and their means of delivery, thereby helping to enforce the non-proliferation clauses of the respective disarmament treaties. Towards the end of the Cold War, the focus increasingly shifted towards conventional weapons. In the Treaty on Conventional Armed Forces in Europe (CFE), the states of the Warsaw Pact and NATO agreed to limits on major weapons systems (including the number of tanks and combat aircraft). The aim was to establish a balance between the conventional forces of the two sides and to eliminate the capacity for surprise military attacks in Europe.

With the fall of the Soviet Union, international ADN policy entered a new phase. This was heavily influenced by a **Western-dominated, liberal system of order and globalisation** with newly emerging actors. The 1990s saw further successes in limiting weapons of mass destruction with the conclusion of the Chemical Weapons Convention (CWC) and the Comprehensive Nuclear-Test-Ban Treaty (CTBT). Numerous states of the former Eastern Bloc joined the four international export control regimes[4] in order to jointly combat the proliferation of weapons of mass destruction and their means of delivery as well as the destabilising effects of conventional armament. However, this was not enough to prevent the emergence of new nuclear powers in South Asia as well as the growing nuclear ambitions of some states, such as North Korea.

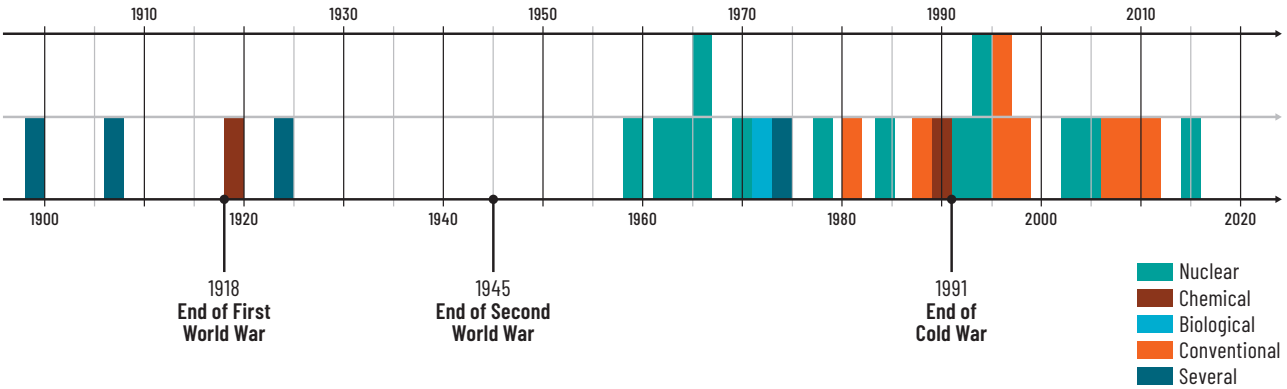
This period also saw the conclusion of new types of treaties that went beyond the classic disarmament and non-proliferation approaches and specifically incorporated humanitarian concerns in addition to security aspects. The foundation was laid as early as 1980 with the adoption of the UN Convention on Certain Conventional Weapons (CCW), which regulates or prohibits certain conventional weapons. Over the next few decades, this was followed by the Anti-Personnel Mine Ban Convention (APMBC) and the Convention on Cluster Munitions (CCM). As progress was no longer possible with the UN framework due to a lack of consensus, these conventions were concluded outside the traditional forums in new formats among like-minded states. The central impetus for this approach came from civil society. The decision to base these and other instruments in Geneva has made the city home to a major cluster in this field.

At the beginning of the 21st century, political attention shifted away from ADN. The focus increasingly moved towards the threat posed by international terrorism. The risk of a nuclear catastrophe also faded into the background in terms of public opinion despite the huge arsenals still in place. The international community increasingly shifted its focus to the challenge of curbing the proliferation of weapons of mass destruction and their means of delivery as well as the illicit trade in conventional weapons systems, primarily small arms and light weapons.[5] Milestones included UN Security Council Resolution 1540, the Arms Trade Treaty (ATT) and the UN Programme of Action on Small Arms and Light Weapons (UN PoA).

3 See list of abbreviations.

4 Australia Group (AG); Nuclear Suppliers Group (NSG); Missile Technology Control Regime (MTCR) and the Wassenaar Arrangement (WA).

5 For the sake of simplicity, the term 'small arms' will be used in this strategy instead of 'small arms and light weapons'. See glossary.



Graphic 1: Adoption of international arms control and disarmament agreements (source: UNODA).

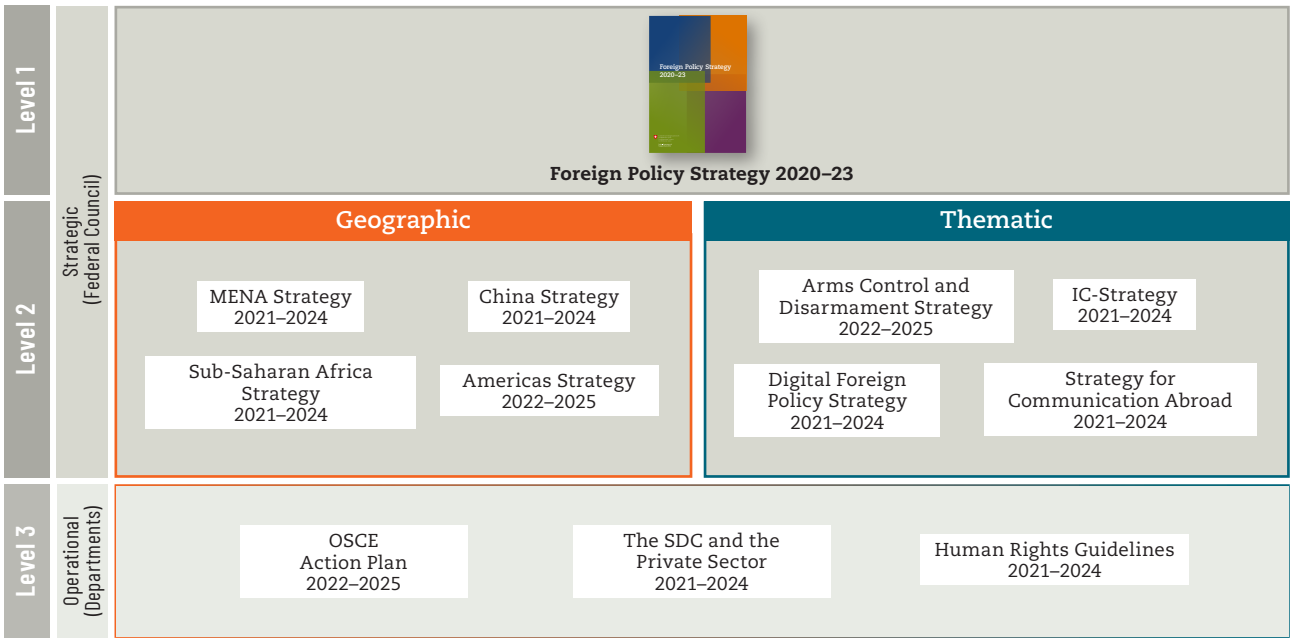
In recent years, ADN has been shaped mainly by crisis-related developments. States such as the US, Russia and China have expanded their military and technological capabilities and influence. As security policy tensions continued to rise, these states have increasingly resisted restrictions on their freedom of action due to international measures for limitation, risk reduction and predictability in the framework of arms control treaties.

Due to growing rivalry and polarisation, the consensus rule that applies in many ADN forums is now being abused as a de-facto veto right, increasingly paralysing the processes in question. Mutual mistrust over compliance with the obligations is sapping the strength of existing arms control instruments, as was the case with the bilateral Intermediate-Range Nuclear Forces Treaty (INF) and the multilateral Treaty on Open Skies (OST). At the same time, agreements such as the Vienna Document are only being implemented minimally by OSCE participating states, and their adaptation to current realities is being prevented. The rapid pace of technological development over recent years has been the main factor giving rise to many new questions that must be answered if the credibility and effectiveness of such agreements are to be maintained.

Switzerland played a rather subordinate role in the essentially bipolar arms control efforts during the Cold War period. It made valuable contributions as the host state of the UN's European headquarters in Geneva by providing a venue for summits and disarmament negotiations. As the political and military dimensions of the Conference on Security and Co-operation in Europe (CSCE) were strengthened in the mid-1980s and Switzerland joined the UN Conference on Disarmament (CD) in 1996 and the UN in 2002, the country was able to build up its capacities and raise its profile in ADN. Switzerland advocated for ADN processes and institutions such as the ATT to be based in Geneva, and chaired forums such as the UN Small Arms Process in early 2000 and the Nuclear Suppliers Group (NSG) in 2017. Complementing its conventional and humanitarian efforts, it also demonstrated greater commitment in the field of weapons of mass destruction from 2003 by proposing specific initiatives, for instance within the frameworks of the CWC, the UN General Assembly or the NPT with its initiative on the human dimension. In doing so, Switzerland has developed a profile and activities that are explained in greater detail in sections 3 and 4.

1.3 Coherence

The ADN Strategy is the fourth thematic follow-up strategy to the Foreign Policy Strategy 2020–2023 (FPS 2020–2023) after the International Cooperation Strategy 2021–2024, the Digital Foreign Policy Strategy 2021–2024 and the Strategy for Communication Abroad 2021–2024. In the FPS 2020–2023, ADN is part of the peace and security thematic priority. The relevant details are fleshed out in this strategy, which concerns all federal departments and was developed in a broad consultation process with the competent authorities. As part of the foreign policy strategy cascade, it contributes to further strengthening the coherence of Switzerland's foreign policy.



Graphic 2: Foreign policy strategy cascade (source: FDFA – illustrative selection of documents).

In the context of the core foreign policy documents, there are connections to both the Digital Foreign Policy Strategy and the International Cooperation Strategy 2021–2024 as well as to the geographical follow-up strategies to the FPS 2020–2023 (MENA, Sub-Saharan Africa, China, Americas). The Dispatch on the Measures to Strengthen the Role of Switzerland as a Host State 2020–2023, the Dispatch on a Framework Credit to Continue the Support for the Three Geneva Centres 2020–2023 and the Voluntary Report of the Federal Council on the Implementation of International Humanitarian Law by Switzerland are also relevant. Switzerland's 2028 Foreign Policy Vision (AVIS28) provides an additional, longer-term source of inspiration for Swiss foreign policy and highlights the growing importance of the topic of security in foreign policy.

The Federal Council's Security Policy report of 24 November 2021, an additional key document, shows that conversely, foreign policy makes vital contributions to Switzerland's security. The report analyses current developments in the field of ADN and outlines Switzerland's relevant instruments. In relation to the security policy goal of "strengthening international cooperation, security and stability", the Federal Council also defines the ADN-specific targets of "promoting the further development of arms control and disarmament measures in light of new technological developments and their impact on weapons systems (e.g. big data, artificial intelligence, autonomy and new network technologies)" and of "drawing up a new strategy for arms control and disarmament".

2 Trends

The two most important trends for ADN in the field of international relations – i.e., geopolitical developments and technological change – are explored in depth below. For further contextual analysis, please refer to the FPS 2020–2023, the various Foreign Policy Reports, AVIS28, the Security Policy Report, and the Situation Reports of the Federal Intelligence Service (FIS).

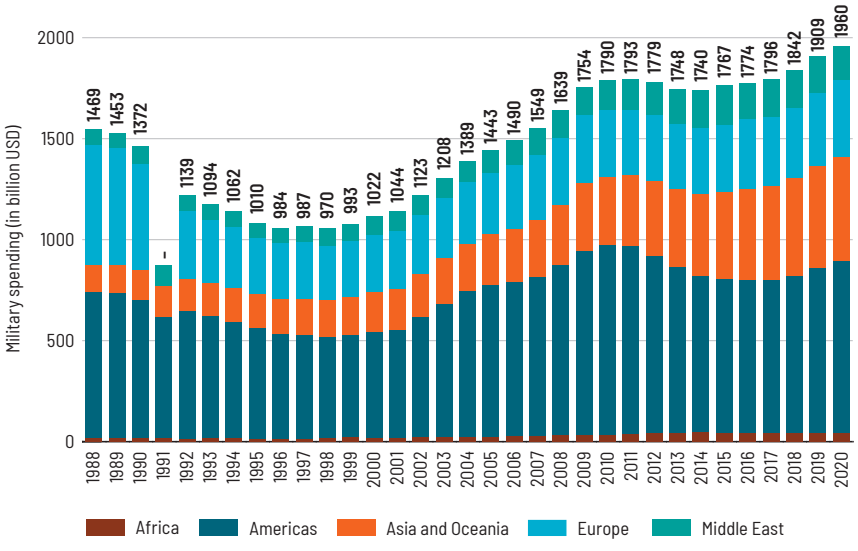
2.1 Geopolitics

The current international security environment is characterized by an increase in great power competition and the rise of regional actors. The result is a more unstable world order caught in the grip of the growing systemic rivalry between the US and China. In consequence, **international relations have become increasingly unpredictable.** The new order is further characterized by confrontations over political, economic and military spheres of influence and the pursuit of supremacy in terms of technologies, resources, infrastructure, and transport routes.

The growing divergences between different systems and values, the mounting international crisis of confidence and the greater willingness of certain states to assert their interests with military means and other instruments of power politics also impinge on arms control and disarmament policy. World military spending is at the highest levels seen in decades, increasing once again in 2020 despite the decline in economic output due to the COVID-19 pandemic.[6]

In addition, **technological progress** is provoking a race to improve the quality of both conventional and nuclear weapons systems. Technologically advanced states and nuclear powers in particular are investing more heavily in upgrading their arsenals. The trend is moving towards greater precision, higher speeds and increasing autonomy of systems.

6 Stockholm International Peace Research Institute (SIPRI), World military spending rises to almost $2 trillion in 2020, 2021.



Graphic 3: World military spending by region, 1988–2020 (corrected for inflation; source: SIPRI).[7]

7 It is not possible to calculate total spending in 1991 because there is no data available for the Soviet Union for that year.

In tandem with these developments, certain states have adopted the view that they can protect their interests more effectively through unilateral measures. They do not wish to be constrained in their freedom to act or their sector-specific supremacy by multilateral disarmament and arms control agreements and transparency-building measures. This applies notably to the technological superiority of major powers and its application to new weapons systems, such as missile defence systems, combat drones, autonomous weapons and hypersonic weapons systems. The rise of China and its unwillingness to participate in such measures have also changed the calculations in Washington and Moscow.

The ramifications of this development have been clearly felt in international arms control. They range from the paralysis of multilateralism, which prevents important adjustments to new military and technological realities, to the **undermining of the rules-based order** and the deliberate dismantling of achievements in security and arms control policy itself. Therefore, alternative approaches to the development of the ADN governance structure are increasingly being explored, such as within groups of like-minded states. Such alternative approaches are often supported or driven by civil society initiatives.

The changing **nature of conflict** is another trend affecting contemporary security policy. Conflicts today tend to last longer, and involve new spheres of operations and more actors. The majority of these are non-international armed conflicts, of which a growing number are becoming internationalized.[8] They often have asymmetrical and hybrid characteristics involving disinformation campaigns and cyber-operations. The growing presence of non-state armed actors and the issue of their involvement presents a particular challenge for ADN policy, which was previously largely geared towards interstate relations.

Conventional weapons delivery systems, such as drones, ballistic guided weapons and cruise missiles, are also being employed more frequently in contemporary armed conflicts. The fact that both state and non-state actors possess such systems complicates efforts to curb their proliferation. The relatively low cost of drones is also contributing to this development. Neighbouring states often perceive the procurement of conventional weapons delivery systems as a threat. Such a perception can have destabilising repercussions and trigger regional arms races.

From a regional perspective, the conflict in and around Ukraine and the annexation of the Crimean Peninsula by Russia in 2014 have exacerbated the crisis in the **European security order** and led to reinvestment in defence and a strengthening of the security and defence policy of the EU and NATO. One corollary of the tensions flaring up again between the US and Russia has been the withdrawal of both states from a number of arms control agreements. The only remaining bilateral agreement between Washington and Moscow on the strategic control of nuclear weapons is the New START Treaty, which was extended by a further five years in 2021 and has made an effective contribution to reducing the number of nuclear weapons on both sides since 2010.

In **Asia and the Indo-Pacific region,** China is extending its position of power and challenging American supremacy as well as regional powers. Driven by strong economic growth, China's defence budget has been increasing continually and significantly. It already occupies second place after the US in terms of defence spending. The country has also progressively evolved into a global technological power and is investing vast funds in the digital sphere – a core element of future armed forces. At the same time, it appears that China currently has little interest in acceding to bilateral or trilateral disarmament and arms control treaties aimed at improving strategic stability and predictability. It has rejected demands to do so – coming from the US in particular – by emphasising that its nuclear weapons arsenal is still much smaller in numerical terms.

China's rivalry with India over latent territorial conflicts and mounting geo-strategic competition is likely to persist over the long-term. The antagonism between India and Pakistan – both nuclear weapons states – also shows little sign of abating. On the Korean Peninsula, the situation remains very concerning due to North Korea's nuclear and missile arsenal, which is already capable of threatening the US and Europe. The possession of nuclear weapons by certain states of the region is a source of instability and creates mistrust and impasses in multilateral arms control forums.

Various internal crises and armed conflicts are taking place in the **Middle East, North Africa and Sub-Saharan Africa.** The resulting risk of proliferation of weapons of all kinds remains an additional source of tension and instability. Due to uncertainties over the future of the nuclear arms agreement with Iran, the proliferation and use of ballistic missiles and drones, and the use of chemical weapons in violation of international law in Syria, the risk of proliferation of weapons of mass destruction is particularly high in the MENA region. Over the past five years, one third of global arms shipments have been sent to this region, turning it into a major hub for international arms trading.[9]

The continuation of armed conflicts, such as in Libya, Yemen, Syria and the Sahel region, has led to a significant and uncontrolled proliferation of small arms and ammunition as well as contamination with explosive ordnance such as mines and improvised explosive devices, with serious humanitarian consequences. These developments create a long-term burden for the affected societies, hampering reconstruction and economic recovery efforts and exacerbating the potential for migration. The Sahel region in particular is experiencing greater instability and armed conflict, the effects of which are being felt beyond the region.

8 Therése Pettersson et al., Organized violence 1989-2020, with a special emphasis on Syria, Journal of Peace Research, 2021.

9 Stockholm International Peace Research Institute (SIPRI), Trends In International Arms Transfers 2020, 2021.

Many **Latin American and Caribbean states** are severely affected by armed violence and criminality, as reflected in high homicide rates.[10] Small arms are used particularly frequently.[11]

In addition, contamination with explosive ordnance – notably mines in Colombia – continues to claim many victims and impedes the sustainable development of society.

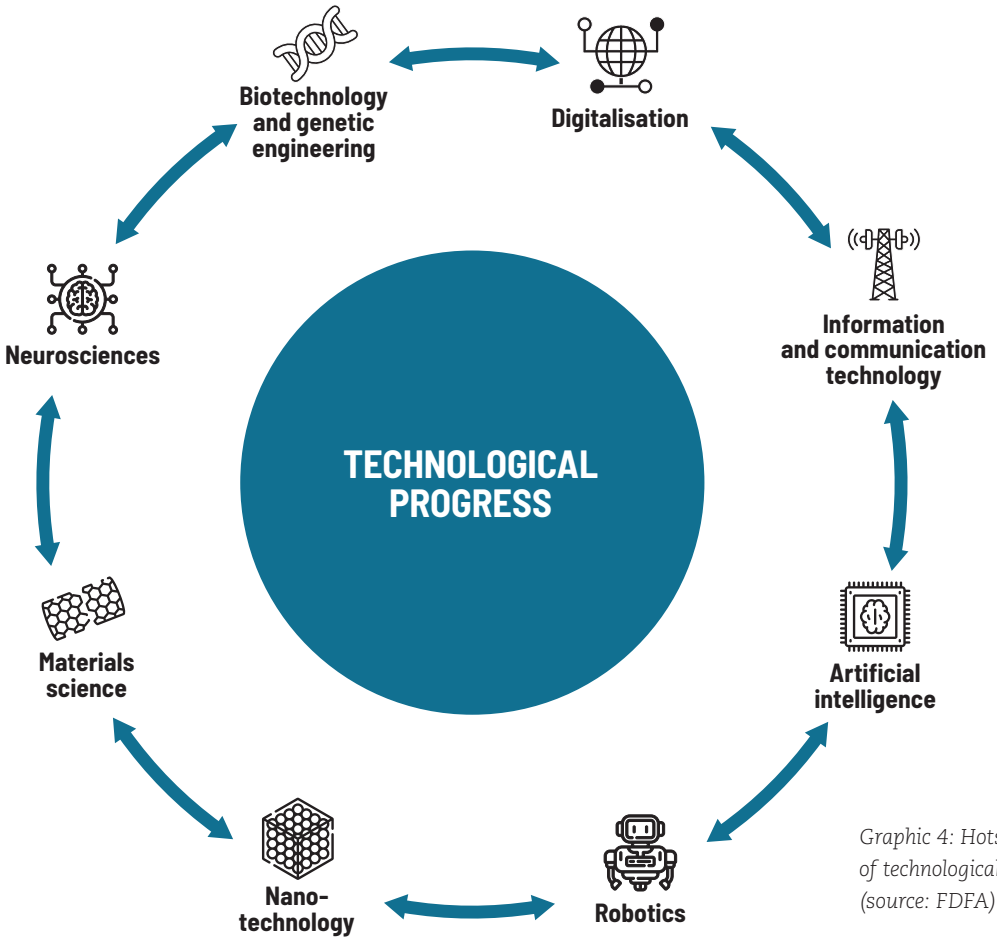
10 United Nations Office on Drugs and Crime, Global Study on Homicides 2019 – Homicides: extent, patterns, trends and criminal justice response, 2019.
11 United Nations Office on Drugs and Crime, Global Study on Homicides 2019 – Homicides: extent, patterns, trends and criminal justice response, 2019; Claire McEvoy and Gergely Hideg, Global Violent Deaths 2017 – Time to Decide, 2017.

2.2 Technological progress

The world is undergoing a period of rapid **technology-driven transformation,** marked by far-reaching breakthroughs in a wide range of scientific and technological spheres. Because these developments are superimposed upon one another, they should not be viewed in isolation. The technologies are mutually reinforcing, they are converging and become particularly relevant when combined, including for arms control. In some cases, the knock-on effects are at this point still almost impossible to predict.

Arms control, too, is affected in crucial ways by the digital transformation. It enables new information and communications technologies (ICT), increasing automation, and the development and application of artificial intelligence (AI). In combination with the generation and processing of huge volumes of data, these emerging trends increasingly enable autonomous functions in weapons systems. In addition, we are witnessing groundbreaking progress in robotics, nanotechnology and materials science, including additive manufacturing (3-D printing), and neuroscience, as well as in biotechnology and genetic engineering.

All of these areas have far-reaching **implications for ADN.** They enable the development of novel types of weapons systems and ammunition that possess the potential to change the way warfare is conducted. In some contexts, this



Graphic 4: Hotspots of technological progress (source: FDFA).

increasingly depends on access to relevant data and information as well as the capacity for real-time processing of that data within a complex networked system. With regard to military capability, there has been a shift in many areas from quantitative factors to qualitative aspects. Technological progress is also opening up new arenas of confrontation in cyberspace and outer space.

It is becoming ever clearer that many established arms control structures are struggling to keep pace with this transformation, not least due to the growing complexity and breakneck speed of developments. The mere idea of arriving at some kind of international agreement on the opportunities and risks of new technologies and areas where arms control mechanisms are required inevitably lags behind technological reality. Moreover, the potential civil and military applications are too promising and the risks too vague for states to muster the common political will to (preventively) restrict themselves at present.

One crucial aspect is the interlinking of dual-use technologies that can be used for both **civilian and military purposes.** With many of these developments, there is a preponderance of positive effects. However, they are not only suitable for beneficial applications, but can also be used for undesired or harmful purposes or have unintended consequences. Still, the avoidance of such risks should not unnecessarily restrict legitimate and responsible use. The fact that some technologies present legal, ethical, or foreign and security policy challenges often has less to do with the technologies themselves than with their application. Arms control approaches should therefore generally adopt a technology-neutral approach.

This also means that **private actors** must be involved in arms control in a more effective way. After all, these technological developments are often no longer being driven by states or state defence industries. Instead, private technology companies and research institutions are the main actors. This means that multifaceted, decentralised multi-stakeholder governance approaches incorporating politics, science and the private sector are becoming more important. International arms control agreements between states will nevertheless continue to play a fundamental role – not least because weapons programmes based on new technologies are the result of conscious, usually state-influenced decisions. It is also states' responsibility to take national measures to prevent research and development from being used by private actors – whether intentionally or not – for illegitimate or illegal purposes.

The international **export control regimes** have a crucial role to play in this context. They provide participating states with the opportunity to anticipate technological developments in order to prevent their misuse as early as possible by means of harmonized controls. To this end, the competent authorities have always maintained close contact with the private sector and the scientific community, since they not only possess important technical expertise, but may also be directly confronted with procurement attempts.

Today, rivalries between states are increasingly driven by economic and technological factors. Data has become a fundamental element of power. States are increasingly determined to stake out **technological spheres of influence** and to gain technological supremacy in certain areas. Global competition over the research, development and application of new technologies has the potential to shift the balance of power. There is a danger of a technological arms race with destabilising effects on international security.

The means and methods of warfare will continue to change owing to these technological developments. Their **effects on national and international security,** as well as the humanitarian consequences, depend on the technological developments themselves, their applications and any guiding principles and rules in the field of arms control. This is primarily a question of fostering dialogue about risks and assessing the impact of technology. If issues arise concerning security policy, humanitarian affairs or international law, the relevant arms control forums should be used to address areas of concern and to call for the application of international law. It may also be necessary to develop these forums. Finally, it is important to preserve the relevance of existing norms and regimes in light of technological developments. This requires compliance with and strengthening of existing obligations, but does not preclude discussions on the need for additional regulation.

3 Switzerland's positioning

Switzerland's foreign and security policy is independent and universal. Switzerland is neutral, non-aligned and committed to dialogue with all states. Its foreign policy represents the interests and values set out in the Federal Constitution. The country shapes its environment accordingly. It strives to ensure that respect for international law, including international humanitarian law,[12] takes precedence over political or military power. This provides predictability and stability in international relations and ensures the country's independence and capacity to act. Switzerland also contributes to effective multilateralism. Global problems call for global solutions – this is the only way to guarantee security and the rule of law.

Switzerland's ADN profile reflects its general foreign and security policy positioning. The following sections set out this profile and Switzerland's roles, identify its specific strengths in this thematic area, and outline the principles of Swiss ADN policy.

12 The Federal Council's 'Voluntary Report on the Implementation of International Humanitarian Law by Switzerland' of 12 August 2020 provides an overview of Switzerland's commitment in this area. It also analyses the most important examples of good practice and challenges in relation to regulating the means and methods of warfare. The topics covered include: Rules on particular weapons, procedures for evaluating new weapons and international arms trade.

3.1 Profile and roles

Switzerland pursues a proactive, pragmatic, objective and innovative arms control, disarmament and non-proliferation policy. It contributes to peace, stability and security in line with the principles of the FPS 2020–23. Switzerland aims to preserve security with the lowest possible level of armaments, both globally and regionally. It uses the opportunities it has to exert influence at both multilateral and bilateral levels. It engages – with very few exceptions – in all of the legally binding multilateral arms-control and disarmament instruments open to it.

The global disarmament and arms control architecture is a core element of the **rules-based international order.** Switzerland wishes to preserve these achievements and to modernise and further develop them where necessary. By providing political, technical, financial and personnel support, it strengthens the relevant bodies' and processes' capacity to act and supports the implementation of relevant international agreements. Where it suits its national interests, Switzerland is also open to new approaches and will contribute to developing these to the best of its abilities.

In view of geopolitical tensions and increasing polarisation, more **mediating voices** are also needed in ADN. With its independent positioning, its sound ethical compass and its focus on achieving useful compromises, Switzerland can counteract polarisation as an integrative, equalising power and contribute to trust-building between states by promoting dialogue and providing its good offices.

However, given increasing attempts to actively divide the international community over various ADN issues, the adoption of a mediating role is not always the best approach. When faced with denial of facts, active attempts to polarise by means of disinformation or the exploitation of international organisations as pawns in political power struggles, **Switzerland adopts a clear position** where necessary.

The involvement of other actors is also becoming more important. These include science, the private sector, international organisations and civil society groups. Switzerland has experience with **inclusive dialogue formats and approaches,** which it also uses and promotes in the field of ADN. It can use its reputation as a credible actor to shape new approaches, expand existing cooperation and develop innovative forms of collaboration.

In view of the risks presented by conventional, chemical, biological and nuclear armament and proliferation, Switzerland applies national **export controls** to transfers of

dual-use goods, specific military goods and war materiel. It is a participating state in the four politically binding international export control regimes and a State Party to the Arms Trade Treaty, and implements the control measures agreed and harmonised under them. In doing so, Switzerland safeguards its foreign and security policy interests as well as its obligations under international law, and protects its companies and research institutes against reputational damage.

At the same time, from a security policy viewpoint, it is important for Switzerland, as a neutral country, to strengthen its own security-relevant technological and industrial base. This can improve the security of supply of security-relevant goods and services and reduces dependencies and vulnerabilities in areas of importance to the security of Switzerland and its population. This is taken into account in the definition of ADN policy.

3.2 Strengths

Switzerland enjoys credibility and trust in ADN-related issues. This is the foundation of its ADN policy and is attributable to its independent foreign and security policy positioning, its objective and pragmatic approach and its expertise in humanitarian affairs, peace policy, legal matters, and science and technology.

The Federal Council wishes to place greater emphasis on three additional strengths in the future: The first is **International Geneva.** The 'city of peace' hosts peace negotiations and discussions over disarmament and is home to a cluster of expertise of global significance. The extensive network of relevant actors, instruments and processes, the expertise available and the many humanitarian, technological and arms control policy issues which are addressed there, make it a unique place for providing solutions to global challenges. Major international organisations, such as the UN and the International Committee of the Red Cross (ICRC) are also based there, as well as non-governmental organisations that shape the debate over the future of international arms control. The three Geneva centres – the GCSP, the DCAF and the GICHD[13] – carry out important work in these areas, too. Based on the Digital Foreign Policy Strategy 2021–24, the synergies with the positioning of Geneva as a global hub of digital governance are to be used even more effectively for ADN purposes.

Secondly, other **key actors** relevant to the future development of arms control are also based in Switzerland. The Federal Institutes of Technology and other research centres put Switzerland at the cutting edge of research in new technologies. Innovative and world-leading technology companies are also located here, in addition to a highly diversified SME and start-up landscape. Switzerland is a trailblazer in certain areas of AI and blockchain research and a leading nation in mechanical engineering and robotics. In biotechnology, internationally successful pharmaceutical and chemical companies play a significant role. These companies and universities enhance Switzerland's reputation as a hub for innovation. In conjunction with its foreign and security policy profile, this also makes Switzerland a credible actor in ADN forums in the field of technology. The Geneva Science and Diplomacy Anticipator (GESDA) foundation helps build bridges between the various groups of actors.

GESDA: ANTICIPATING CHALLENGES – CHARTING THE RIGHT COURSE – SHAPING EFFECTIVE MEASURES

Technological breakthroughs can make the world a safer place and save human lives. Some applications can nevertheless undermine key norms and values and destabilise the planet. Warfare in the age of robotics, autonomous weapons and genetic engineering raises fundamental questions about the future of humanity.

Through the **Geneva Science and Diplomacy Anticipator (GESDA)** foundation, Switzerland supports the systematic anticipation of developments in the sciences and their technological consequences. It aims to co-shape effective multilateral solutions at an early stage and to chart the right course to ensure the responsible use of technology for the benefit of everyone. From an arms control perspective, these developments should be viewed in the context of geopolitical trends. This includes developing clear rules and designing innovative disarmament instruments. This strategy adopts this approach in many fields of action.

Thirdly, the **2023/24 UN Security Council** seat Switzerland is seeking represents an opportunity to shape ADN discussions and possibly raise ADN topics in that forum. To the extent possible, the opportunities arising from a Security Council membership should also be leveraged outside of the Council and beyond membership to gain a better understanding of different positions, to draw up solutions and find compromises.

13 See list of abbreviations.

3.3 Principles

Based on its profile and strengths, Switzerland is guided by the following principles in defining its ADN policy:

- Switzerland favours legally binding instruments under international law. To counteract fragmentation of rules, Switzerland promotes their **universalisation and an inclusive, non-discriminatory approach** which includes as many relevant states as possible on an equal footing. This ensures the sustainability and effectiveness of the rules agreed upon.

- Switzerland supports the **comprehensive implementation** and, where necessary, the **development** of ADN agreements. This includes eliminating any normative, legal and operational gaps and strengthening verification measures to monitor compliance with treaty provisions as well as exploring new governance and verification approaches.

- The creation or **strengthening of transparency- and confidence-building instruments and measures** in the area of ADN, which are becoming more significant in view of growing geopolitical tensions, is of vital importance to the implementation of Swiss ADN policy. Such measures help build trust between states and facilitate risk reduction because they make military activities and developments more transparent and predictable. They do so by, for example, avoiding miscalculations.

- Switzerland supports and fosters both goals of international ADN efforts – **promoting international security** and **preventing humanitarian consequences.**

- Switzerland attaches great importance to incorporating relevant aspects of **scientific and technological progress** into ADN. Addressing its impact on international law and the relevant agreements is crucial to maintaining the long-term relevance and effectiveness of the applicable norms and instruments. Technological progress also presents new opportunities for ADN, for example in the areas of verification or incident management.

- Through the **control of the transfer** of dual-use and specific military goods as well as war materiel, Switzerland aims in particular to prevent the proliferation of weapons of mass destruction and the destabilising accumulation and misuse of conventional weapons. At the same time, it does not want to unnecessarily hinder legitimate economic and scientific activities and wishes to maintain the level of industrial and technological capacity that meets the requirements of its national defence. In the event of potential **conflicting interests** in this regard, the various perspectives are carefully weighed up taking account of clearly defined export criteria and obligations under international law.

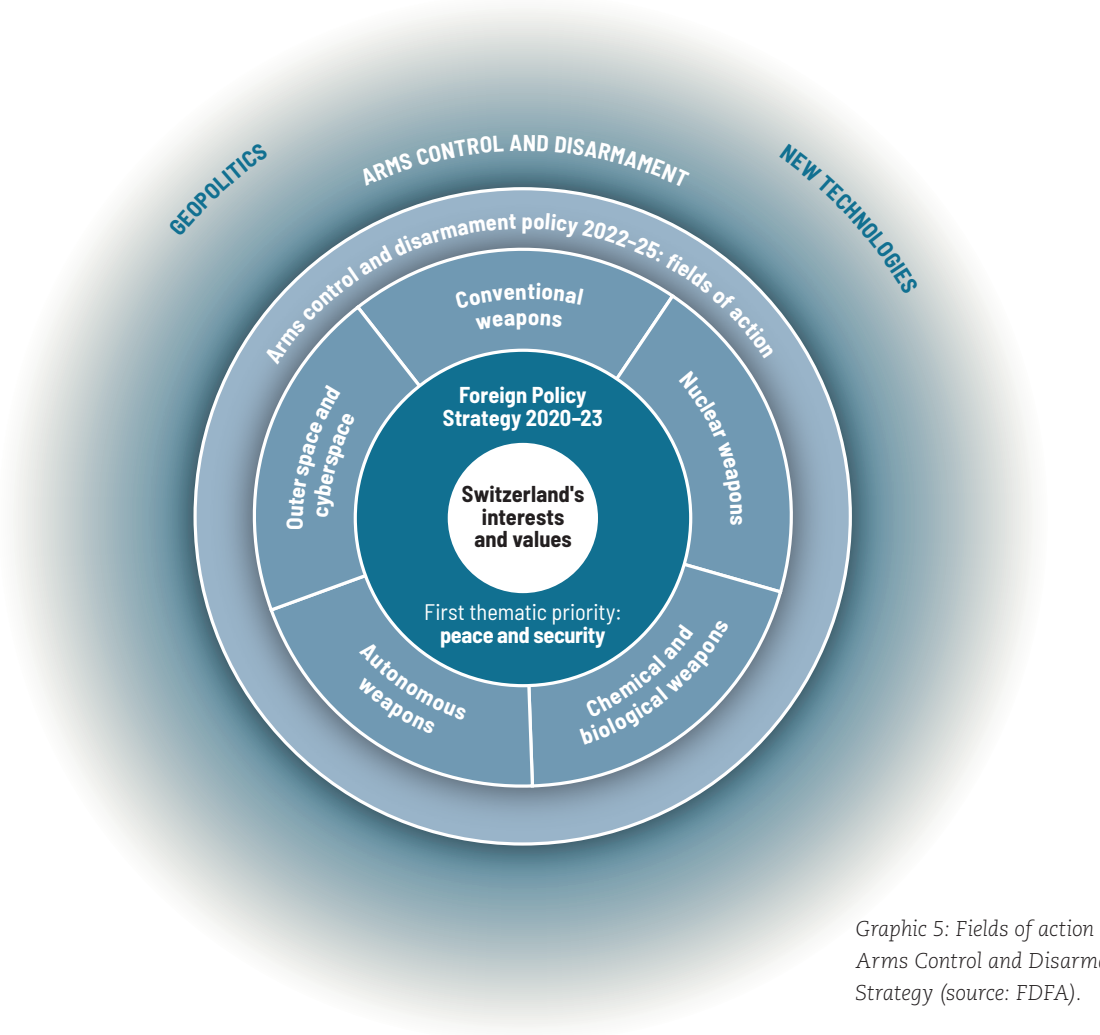
- In line with Switzerland's commitment to gender equality and the Women, Peace and Security agenda, promoting **equal opportunity** and strengthening **the role of women** are also essential elements of ADN policy. Switzerland places great emphasis on gender-specific aspects and on the equal participation of women in all areas of ADN.

- As part of its activities in the field, Switzerland attaches great importance to developing national capacities so that partner states can assume and sustainably bear responsibility for the full implementation of their obligations. In this respect, Switzerland relies on **local ownership** and commitment by states themselves and applies the principle of helping others to help themselves.

- Switzerland focuses on targeted cooperation with relevant actors in **science, industry and civil society.** This allows it to tap into the expertise available there to provide fresh ideas and impetus for ADN and to improve the effectiveness of Swiss policy. Fostering multi-stakeholder formats and dialogue with science and the private sector is therefore a priority.

4 Fields of action

The Federal Council has derived five fields of action for Swiss arms control and disarmament policy on the basis of the FPS 2020–2023, the trends described above, and Switzerland's ADN positioning. These areas concern **nuclear weapons, chemical and biological weapons, conventional weapons, autonomous weapons, and outer space and cyberspace.** The Federal Council has defined objectives and measures for each area for the period 2022–2025. Implementing them requires action on the part of all federal departments as well as close interdepartmental cooperation. In view of the respective Swiss interests and obligations under international law, technical and political factors must be considered together, risks reduced, opportunities seized, existing strengths bolstered and focus areas defined by carefully setting priorities. In addition to credibility and a sense of realism, coherence is also vitally important here.



Graphic 5: Fields of action of the Arms Control and Disarmament Strategy (source: FDFA).

4.1 Nuclear weapons

The use of nuclear weapons would have catastrophic cross-border humanitarian, environmental, economic and social consequences. Although no nuclear weapons have been used since Hiroshima and Nagasaki in 1945, thousands of tests caused human suffering and lasting environmental damage. Potential nuclear incidents – accidents, misunderstandings between nuclear powers or an escalation of conflict– still pose existential risks to our planet. Switzerland has always taken the view that nuclear weapons can hardly be used in compliance with the pertinent rules of international law, in particular international humanitarian law. On this basis, Switzerland emphasises the importance of the humanitarian consequences of nuclear weapons as a key driver for further nuclear disarmament. Switzerland continues to pursue its commitment to a world without nuclear weapons, even though different approaches to achieving this goal exist.

Nuclear deterrence was an essential factor in the bipolar order of the Cold War and resulted in a degree of stability and predictability despite the build-up of arms by both blocks. In the current geopolitical context, some states still believe nuclear weapons have an indispensable stabilising effect and are investing in their modernisation. Switzerland's security policy environment is characterized by the NATO military alliance set on relying on the nuclear deterrent for as long as nuclear weapons exist. Moreover, nuclear warheads are not just seen as a category of weapons but also as a political power factor.

The cornerstone of the nuclear order is the **Treaty on the Non-Proliferation of Nuclear Weapons (NPT)** of 1968. Under the NPT, nuclear-weapon states are prohibited from transferring nuclear weapons or supporting the efforts of other states to acquire them. The NPT requires non-nuclear-weapon states to renounce the production and acquisition of nuclear weapons and to place all their nuclear facilities under the supervision of the International Atomic Energy Agency (IAEA). The NPT also guarantees the peaceful use of nuclear power with applications in energy, medicine and agriculture. Finally, all states are obliged to pursue in good faith and bring to a conclusion negotiations on nuclear disarmament.

The NPT has created an almost universal non-proliferation norm. Its preservation is of fundamental importance to Switzerland. Only four states – India, Pakistan, Israel and North Korea – have obtained nuclear weapons outside of this norm. A far higher number was forecast in the 1960s. Still, the danger of proliferation has not been averted, especially since nuclear weapons are widely deemed to help establish security and seen as strategically valuable.

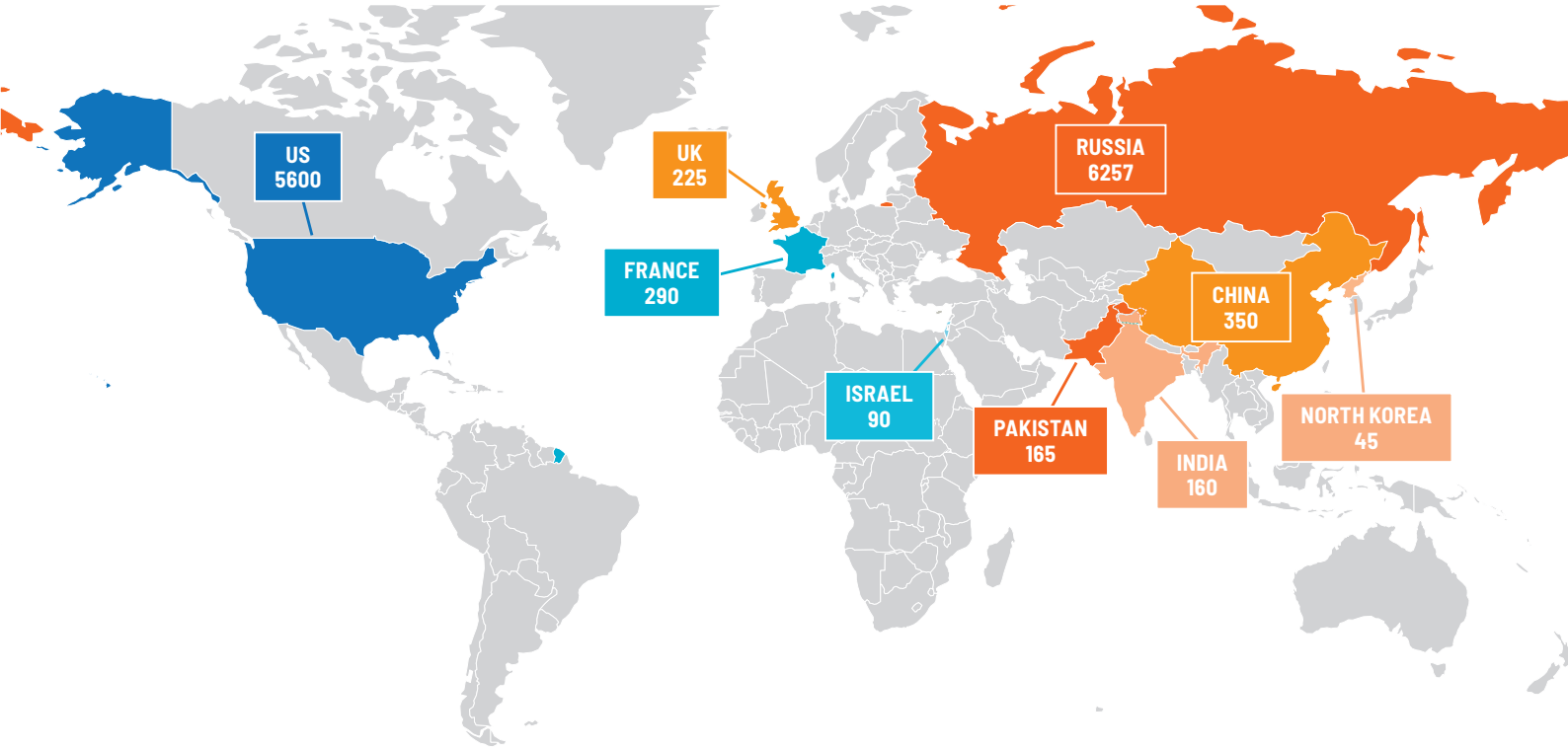
By pursuing a programme to develop nuclear weapons and their means of delivery, North Korea has contravened the non-proliferation norm despite comprehensive UN sanctions. This represents a direct security risk to Switzerland. As long as the perception persists that nuclear weapons contribute to strategic security, nuclear ambitions of further states cannot be ruled out. The nuclear agreement with Iran prevented it from developing nuclear weapons in the foreseeable future. Yet, the US withdrawal from the agreement and Iran's resumption of enrichment activities and violations of restrictions in the agreement have again accentuated the risk of proliferation.

Switzerland has various means at its disposal to **prevent further nuclear proliferation.** By implementing the obligations of the UN Security Council Resolution 1540 – including through effective export and transit controls – it is helping to ensure that non-state actors do not come into possession of weapons of mass destruction. In addition, under the export control regime of the Nuclear Suppliers Group (NSG), it is committed to ensuring that potential supplier countries of nuclear goods apply comparable export control criteria. Through its corresponding national export controls, it prevents Swiss materials from being used for nuclear weapons programmes in violation of international law. Means of delivery suitable for weapons of mass destruction and relevant components are also controlled, based on the Missile Technology Control Regime (MTCR). By chairing the MTCR in 2022–23, Switzerland will support this regime's ability to act and wants to contribute towards involving relevant actors. All of these instruments are used to control proliferation-relevant goods. This control makes gaining access to nuclear weapons technology and means of delivery systems more difficult.

A comprehensive **ban on nuclear weapons testing,** as provided for by the Comprehensive Nuclear-Test-Ban Treaty (CTBT), also aims to avert potential ambitions to obtain nuclear weapons. While this treaty has not yet entered into force, the establishment of the associated international verification system – to which Switzerland is contributing by providing a seismic monitoring station – still represents a major achievement. Switzerland is working towards the treaty's entry into force. In addition, Switzerland wishes to develop and strengthen non-proliferation norms, for example in the area of fissile material production for nuclear weapons.

Through diplomatic efforts to improve regional and international security, Switzerland can also contribute towards reducing the incentives for nuclear proliferation. Switzerland is also engaged in improving the safety and security of civil nuclear materials and facilities. This helps lower the risks of nuclear proliferation. It works closely with the IAEA, which develops international safety and security standards. Here, Switzerland works towards the implementation of these international standards and the relevant conventions in this area, which include the amended Convention on the Physical Protection of Nuclear Material (CPPNM).

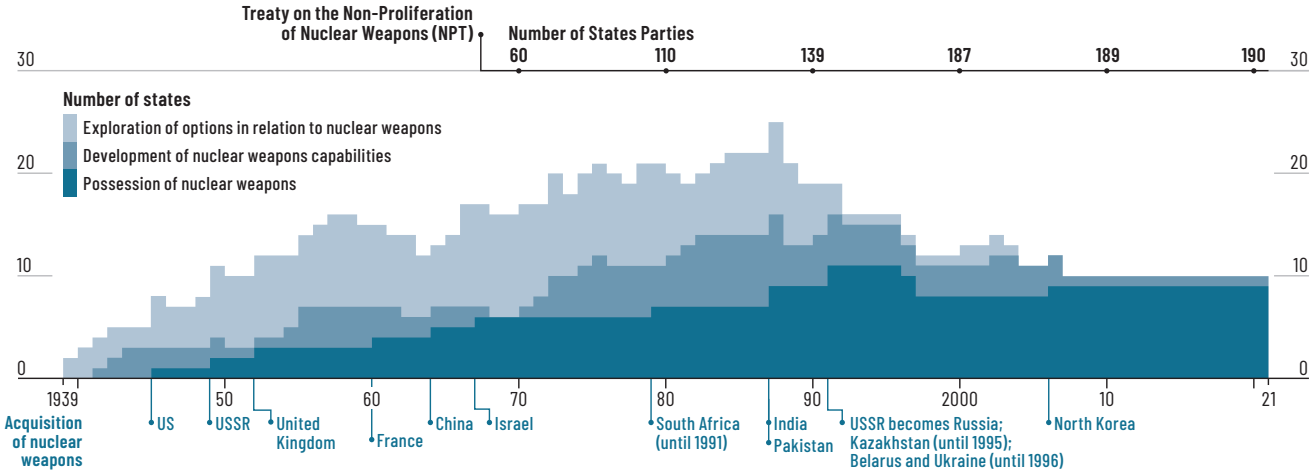
The **NPT record in the area of disarmament** is less impressive. After the disarmament of thousands of nuclear weapons, further efforts have faltered. While only some of the recognised nuclear-weapon states – the United States, Russia, the United Kingdom, France and China – are currently endeavouring to increase their arsenals, it is primarily qualitative developments that give cause for concern. The US and Russia are modernising their arsenals. New means of delivery are also being developed. While China continues to emphasize its 'no-first-use' doctrine, it is expanding its capabilities. In March 2021, the United Kingdom announced its decision to increase the previous unilateral cap on its arsenal. All of these developments clearly indicate that the deteriorating international security situation is being met with a greater emphasis on nuclear weapons, irrespective of the NPT disarmament obligation. The build-up of arms outside of the NPT – in India, Pakistan and North Korea – is exacerbating the situation. Moreover, the risk of a loss of control by state actors over these weapons of mass destruction remains.



Graphic 6: The 2021 global nuclear warhead inventory according to the Federation of American Scientists (source: Hans M. Kristensen and Matt Korda, 2021).[14]

14 The figures show the total stockpile of nuclear warheads estimated by the Federation of American Scientists. The five official nuclear-weapon states and the other possessors together possess more than 13000 nuclear warheads. About 9600 are ready for military use. Russia and the USA account for more than 90% of all nuclear warheads.

During the Cold War and the period immediately following it, there was considerable scope for nuclear negotiations. For example, Moscow and Washington agreed on the elimination of a specific group of means of delivery. The prospects of concluding such bilateral agreements today are less promising. China, an increasingly significant actor, is yet to be convinced to engage. The room for multilateral manoeuvre is also limited, as evidenced by the Geneva Disarmament Conference, where tensions and particular interests are hampering efforts to reach consensus. This situation is being exacerbated by the fact that numerous existing treaties are coming under pressure or are being undermined.



Graphic 7: Increase in possessors of nuclear weapons and mitigation through the NPT (sources: The Economist; FDFA).

In light of these developments, certain states and non-governmental organisations (NGOs) have pursued a path outside of the established processes and approaches. In 2017, they negotiated the **Treaty on the Prohibition of Nuclear Weapons (TPNW)** as a counterpoint to the aforementioned stalemate. Central to the new approach was the stigmatisation of nuclear weapons because of their catastrophic humanitarian consequences. Traditional security aspects were, at the same time, excluded. This new approach mobilised a broad consistency, not least the states of the southern hemisphere. However, the price for the breakthrough was the non-participation of the nuclear powers and their allies. And while the TPNW created for the first time an instrument in the UN framework that completely prohibits nuclear weapons, this ban only binds its states parties.

Switzerland has long supported complete nuclear disarmament and the development of the international instruments required to achieve this goal. However, as there was little scope for discussions on security and arms control policy during the negotiations, questions about the impact of the agreement remained unresolved after the negotiations. It therefore remains unclear whether the new treaty will reinforce or weaken the implementation of the disarmament obligations under the NPT. So far the treaty has only been signed and ratifie by a minority of states. In view of this and on the basis of a report by an interdepartmental working group, the Federal Council decided to defer accession. It will re-evaluate the matter in light of further developments in the NPT and after Switzerland's participation as an observer at the first TPNW Conference of State Parties. Regardless of the question of accession, Switzerland will advocate for constructive, synergy-based collaboration and will continue to emphasise that humanitarian consequences must remain a driving force for disarmament.

The stocktaking of nuclear disarmament highlights why Switzerland continues to consistently advocate for a world without nuclear weapons. The complexity of this undertaking is nevertheless clearly evident. The geopolitical realities must be taken into account. Swiss efforts to establish an effective and inclusive nuclear control and disarmament architecture and the preservation and further implementation of existing agreements, particularly the NPT, are of major importance in this respect. Switzerland is also endeavouring to help break the aforementioned deadlock over disarmament and arms control negotiations and is not satisfied with the status quo.

Its values, profile and constructive relations with all nuclear-weapon states position Switzerland as a bridge-builder in this field. One example of this is its contribution – in cooperation with the nuclear-weapon states – to international verification of nuclear disarmament. Such verification is a basic prerequisite to achieving a world without nuclear weapons. It could also help shape the agenda through contributions to a new generation of multilateral arms control instruments. Together with other non-nuclear-weapon states, it can put forward initiatives and raise concerns, for example as part of the Stockholm Initiative for Nuclear Disarmament. Its 16 member states from all continents are committed to reviving disarmament diplomacy, strengthening the NPT and making practical progress towards disarmament.

For as long as nuclear weapons exist, containing the risks and dangers they pose will remain a key challenge. Switzerland plays a leading role in nuclear **risk reduction.** It has been advocating for the reduction of the high level of operational readiness of certain nuclear weapons arsenals for many years, not least because such de-alerting[15] can reduce risks.

International concern over nuclear risks has come to the fore in recent years and action is needed to reduce them. This also includes risks arising from technological advances. New offensive capacities are emerging as sources of risk, on the one hand, such as the high speed – combined with manoeuvrability – of means of delivery able to carry nuclear weapons. These include hypersonic weapons, which can have destabilising effects. On the other hand, defensive systems can also create risks. Missile defence systems which were intended to reduce military vulnerability can drive the development of further means of delivery as part of an offensive/defensive dynamic.

By adopting a set of measures to reduce nuclear risks as part of the Stockholm Initiative, Switzerland underlined that non-nuclear-weapon states can play a key role in achieving progress on complex arms control issues and effectively get the attention of the nuclear powers. With regard to strategic risk reduction, Switzerland – together with nuclear-weapon states – is deepening practical measures, including a concept for a secure, multilateral hotline infrastructure to enable major powers to avoid misunderstandings and promptly resolve tensions in crisis situations.

Goals and measures

A. Switzerland builds **bridges to strengthen and develop the nuclear non-proliferation and disarmament architecture with the NPT at its centre.**

A1. Promoting inclusive dialogue processes and confidence-building measures as well as providing good offices to support negotiations over nuclear issues.
A2. Strengthening the existing architecture with the NPT as the cornerstone and promoting adherence to and better implementation of the norms and existing obligations, including those within the IAEA framework.
A3. Reviewing its position on the TPNW and contributing towards constructive coexistence between the NPT and the TPNW.
A4. Supporting future-oriented arms control treaties that supplement the NPT and take account of the reality of the security policy situation and technological challenges, including through contributions to new verification measures.
A5. Contributing towards the reduction of nuclear weapons risks and other strategic risks through relevant initiatives.
A6. Strengthening and developing transparency and governance instruments in the field of means of delivery, including in the context of the MTCR chairmanship.

15 De-alerting is a long-standing Swiss priority in the context of the UN General Assembly First Committee.

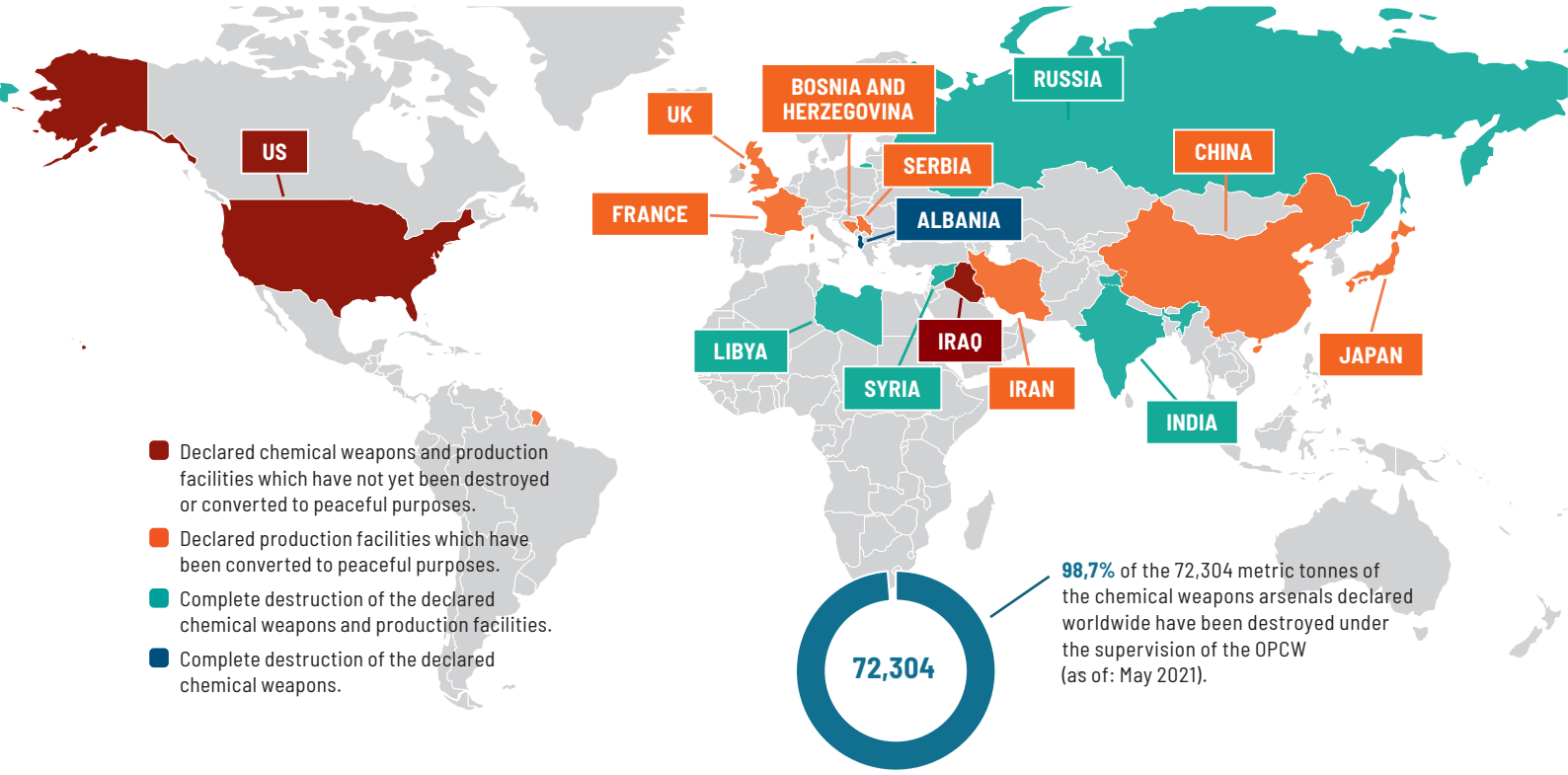
4.2 Chemical and biological weapons

Chemical weapons have been deployed on a large scale over the past decade for the first time since the 1980s. In particular, they were used during the conflict in Syria, but chemical agents were also employed in attacks on individuals (e.g. Alexei Navalny, Sergei Skripal and Kim Jong-Nam). This provided a severe test for respect for the international norm against this prohibited category of weapon and so too for multilateral cooperation. Although the UN Security Council essentially remains deadlocked over this issue, it has been possible to take measures under the **Chemical Weapons Convention (CWC)** and to maintain the capacity to act of Organisation for the Prohibition of Chemical Weapons (OPCW), which is responsible for the Convention's enforcement. These included enhancing the Organisation's investigative and forensic capacity as well as the multilateral mandating of investigation missions.

Taking such measures in response to the unacceptable **use of these weapons** is vitally important to support the ban on chemical weapons and to deter future use. Switzerland supports the OPCW's investigations at the political, technical and financial levels. Here, it relies in particular on the chemical and analytical expertise of Spiez Laboratory, which is one of the world's leading facilities in this field. In addition, combating impunity for such crimes by identifying, prosecuting, and sanctioning those responsible is also crucial, which is why Switzerland, among other activities, participates in the Partnership against Impunity for the Use of Chemical Weapons. In this context, the EU established a thematic sanctions regime against the use and proliferation of chemical weapons in 2018.

The measures at the multilateral level were only enforceable in the current geopolitical context because there is no strict consensus rule under the CWC. This approach has nevertheless led to a high degree of polarisation amongst the States Parties – which now also extends to essentially non-controversial areas – in the Organisation which had previously largely operated on the basis of consensus. On the one hand, the political efforts required to enable progress within the framework of the Convention in light of this situation have increased significantly. On the other, disinformation campaigns and cyber-operations have been conducted for years to undermine the OPCW's credibility, which has also affected Switzerland directly. Switzerland has intensified its efforts to counteract non-acknowledgement of facts, division through disinformation, and attempts to weaken the OPCW, including political advocacy and measures to strengthen the Organisation.

Overall, the CWC is a **success story** of multilateral arms control and disarmament. Since entering into force in 1997, it has virtually achieved universality and currently has 193 States Parties. Over 98% of the chemical weapons stockpiles declared worldwide to date have been destroyed under the OPCW's supervision. The Organisation also carries out, in all States Parties, routine inspections of relevant industrial companies and state defence facilities and coordinates the provision of assistance and protective measures against chemical weapons. Switzerland regularly holds training courses for international instructors and provides protective and decontamination equipment. The OPCW was awarded the Nobel Peace Prize in 2013.



Graphic 8: Destruction of chemical weapons under the supervision of the OPCW (source: OPCW).

The OPCW and the Convention will face a considerable challenge over the coming years as the foreseeable destruction of the declared chemical weapons stockpiles will require a debate over the direction to take in the future. Switzerland believes the already initiated shift of focus from disarmament to preventing the **re-emergence of chemical weapons** is necessary. In this regard, it successfully campaigned for the aerosolised use of chemicals acting on the central nervous system for law enforcement purposes to be declared inconsistent with the provisions of the CWC.[16] In view of the renewed deployment of chemical weapons, preserving the OPCW's expertise and internationally coordinated protective efforts are vitally important as well.

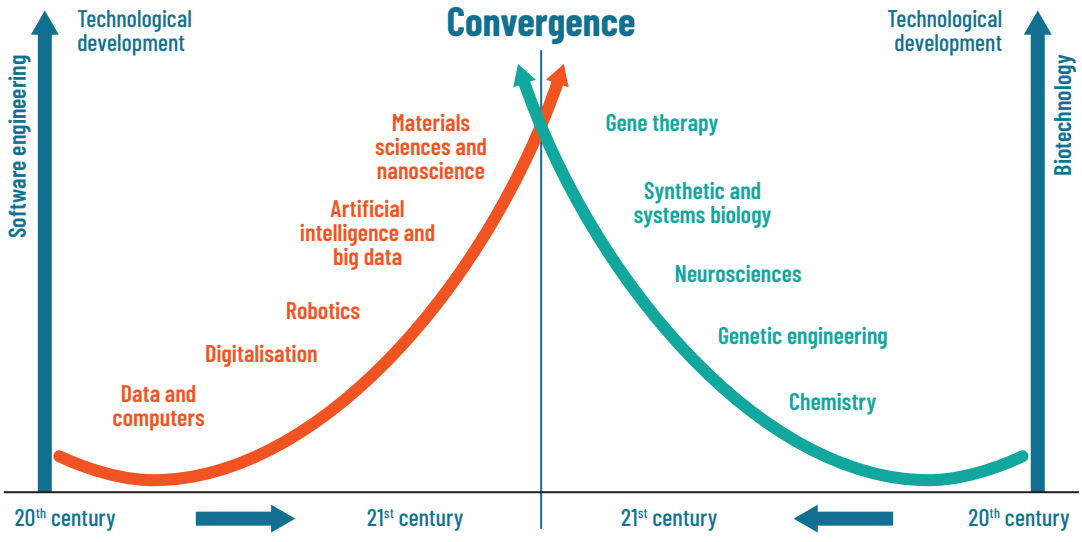
Continuously adapting the Convention to **scientific and technological advances** is also a crucial aspect – an area in which Switzerland is particularly active in the framework of its science diplomacy. It is regularly represented on the OPCW's Scientific Advisory Board. Spiez Laboratory works closely with the OPCW's own laboratory in The Hague as one of around 25 specialist laboratories worldwide designated by the Organisation. This collaboration covers cooperation as part of the investigation missions mentioned above, support for building the capacities of the designated laboratory network, and the provision, free-of-charge, of extensive reference datasets and chemicals for the analysis of chemical agents.

In contrast to the CWC, the **Biological Weapons Convention (BWC)** has neither a legally binding verification system for monitoring compliance with its provisions nor an organisation responsible for implementation. Considering the elusive threat posed by biological weapons in combination with the disruptive potential of global pathogen outbreaks – unmistakeably highlighted by the COVID-19 pandemic – this represents an ongoing shortcoming and creates uncertainty and mistrust.

Switzerland therefore advocates for **institutional strengthening** of the BWC. Proposals on resuming negotiations on a legally binding additional protocol have failed to reach consensus so far, essentially preventing the continual development of the Convention to meet present challenges. However, recent calls for negotiations, to which Switzerland is not averse in principle, are currently rather exacerbating polarisation of the States Parties and have little prospect of success. This is why Switzerland is primarily focusing on incremental progress, for example in the areas of technological development, confidence-building measures, international cooperation and the coordination of assistance and protective measures.

These political challenges are being accompanied by rapid **advancements in the biosciences** that are currently among the most groundbreaking trends in technology. This progress is being driven by the convergence of biotechnology with digital technologies and artificial intelligence, but also with chemistry, materials science, nanotechnology and neuroscience. It is producing a concentration of innovations and is blurring the boundaries between the sciences. Approaches such as synthetic biology and trends in automation and decentralised production (including commercial DNA sequencing and synthesis, cloud laboratories, additive manufacturing and robotics) are resulting in faster and high-quality processes in the development of complex chemical and biological products.

16 The "Understanding regarding the Aerosolised Use of Central Nervous System-acting Chemicals for Law Enforcement Purposes" initiative is a longstanding priority of Switzerland in the framework of the OPCW and was successfully concluded in December 2021.



Graphic 9: Convergence in the life sciences (source: FDFA).

Taken together, these trends are lowering the barriers in technology application, changing the user's role. Hardware and technical expertise are becoming less significant whereas the importance of knowledge and access to data and information is growing.

These developments will produce major benefits for medicine and other areas of society. But they also entail risks ranging from unintended consequences to deliberate misuse. The main challenge of biotechnology from a security policy perspective is that numerous applications can be used for beneficial but also harmful purposes, complicating the distinction between defensive and offensive research.

Technological progress and the **dual-use problem** make it hard to just identify activities relevant to biological weapons, let alone control them. Research and development under a biological weapons programme can easily be concealed under the pretext of legitimate activities and carried out at small civil facilities. The ability to control relevant substances and technologies using traditional means, such as list-based export control approaches, looks set to diminish. By contrast, the efforts and the ability to control access to relevant data and intangible technology transfers are becoming increasingly important.

The Australia Group (AG), the export regime to control chemical and biological goods, plays a key role here. Switzerland is a member of this group and incorporates its agreements into national legislation.

The technological progress and the opportunities it is creating are impacting the sustainability of the international norms against biological weapons. A systematic analysis of the scientific and technological advancements and the challenges they pose to the BWC and security policy in general is required. This progress nevertheless also provides opportunities for ADN, such as new forms of monitoring and verification and more advanced methods for the (forensic) investigation of the use of weapons. Strengthening the BWC's confidence-building measures is also important in the context of bioscience research, as it helps to establish a minimum degree of transparency and trust.

Involving **science and industry** is a crucial way to prevent misuse in the area of bioscience research and other, converging areas. Instead of just trying to control access to materials and equipment, multi-layered, decentralised, multi-stakeholder approaches are needed – involving politics, science and industry – each of which must assume their partial responsibility for the security and transparency of their activities. This should not be at the expense of traditional control approaches but should instead be pursued in parallel and in a complementary way.

Through its science diplomacy, Switzerland is endeavouring to intensify dialogue with science and industry. The "Spiez Convergence" conference series it has set up on the topic of growing convergence in biological, chemical and other sciences provides national and international experts from research, industry and politics with the opportunity to discuss relevant implications for arms control, in particular the CWC and the BWC. Researchers in Switzerland are also being made aware of the risks of the misuse of advancements in bioscience and the dual-use problem.

In addition to its commitments to the BWC and the CWC, Switzerland also supports the Secretary-General's Mechanism for Investigation of Alleged Use of Chemical and Biological Weapons (UNSGM). As chair it coordinates the support activities of the mechanism's 'group of friends' consisting of UN member states with an interest in this area. Experts from various federal offices regularly take part in field exercises and workshops. Switzerland also holds expert workshops at Spiez Laboratory which aim to ensure that the participating laboratories can meet the quality requirements and standards for the analysis of biological samples.

Goals and measures

B. Switzerland is committed to compliance with and development of the **normative framework and strong institutions** in the field of biological and chemical weapons.

B1. Supporting and strengthening the international norm against chemical weapons and the OPCW's credibility in view of the repeated use of chemical weapons and disinformation campaigns (possibly on the UN Security Council as well).

B2. Supporting the fact finding missions of the OPCW and other institutions as well as initiatives against impunity, including as part of the continued OPCW designation of Spiez Laboratory.

B3. Making contributions towards strengthening the institutional framework and the instruments of the BWC, such as confidence-building, cooperation and assistance.

B4. Strengthening international investigation capacities in the framework of the UNSGM and contributing to multilateral cooperation on protection and the provision of assistance against chemical and biological weapons.

C. Switzerland promotes the evaluation of the **opportunities and impact of new technologies** and fosters in-depth **dialogue with science and industry.**

C1. Promoting dialogue between politics, industry and science on issues concerning technological progress in the life sciences and their implications for arms control policy.

C2. Supporting initiatives and making contributions that concern the systematic assessment of the implications of developments in science and technology within the framework of the CWC, the BWC and other international fora.

C3. Contributing to the analysis of the potential of new scientific and technological approaches in the areas of monitoring, verification, investigation and forensics in relation to biological and chemical weapons.

C4. Supporting the OPCW in scientific and technical matters to strengthen its verification regime and its investigative capacity, including the OPCW laboratory and the network of designated laboratories.

4.3 Conventional weapons

With almost no exceptions, armed conflicts are fought with conventional weapons.[17] Such conflicts affect civilian populations in particular. Even in regions where no armed conflict is taking place, conventional weapons and their illicit proliferation can have destabilising effects and foster violence, for example small arms in fragile contexts. Furthermore, the excessive accumulation of conventional weapons can exacerbate existing regional tensions between states. At the same time, there are hardly any states that can forego the possession of conventional weapons to maintain their domestic order or to defend themselves, as stipulated in Article 51 of the UN Charter. It is also for this reason that conventional weapons are not banned, with a few exceptions such as anti-personnel mines and cluster munitions. However, international law does regulate, in particular, their use and international trade.

Switzerland is tackling these challenges on three levels. Firstly, it endeavours to reduce the impact of armed violence and promotes respect for international humanitarian law. Secondly, it works to ensure responsible arms trade and the control of conventional military equipment. Thirdly, Switzerland supports specifically conventional arms control and confidence-building in Europe.

Reducing armed violence

Armed violence often triggers humanitarian crises and undermines peacebuilding and the implementation of the 2030 Agenda for Sustainable Development. Switzerland – through its ADN activities – advocates strict compliance with international humanitarian law (IHL) to minimise the **impact of conventional weapons, particularly on civilians and civilian objects.** It also focuses on mine action and the safe and secure management of small arms and ammunition.

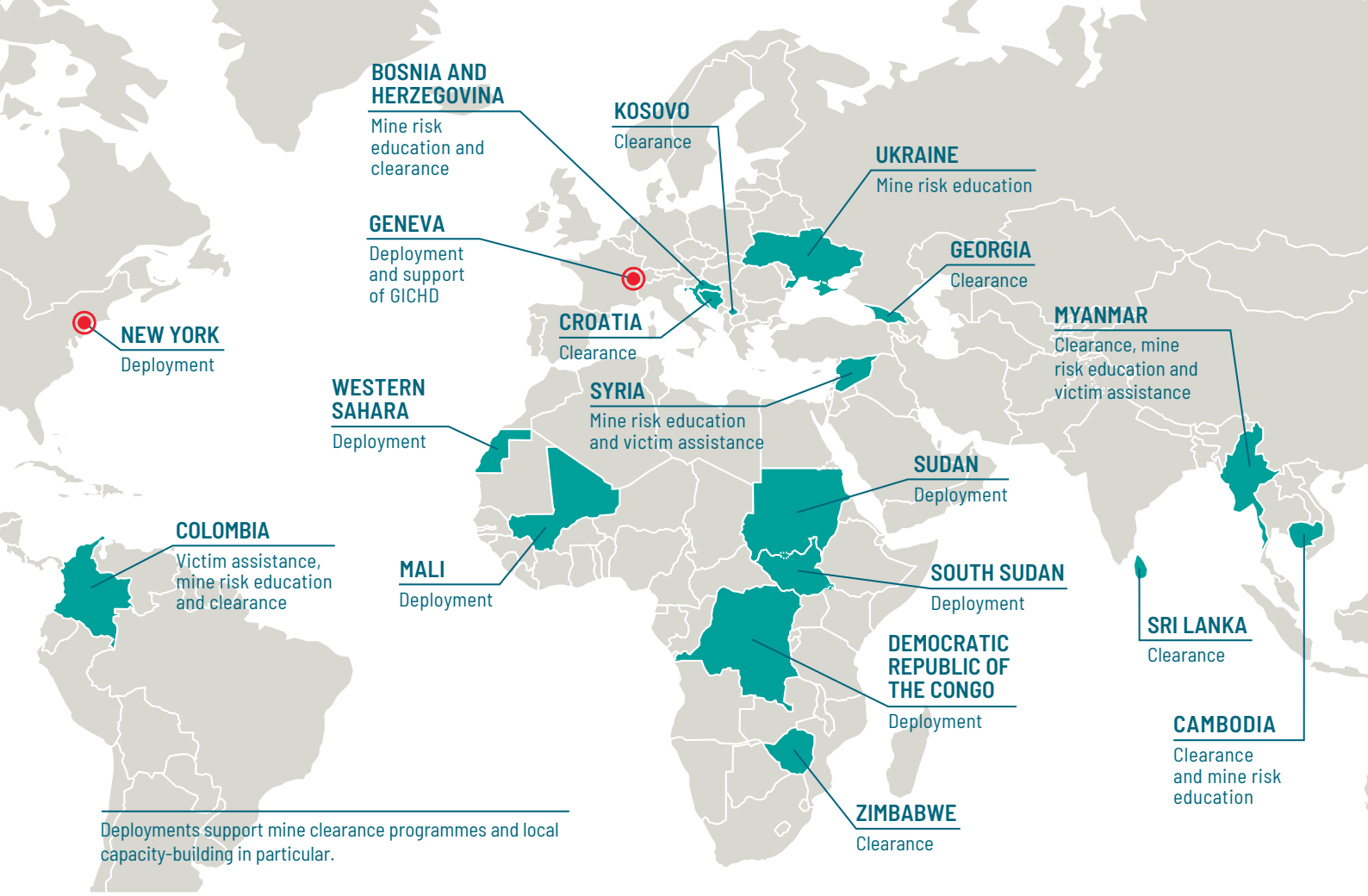
Mines, cluster munitions and explosive remnants of war affect the civilian population indiscriminately, often decades after the end of a conflict. In response, the international community has established important instruments, in particular the Anti-Personnel Mine Ban Convention (APMBC) of 1997 and the Convention on Cluster Munitions (CCM) of 2008. They prohibit the use, stockpiling, production and transfer of anti-personnel mines and cluster munitions respectively and undertake to clear contaminated areas. In Switzerland, both are banned, as war materiel.

States have made significant progress under the APMBC and CCM: hundreds of square kilometres of contaminated areas have been cleared, stockpiles destroyed and thousands of victims supported. Over 60 states and regions nevertheless remain contaminated by explosive ordnance today.[18] New armed conflicts result in new contamination, for example in Syria, Yemen and Libya. New contamination is increasingly being found in densely populated areas and is often attributable to non-state armed groups. This is one of the main reasons for the rise in the number of victims since 2013 after a downward trend for years.[19] It is all the more important to seek dialogue with armed groups about their obligations under international humanitarian law.

17 Conventional weapons are weapons that are not weapons of mass destruction. Autonomous weapons and the field of action concerning them are discussed separately in section 4.4.

18 International Campaign to Ban Landmines – Cluster Munitions Coalition, Landmine Monitor 2021; International Campaign to Ban Landmines – Cluster Munitions Coalition, Cluster Munition Monitor 2021.

19 International Campaign to Ban Landmines – Cluster Munitions Coalition, Landmine Monitor 2021.



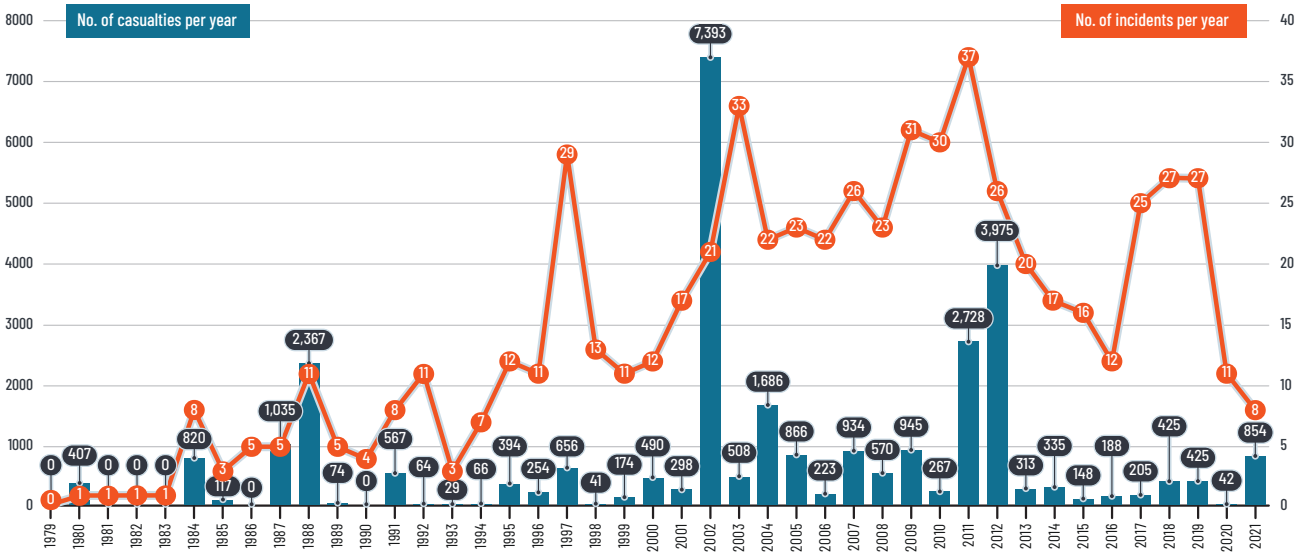
Graphic 10: Switzerland's commitment to mine action in 2021 (source: FDFA).

Switzerland is striving for a world free of anti-personnel mines, cluster munitions and explosive remnants of war over the long term. The further universalisation of relevant conventions and compliance with the obligations undertaken by the contracting states are key aspects. Many states have fallen behind in implementing their obligations, especially the clearance of contaminated areas. In its presidency of the Second Review Conference of the Convention on Cluster Munitions 2020/21, Switzerland – together with the contracting states – drew up an Action Plan that aims to accelerate implementation of the convention by 2026. Being a major donor country, it has been supporting states such as Croatia, Cambodia and Colombia for years to meet their obligations and develop sustainable structures and capacities.

Explosive ordnance detection and clearance remain time-consuming and expensive and are especially complex in urban areas. Technological developments, such as unmanned vehicles, AI and virtual reality, harbour the potential to make mine action safer, and more efficient and responsive to needs, particularly in terms of detecting explosive ordnance. A key success factor is close collaboration between science and mine action organisations on analysing requirements and developing solutions. The links between these actors in and around Geneva are ideal for establishing such partnerships.

In relation to the **illicit proliferation and misuse of small arms,** Switzerland has contributed to the development of international and regional instruments. One example is the International Tracing Instrument (ITI) of 2005 to enable states to identify and trace illicit small arms and light weapons. Switzerland advocates maintaining and, where necessary, strengthening such instruments, despite increasing political polarisation. It also closely monitors technological developments, such as non-metallic small arms and the use of 3D-printing to manufacture small arms.

Switzerland has focused particularly on the safe and secure **management of conventional ammunition** since 2015. The inadequate management of ammunition makes it easier for unauthorised recipients to access ammunition. It also increases the risk of unplanned explosions with often far-reaching and long-term consequences for the civilian population, infrastructure and the environment. Switzerland has also experienced such accidents in the past. It contributed successfully to the convening of a UN Group of Governmental Experts and provided an expert itself. Switzerland is committed to ensuring this group's recommendations are turned into concrete steps to improve the management of ammunition.



Graphic 11: Unplanned explosions at ammunition sites 1979 to 2021 (source: Small Arms Survey).

A number of countries lack the capabilities and resources to manage small arms and ammunition throughout their entire life cycle in accordance with international technical norms. Switzerland supports partner states, for example Bosnia and Herzegovina, by providing expertise, donating equipment and making financial contributions to help grapple with this challenge. Exchanging experience and international cooperation are gaining in importance, especially in ammunition management. Geneva has established itself as a hub of expertise in this area thanks to the work of the GICHD, the United Nations Institute for Disarmament Research (UNIDIR) and the Small Arms Survey.

In the context of increasing urbanisation, the **use of explosive weapons with wide-area effects in densely populated areas** is presenting challenges for the compliance with international humanitarian law. Key aspects include not only complying with the principle of proportionality and the obligation to take all feasible precautions to protect the civilian population, but also the distinction between civilians and combatants and civilian and military objects. Some parties to a conflict deliberately blur this distinction. Accordingly, the requirements to be met by those responsible are high. Switzerland is participating in the drafting of an international political declaration through which the international community is to pledge to address the negative consequences of explosive weapons with wide-area effects in densely populated areas through concrete measures. Switzerland believes the promotion and improved implementation of IHL is vitally important here. Practical steps include that the armed forces review the adequacy of their military provisions regarding the use of explosive weapons with wide-area effects in urban areas and, where necessary, adapt them and that they train and sensitise military personnel in a targeted manner.

Arms trade and control of conventional military equipment

Switzerland is actively engaged in the regulation and control of international trade in conventional weapons through its participation in the **Arms Trade Treaty (ATT)**. The ATT, which is based in Geneva, helps to prevent and combat illicit trade in arms and to ensure compliance with IHL and respect for human rights. The treaty also promotes the cooperation, transparency and responsibility of states in international arms trade. Switzerland implements its obligations under international law arising from the ATT at national level through its legislation on war materiel.

Switzerland promotes the effective implementation and universalisation of the ATT. One of its priorities is preventing illegal transfers of conventional weapons to undesirable end recipients. Due to its Post-shipment Verification (PSV) instrument, Switzerland is playing a pioneering role on the international stage in this field. PSV is used to verify on-site if the assurances given by the recipient not to re-transfer the exported war materiel have been respected. Switzerland is seeking to obtain international recognition of this instrument and to encourage its greater use by other states. It advises partner states bilaterally and uses the ATT bodies to transfer knowledge and develop capacities.

Verifying export documents such as end user certificates and import licences is a vital element of export control. Digitalisation is also playing a more significant role in this area. It is opening up new opportunities, e.g. for decentralised registration and authentication of documents necessary to verify international weapons transfers. Switzerland intends to assess – with the involvement of science and industry – the added value and application of new technologies such as blockchain technology in arms export control.

In addition to the ATT, Switzerland is also working to harmonise internationally export controls on conventional weapons and associated dual-use goods, notably in the framework of the **Wassenaar Arrangement (WA).** In this regard, it closely monitors developments in terms of new technology. It implements its political obligations at national level by incorporating the WA goods lists into its legislation.

Conventional arms control and confidence-building in Europe

Controlling conventional weapons systems and promoting relevant transparency measures are core elements of the cooperative European security architecture under the auspices of the Organization for Security and Co-operation in Europe (OSCE). The erosion of the rules-based security order and persisting conflicts in the OSCE region are playing out in tandem with a crisis in conventional arms control. After the failed attempt to update the **Treaty on Conventional Armed Forces in Europe (CFE)** and its suspension by Russia in 2007, another pillar of the arms control architecture – the **Treaty on Open Skies (OST)** – began to totter in 2021 after the withdrawal of the US and Russia.

Attempts to amend the 2011 **Vienna Document** on confidence and security-building measures (WD11) to take account of the latest military and technological developments have also failed due to tensions. The Document no longer provides full, verifiable transparency concerning the operational capabilities and potential of modern armed forces, in particular with regard to qualitative aspects, such as networked weapons systems and the opportunities these present in terms of modern command and control structures. The gaps in knowledge are causing uncertainty and mistrust. There is a growing risk of the instruments becoming less relevant and of the OSCE's goal of promoting cooperative security and stability in Europe being undermined.

In line with the OSCE Action Plan 2022–2025, Switzerland is committed to reinforcing the OSCE as a platform for dialogue about European security, reducing tensions and minimising risk. Maintaining, strengthening and developing the multilateral arms control instruments is an essential part of achieving this goal. Switzerland will also continue to actively participate in the discussions on **revitalising conventional arms controls in Europe,** especially as part of the OSCE's structured dialogue, which it jointly initiated, and the Group of Like-Minded States, initiated by Germany, which engage in regular discussions concerning political and technical aspects of future arms control in Europe. It also welcomes the discussions on the modernisation of the Vienna Document, although they have been deadlocked for years. As an intermediate step, Switzerland is aiming to ensure the acquis is maintained and the applicable provisions are fully implemented.

Goals and measures

D. Switzerland, a leader in this field, contributes towards reducing the negative **impact of conventional weapons** on the civilian population.

- D1. Developing an FDFA/DDPS action plan on mine action 2023–2026 and implementing it on the ground based on its priorities.
- D2. Supporting multilateral projects as part of the UN, OSCE and NATO Partnership for Peace in small arms and ammunition management by providing specialist expertise, equipment and finance.
- D3. Strengthening the integration of mine action and the management of small arms and ammunition into peacebuilding, taking account of gender issues, including in the context of its candidacy for the UN Security Council.
- D4. Promoting promising technologies in mine action, particularly in the detection of explosive ordnance, and analysing the potential of new technologies such as blockchain in export controls.

E. Switzerland promotes **universalisation, effective implementation and development of the normative framework** in conventional arms control and disarmament.

- E1. Highlighting the universalisation of relevant conventions in bilateral dialogues with states not party and collaboration at multilateral level.
- E2. Promoting dialogue with armed groups to ensure respect for international humanitarian law.
- E3. Making contributions to strengthening and developing international and regional instruments concerning the management of small arms and ammunition, in particular at the UN and in the OSCE region.
- E4. Contributing towards improved compliance with international humanitarian law in armed conflicts, particularly in relation to warfare in densely populated areas and in the aim of ensuring better protection of the civilian population.
- E5. Providing impetus to revitalise and modernise conventional arms control in Europe, taking account of the modern technological capabilities of armed forces.

F. Switzerland is committed to fostering **dialogue on conventional arms control and disarmament** and to supporting **national institutions in partner states** to assume responsibility in these areas.

F1. Bolstering International Geneva as a hub of conventional arms control and disarmament, in particular regarding the exchange of experience on ammunition management.

F2. Intensifying dialogue with Swiss industry and science, including on technological, political and legal developments in arms control.

F3. Providing financial and material support for sustainable capacity-building in national institutions on mine action and the management of small arms and ammunition, in particular through deployments to the UN and regional organisations.

F4. Consolidating Switzerland's role as a pioneer in developing technical standards and guidelines on mine action, the management of small arms and ammunition and their implementation in and with partner states.

4.4 Autonomous weapons

Advancing digitalisation and technological developments – namely artificial intelligence, sensor technology and robotics – are changing the nature of warfare. They enable systems with a greater degree of autonomy. Their applications are broad and also involve intelligence, logistics and rescue operations. In arms control, systems that are armed and autonomously – without direct human involvement – identify (search, track and select) and combat (use of force, neutralise, damage or destroy) targets need to be very closely monitored.

Autonomy enables greater speed in operations through more effective networking of sensors, command and control systems and means of action. Autonomy can also provide protection for and relieve the strain on Switzerland's own forces, making it conceivable to conduct operations in places which are dangerous for humans or difficult to reach. Autonomy can also provide opportunities for armed systems. Only systems not requiring any further direct action by the weapon operator after being activated can provide defence at short distances against rapidly approaching aircraft, missiles or artillery fire. Some autonomous functions can also improve safety by compensating for human error owing to fatigue, stress, fear or other emotions. Finally, autonomy can sometimes help to better protect civilians and civilian objects and to avoid collateral damage through increased precision.

At the same time, weapon systems also entail risks if they operate increasingly autonomously and can trigger violence without human intervention. Such a development, which also signifies a change in human-machine interaction, raises various questions. Weapons systems – based on artificial intelligence and algorithms, but without any human control – which could identify targets and engage them would be unlawful in Switzerland's view.[20] They would also be questionable from an ethical perspective, especially with regard to human dignity. Decisions that have a possible direct impact on life and death of humans, and which require ethical considerations, must not be transferred to machines. A particular danger is the possibility of certain actors misusing such technologies outside of existing norms. Last but not least, there are also considerations regarding the potential impact on international stability, for example as a result of an arms race, an increase in escalation risks, or a decrease in crisis stability.

This set of issues has been discussed in Geneva since 2013; currently within the framework of a **UN Group of Governmental Experts.**[21] A key element of this dialogue is the inclusion of different perspectives, above all humanitarian considerations and military interests. Switzerland has succeeded placing compliance with international law at the centre of discussions – as a benchmark against which any system is to be measured. On this basis, Switzerland drew up contributions addressing the issue of human control. It is currently playing an active role in exploring an operational and normative framework, hoping this will provide the foundation for a future agreement and pave the way for a corresponding negotiation process.

The Swiss Armed Forces also has a fundamental interest in international rules in this area. Military and security policy interests must be safeguarded – because certain applications are also relevant for the Swiss Armed Forces. This calls for a differentiated approach that properly addresses the complexity of the issue and leads to an internationally broad-based, effective result that takes both military and humanitarian aspects into account.

20 From Switzerland's perspective, human control covers a weapons system's entire life cycle. Human control over the decision on deployment, its parameters and targets constitutes a key element. Also see the notes in Annex 1: Postulate 21.3012 "Clear Rules on Autonomous Weapons and Artificial Intelligence".

21 This group of experts operates under the mandate of the high contracting parties to the Convention on Certain Conventional Weapons (CCW), SR 0.515.091.

By adopting **postulate 21.3012 of the National Council's Security Policy Committee,** the National Council tasked the Federal Council with assessing how an operational doctrine for future autonomous weapons systems and artificial intelligence in security infrastructure could be formulated, taking account of international ethical standards, and with identifying opportunities for Switzerland to promote relevant ethical standards internationally. The Federal Council addresses the relevant national and international aspects in more detail in the annex to this strategy.

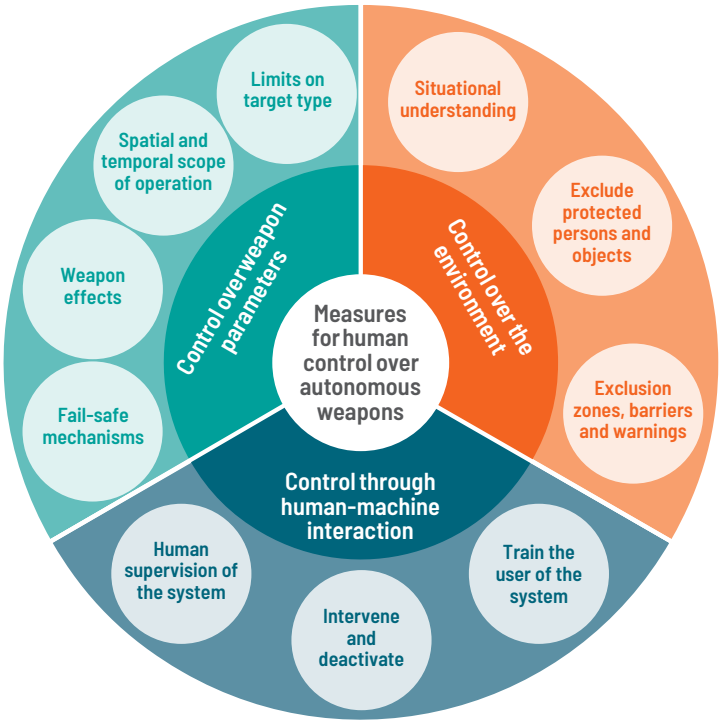
Switzerland's approach continues to focus on **ensuring compliance with international law.** Ethical considerations must also be taken into account. Different types of control – over weapons parameters and design, operational context and by means of the design of human-machine interaction – are central and possible in this respect (see graphic 12). This underlines that control can be exercised over a system's entire life cycle. However, there is still much to be done to establish a consensus at international level on what the right balance is between the extent of autonomy and the timing and quality of control. These efforts are being complicated by the fact that the systems in question – in the air, on the ground, in the water or even in outer space – are of different types.

In line with national considerations on technological developments in warfare, Switzerland is continuing its commitment to developing a UN **framework for regulating weapons systems with increasing autonomy.** There are three priority aspects:

Firstly, options should be developed to prevent, above all, the emergence of those systems with increasingly autonomous functions that would not be in compliance with international humanitarian law. This includes systems whose functioning cannot be adequately understood, whose effects cannot be reasonably predicted or whose impact cannot be limited in accordance with the provisions of international humanitarian law (IHL).

Secondly, specific measures should be developed concerning weapons with increasingly autonomous functions which in principle can be used in accordance with international law. Here, options would be developed to help limit risk through measures such as positive obligations to maintain human control or restrictions on weapons parameters and contexts of use. In doing so, military, security policy and ethical considerations should be taken into account.

Thirdly, dialogue on fostering responsible military use of systems with increasing autonomy should be promoted at the UN. Transparency and dialogue are important, especially in areas where autonomy per se is not an issue. Industry must also be involved and good practices developed. As a complementary measure, broader discussion is required on the impact of the military use of systems with increasing autonomy on international security and stability. Inclusive approaches involving science and industry can guide technological developments and promote responsible use.



Graphic 12: Approaches for human control over autonomous weapons systems (sources: SIPRI/ICRC; FDFA).

Goals and measures

G. Switzerland contributes to developing effective **international regulation of weapons systems with increasing autonomy.**

G1. Initiating and supporting multi-stakeholder formats to promote dialogue on the responsible military use of increasing autonomy in weapons systems and artificial intelligence and their impact on international security and stability.
G2. Making proposals for international regulation that focuses on preventing, above all, the emergence of autonomous weapons systems that are not in compliance with international humanitarian law.
G3. Making proposals on rules and measures that ensure legal compliance of weapons systems with increasingly autonomous functions, minimise security risks and take account of military benefits and ethical considerations.

H. At national level, Switzerland is drawing up the basic principles to ensure a better **understanding of autonomous functions in weapons systems and their responsible use.** It is also defining principles for its own use of such technologies.

H1. Monitoring technological and military developments to ensure a better understanding of autonomy in weapons systems.
H2. Consistently implementing the weapons reviews provided for under international law,[22] taking account of the challenges presented by increasing autonomy.
H3. Developing internal expertise at the DDPS to ensure the inclusion of ethical considerations in the procurement and application of weapons.

22 Under article 36 of Additional Protocol I to the Geneva Conventions on the Protection of Victims of International Armed Conflict, all states are obliged to assess the compatibility of new weapons with the applicable provisions of international law.

4.5 Cyberspace and outer space

Technological progress is enabling ever greater exploration and use of cyberspace and outer space. A large number of military, civil, scientific and commercial facilities and services now exist in both spheres, which have also seen a sharp rise in the number of actors. The high degree of interconnection of the two spheres is clearly reflected by the numerous internet functions dependent on satellite systems and the fact that activities in outer space would be inconceivable without information and communications technologies. Military and civil applications are also increasingly interdependent. Against this background, dependencies and potential vulnerabilities are growing.

All of this leads to an increasing strategic relevance of both spheres. They are emerging as **arenas for political and economic power competition** in the 21st century and serving as spheres of military operation in or from which armed forces are performing impactful activities – be it for early warning, communication, information gathering or operational command. Constantly evolving technologies are creating new opportunities as well as targets and vulnerabilities that can also be exploited militarily. Numerous targets in the physical world can be destroyed, modified or damaged, for example critical infrastructure. The specific characteristics of cyberspace, and outer space, mean there is potential in both spheres for operations to escalate; the probability of accidents, misjudgements, and misunderstandings is high, not least due to the challenges of attributing hostile actions.

The interdependencies raise concerns about the **security and the sustainable use of both spheres.** Swiss interests in these spheres are increasingly being jeopardised. Even as an impartial player, a country like Switzerland would be inevitably and directly affected by restricted access to these spaces as a consequence of conflict. Switzerland therefore has an interest in clear legal and institutional rules in these areas, in the application of existing international law and in the development of new governance approaches that enjoy widespread support.

Cyberspace

In the **cyber and information space,** numerous areas of innovation accentuate global competition and political tensions. Not just in times of armed conflict, but also in times of peace, a broad spectrum of operations aimed at exerting influence and power are being carried out. This ranges from espionage, political pressure, and election interference to the exertion of financial and economic pressure and damaging social cohesion through disinformation up to the paralysis of critical infrastructure.

Although the 'weapons' used to exert this power are not easy to define and usually invisible, a new type of arms race is also emerging in cyberspace. Artificial intelligence, machine learning and complex algorithms in particular, but also an ever greater degree of interconnection are enabling operations with increasingly far-reaching consequences. Advancements in technology mean such operations can be carried

out quickly and largely covertly, making cyberspace more attractive to both state and non-state actors.

Switzerland participates in discussions on international security in cyberspace at the UN. A framework for **responsible state behaviour in cyberspace** has been drawn up in the context of the work of the relevant Group of Governmental Experts. This framework is based on four pillars: international law, voluntary norms (see graphic 13), confidence-building measures, and capacity-building. The most significant achievement so far – to which Switzerland made a substantial contribution – is the agreement that existing international law is also applicable in cyberspace. Switzerland remains committed to the comprehensive recognition of, compliance with and enforcement of international law in cyberspace. The implementation of voluntary norms is still at an early stage in many states.

Graphic 13: Voluntary UN norms for responsible state behaviour in cyberspace (source: Australian Strategic Policy Institute).

Beyond this, questions have been raised concerning the extent to which **arms control approaches** can be used to tackle certain cyber challenges – irrespective of the fact that digital technologies are not traditional weapons per se. One example is sectoral restrictions, such as the agreement to limit cyber-operations targeting nuclear command, control and communications systems. Another example are confidence-building measures, such as those used in the UN and OSCE framework for conventional weapons. As part of both organisations, Switzerland promotes the further development of confidence-building measures for cyberspace.

In the area of arms control, respect for international humanitarian law applicable to armed conflicts has been strengthened several times through specific instruments. Such respect is also a major concern in cyberspace. Switzerland has an interest in ensuring that existing international law is applied and respected there. Specific norms and standards should be substantiated, their implementation ensured, and where appropriate, further developed. Switzerland therefore intends to manage the interfaces between its ADN policy and its digital foreign policy even more closely in the future.

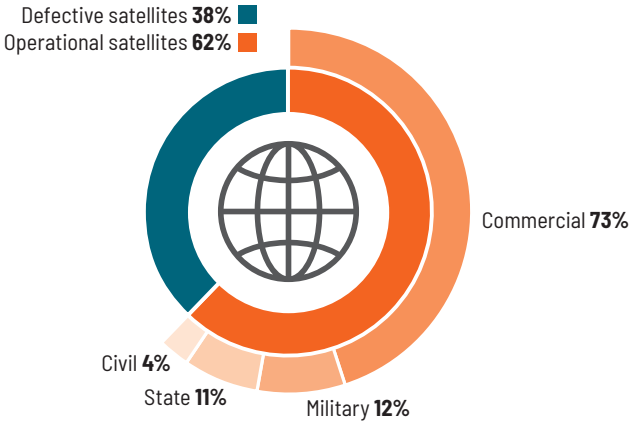
Outer space

In **outer space,** too, there is growing competition among the major powers, with repercussions for security. The US and Russia have long been the dominant actors in outer space, but China has now overtaken Russia and is the most active state actor, launching about one satellite per week. Other states have also become more active. Ever more intensive use is being made of outer space, including by private actors. This raises various questions concerning regulation and international coordination.

The first discussions about activities in outer space at the UN General Assembly go back to the launch of the first satellite, called Sputnik, by the Soviet Union in 1957. They confirmed the principle that outer space should only be used for peaceful purposes. The **UN Committee on the Peaceful Uses of Outer Space (COPUOS),** based in Vienna, was established shortly thereafter. This committee drew up the outer space treaties,[23] which recognise the application of international law in outer space. While COPUOS focused on developing further instruments for the peaceful, secure and long-term use of outer space, the prevention of an arms race in outer space has been addressed at the Geneva Conference on Disarmament since the 1980s. Progress there has been held back by various trends and circumstances.

23 See United Nations Office for Outer Space Affairs (UNOOSA), Space Law Treaties and Principles.

One of these trends is the growing **military importance of outer space** at strategic and tactical level. Ground-based military systems are increasingly dependent on space-based technologies. Communication, navigation, surveillance and early-warning systems – hardly any such applications could operate without satellite support. This growing military significance is being accompanied by ever greater civil and military use driven by the private sector. The blurring of the boundaries between state and private use is reflected in the development of dual systems, which allow the private use of data from military satellite systems, the military use of commercial satellite imagery or the placement of military instruments on commercial satellites .



Graphic 14: Types and number of satellites in low Earth orbit (sources: Union of Concerned Scientists; ESA; FDFA).

A second trend concerns the proliferation of capabilities that can be used to counter systems in outer space and some states' interest in stationing **weapons in outer space,** which could lead to a new arms race. Examples of such capabilities include kinetic and electromagnetic (laser, jamming and spoofing) weapons as well as cyber-assets. Some of these capabilities can inflict temporary damage, others permanent. Manoeuvrable objects in outer space can also be used as a means of destruction. Moreover, debris from destroyed satellites jeopardises functioning outer space systems. For all these reasons, transparency and communication as well as the development of norms for responsible behaviour and predictability are key aspects in ensuring stability and the sustainable use of outer space.

A third trend is states and military alliances increasingly viewing **outer space as an operational arena** in their military doctrines and establishing outer-space-specific command chains. The extent to which such announcements will actually be implemented remains unclear. However, if outer space were to become an arena for direct military conflict, this could have far-reaching consequences for civil infrastructure in outer space and, accordingly, for all humankind.

Conflict in outer space must be prevented. Any such conflict would have global humanitarian, societal and economic ramifications. The outer-space command and control systems of some countries do not just control conventional weapons but also nuclear ones. A threat in outer space could consequently be interpreted as a threat of nuclear deterrence with the corresponding potential for escalation. Switzerland intends to increasingly address the connections between nuclear and conventional aspects as part of nuclear risk reduction.

The dangers outlined are only covered by a few – aside from general provisions of international law – concrete norms that govern specific matters. Some rules were developed under COPUOS relating to the **peaceful use of outer space** – such as those concerning the security and long-term sustainability of outer space activities and the management of space debris. Little success has been achieved in terms of security policy despite repeated attempts. The Outer Space Treaty of 1967, which aims to ensure peaceful exploration of outer space, is a significant achievement. As a partial arms control instrument, it seeks to prohibit the placement of weapons of mass destruction in outer space and the use of the moon and other celestial bodies for military purposes or weapons testing. Most importantly, however, the treaty clarified the applicability of general international law at an early stage.

An agreement on a more specific development of outer-space norms governing military applications has not yet been reached. Rather, deadlock has emerged, preventing progress on both comprehensive agreements and partial regulations. There are nonetheless indications of a change in mindset. Fresh attempts will be made in the UN General Assembly to develop principles of responsible behaviour in outer space – an approach which has proven effective in cyberspace. As other examples have illustrated, partial steps, and not just legal but also political measures, can help overcome impasses. The Hague Code of Conduct against Ballistic Missile Proliferation (HCOC) is one example here. It provides for transparency measures in relation to missile launches.

Like all states, **Switzerland** is dependent on satellite-based technology. It is vulnerable to the destabilising effects outlined. It is also itself active in outer space and has a major research and industrial centre for outer-space projects. It has a strong interest in preventing an arms race between the powers in outer space and from turning into an arena for aggression or warfare. Switzerland therefore aims to contribute towards gradually improving security and stability in outer space and preventing attacks on systems in outer space and targets on Earth. It supports the elaboration and further development of rules of international law and of political instruments as well as the exploration of alternative forms of governance as part of multi-stakeholder approaches.

Goals and measures

I. Switzerland promotes international cooperation to **strengthen an open, secure and peaceful cyberspace.**

- I1. Advocating the comprehensive recognition, respect for and enforcement of international law, in particular international humanitarian law and human rights, in cyberspace. Specific norms and standards should be concretised, their implementation ensured and, where appropriate, further developed.
- I2. Promoting the implementation of existing voluntary norms for responsible state behaviour in cyberspace and, where appropriate, further developing them and providing impetus for additional bilateral, regional or international confidence-building measures.
- I3. Assessing arms control approaches to foster international cybersecurity and launching relevant proposals, including at the UN.

J. Switzerland is working to **strengthen and develop governance instruments concerning outer space.**

- J1. Contributing to the development of standards and norms for responsible and predictable behaviour and the safe and sustainable use of outer space, involving all relevant actors, to establish inclusive approaches for promoting security in outer space and stability in outer space.
- J2. Supporting work at the UN to prevent an arms race in outer space and to promote the integration of security and long-term considerations into the use of outer space.

5 Implementation partners

The strategy's implementation concerns all departments of the Federal Administration, with the particularly heavy involvement of the FDFA, the DDPS and the EAER. In addition, numerous organisational units of the departments are involved, depending on their area of expertise; for example, Spiez Laboratory, SECO, ENSI, the SFOE, the FOPH, and SERI.[24] Implementation is steered within the Federal Administration via various formal and informal coordination structures in the relevant sub-areas. Joint monitoring of all federal actors involved will also be carried out annually in future to assess the status of target attainment. The cantons may also be involved, for example where they have points of contact with this strategy as the location of arms companies.

In implementing the strategy, the Federal Council adopts a partnership-based approach that extends beyond the Federal Administration. Switzerland can only achieve most of the goals and measures outlined in this strategy by joining forces with other stakeholders. In its role as an innovative driving force and dependable bridge-builder, it uses an already close-knit network of partnerships with governments, organisations, companies, academia and civil society actors. It is endeavouring to expand this network, including in the context of its candidacy for the UN Security Council. In line with its Digital Foreign Policy Strategy 2021–2024, Switzerland wishes to broaden its partnerships in the field of new technologies. Partnership-based collaboration within the framework of this Arms Control and Disarmament Strategy 2022–2025 also benefits from interaction with Switzerland's other regional and thematic strategies.

Graphic 15: Implementation partners (source: FDFA).

International Geneva

In line with the Dispatch on Strengthening Switzerland's Role as a Host State 2020–23, the Federal Council places special emphasis on International Geneva. Firstly, the city has established its position as the leading global hub for disarmament. Surrounding the Conference on Disarmament, it hosts various institutions, instruments, processes, implementation mechanisms and actors, particularly in the field of conventional weapons. Secondly, Geneva has a unique density and diversity in terms of actors involved in humanitarian and social matters related to ADN. Geneva's advantages here are to be consistently exploited, especially for developing solution-oriented approaches covering multiple thematic areas.

With the Geneva Centres GCSP, DCAF and GICHD, Switzerland can rely on internationally recognised institutions in the field of peace and security. They are housed at the Maison de la paix together with other actors in their field. Switzerland draws on their expertise to anticipate trends, to develop new approaches, to disseminate good practice, and to develop capacities.

To strengthen the position of Geneva as a disarmament hub, Switzerland supports the instruments based there and their effective implementation in a targeted way. It also seeks to position Geneva as a centre for governance issues related to technological developments in arms control and disarmament. This also helps achieve the FPS 2020–23 goal of establishing Geneva as a hub for digitalisation and new technologies. Switzerland uses synergies at the interface between disarmament, digitalisation and science in its science diplomacy. One of the ways it does so is by relying on existing institutions such as the Geneva Science and Diplomacy Anticipator (GESDA).

24 See list of abbreviations.

International and regional organisations

In implementing this strategy, Switzerland draws on the expertise and resources of international organisations, such as the UN (in particular UNODA, the DPO and OCHA) and the ICRC. As part of its commitment to implementing the UN Secretary-General's disarmament agenda, Switzerland works very closely with the Geneva-based UN Institute for Disarmament Research (UNIDIR), which enjoys great reach and credibility thanks to its position in the UN system. In addition to financial support for these organisations, Switzerland also provides experts for peace missions, mine action activities and deploys experts to the headquarters of these organisations.

Regional organisations are key partners of Switzerland. At the OSCE, Switzerland supports implementing global norms at regional level and developing regional solutions. It contributes its experience in ADN matters and cybersecurity in various forums, such as the Forum for Security Cooperation (FSC) and supports the work of the OSCE by providing financial and human resources as part of its OSCE Action Plan 2022–2025. Through its participation in the NATO Partnership for Peace (PfP), Switzerland promotes dialogue in the Euro-Atlantic area, including on military developments and technologies, and supports projects on the ground. Switzerland also engages in regular exchange with the European Union (EU) on ADN and new technologies, such as those in cyberspace, and supports EUFOR Operation ALTHEA in Bosnia and Herzegovina with the management of arms and ammunition. As part of the Schengen Area, it is also participating in the amendments to the EU Weapons Directive.

States

Switzerland engages in dialogue with all states and fosters constructive relations, including with major and regional powers. It is holding bilateral discussions on disarmament with around 12 states, including those with different interests and positions.

Switzerland constantly relies on initiatives of like-minded states when progress in conjunction with all states is impeded. This enables it to advance its own priorities in tandem with other states. In this way, Switzerland put together a set of measures aimed at reducing the risks associated with nuclear weapons as part of the Stockholm Initiative for Nuclear Disarmament, which is comprised of 16 states. Another example is the initiative launched by the US to drive forward the verification of nuclear disarmament. Here, around 30 states are carrying out technical work on relevant concepts. In the context of its candidacy for the UN Security Council, Switzerland aims to strengthen its collaboration with permanent and non-permanent Council members and to advocate with like-minded states to have joint ADN-related concerns addressed.

Private sector, academia and NGOs

Cooperation between states as well as with international and regional organisations is not sufficient to tackle the wide-ranging challenges in arms control and disarmament. The private sector and academia – as well as NGOs – play key roles in promoting innovation, creating evidence-based and forward-looking processes and implementing instruments effectively. They are all part of the whole-of-Switzerland approach, which the Federal Council wishes to pursue in ADN as well.

Companies are increasingly becoming key actors in developing and establishing norms for technologies of major relevance to arms control and disarmament, such as security in outer space, artificial intelligence and bio-technologies. The governance issues raised by these themes require extensive and in-depth collaboration with the private sector. Switzerland is well positioned to intensify dialogue with these new actors, especially with companies headquartered in Switzerland.

The Swiss export control authorities cultivate intensive exchanges with the industry. They have been holding export control symposiums with industry representatives since 2014 to discuss international and national developments in export control, associated security, foreign and economic policy aspects and specific issues related to application. Dialogue with industry should be stepped up in particular where it can enhance mutual understanding of technical, political and legal developments in arms control.

Switzerland – with its world-renowned universities and think tanks – is at the cutting edge when it comes to research, innovation and new technologies. The Federal Institute of Technology Lausanne (EPFL) carries out research into innovative technological solutions for peacebuilding, sustainable development and humanitarian assistance, including in the field of mine action. EPFL and the Federal Institute of Technology Zurich (ETHZ) are also home to part of Switzerland's Cyber Defence Campus. In the field of armed violence, Switzerland – with the Small Arms Survey at the Graduate Institute of International and Development Studies (IHEID) in Geneva – has possessed globally recognised expertise on supporting fact-based policy-making and implementation for over 20 years. The Center for Security Studies (CSS) at ETH Zurich is also a significant partner focusing heavily on traditional areas of security and disarmament policy related to new technologies. Switzerland also cooperates with globally leading actors from academia abroad.

Switzerland aims to make more targeted use of expertise from research in its policy-making. Conversely, it is also seeking to raise researchers' awareness of security policy risks, for example in relation to the life sciences and artificial intelligence, with the aim of developing joint forward-looking approaches and specific measures for arms control and disarmament.

Closely collaborating with the cantonal authorities, the Federal Intelligence Service (FIS) raises awareness among Swiss and Liechtenstein companies, universities and research institutes of the threats posed by espionage and proliferation. In this context, the prevention and awareness-raising programme called "Prophylax" is aimed at strengthening the control of exports of critical and proliferation-relevant goods and technologies by identifying and preventing illegal procurement activities at an early stage.

Switzerland is collaborating with national, international and local NGOs on numerous issues and in various geographical contexts. NGOs address challenges in arms control and disarmament, propagate approaches to issues and demand public accountability. In doing so, they play a key role in shaping policy and evaluating the implementation of arms control and disarmament commitments by states. Switzerland will continue to cultivate open and substantial dialogue with NGOs in all ADN areas.

NGOs make major contributions to arms control and disarmament on the ground during and after armed conflicts. For example, they clear contaminated areas, assist victims of armed violence with reintegration into society and raise awareness amongst the population about the risks of conventional weapons. The selection of organisations plays a key part in ensuring the quality of services. Switzerland assesses the use of resources and target attainment appropriately using internal and external control mechanisms and by involving the local actors concerned. This evaluation is carried out on an ongoing basis.

Annex 1: List of abbreviations

ADN	Arms control, disarmament and non-proliferation
AG	Australia Group
AI	Artificial intelligence
APMBC	Convention on the Prohibition of the Use, Stockpiling, Production and Transfer of Anti-Personnel Mines and on Their Destruction
ATT	Arms Trade Treaty
BWC	Biological Weapons Convention (*Convention on the Prohibition of the Development, Production and Stockpiling of Bacteriological (Biological) and Toxin Weapons and on their Destruction)*
CCM	Convention on Cluster Munitions
CCW	Convention on Certain Conventional Weapons *(United Nations Conference on Prohibitions or Restrictions on the Use of Certain Conventional Weapons Which May be Deemed to be Excessively Injurious or to Have Indiscriminate Effects)*
CD	Conference on Disarmament
CFE	Treaty on Conventional Armed Forces in Europe
COPUOS	UN Committee on the Peaceful Uses of Outer Space
CSCE	Conference on Security and Co-operation in Europe
CTBT	Comprehensive Nuclear-Test-Ban Treaty
CTBTO	Comprehensive Nuclear-Test-Ban Treaty Organisation
CWC	Chemical Weapons Convention *(Convention on the Prohibition of the Development, Production, Stockpiling and Use of Chemical Weapons and on their Destruction)*
DCAF	Geneva Centre for Security Sector Governance
DDPS	Federal Department of Defence, Civil Protection and Sport
DPO	United Nations Department of Peace Operations
EAER	Federal Department of Economic Affairs, Education and Research
ENSI	Swiss Federal Nuclear Safety Inspectorate
EU	European Union
EUFOR	European Union Force
FDFA	Federal Department of Foreign Affairs
FIS	Federal Intelligence Service
FOPH	Federal Office of Public Health
FPS	Foreign Policy Strategy
FSC	OSCE Forum for Security Co-operation
GCSP	Geneva Centre for Security Policy
GESDA	Geneva Science and Diplomacy Anticipator
GICHD	Geneva International Centre for Humanitarian Demining
HCOC	Hague Code of Conduct against Ballistic Missile Proliferation
IAEA	International Atomic Energy Agency
IC	International cooperation
ICRC	International Committee of the Red Cross
ICT	Information and communication technologies
IHEID	The Graduate Institute of International and Development Studies
IHL	International humanitarian law
INF	Treaty between the United States of America and the Union of Soviet Socialist Republics on the Elimination of Their Intermediate-Range and Shorter-Range Missiles
IPNDV	International Partnership for Nuclear Disarmament Verification
ITI	International Instrument to Enable States to Identify and Trace, in a Timely and Reliable Manner, Illicit Small Arms and Light Weapons
MTCR	Missile Technology Control Regime
NATO	North Atlantic Treaty Organization
NPT	Treaty on the Non-Proliferation of Nuclear Weapons
NSG	Nuclear Suppliers Group
OCHA	United Nations Office for the Coordination of Humanitarian Affairs
OPCW	Organisation for the Prohibition of Chemical Weapons
OSCE	Organisation for Security and Co-operation in Europe
OST	Open Skies Treaty
PfP	Partnership for Peace
PSV	Post-shipment verification
SECO	State Secretariat for Economic Affairs
SERI	State Secretariat for Education, Research and Innovation
SFOE	Swiss Federal Office of Energy
START	Treaty between the United States of America and the Russian Federation on Measures for the Further Reduction and Limitation of Strategic Offensive Arms
TPNW	Treaty on the Prohibition of Nuclear Weapons
UN	United Nations

UN PoA	United Nations Programme of Action to Prevent, Combat and Eradicate the Illicit Trade in Small Arms and Light Weapons in All Its Aspects
UNIDIR	United Nations Institute for Disarmament Research
UNODA	United Nations Office for Disarmament Affairs
UNSGM	UN Secretary-General's Mechanism for Investigation of Alleged Use of Chemical and Biological Weapons
WA	Wassenaar Arrangement On Export Controls for Conventional Arms and Dual-Use Goods and Technologies
WD11	Vienna Document 2011
WPS	Women, Peace and Security

Annex 2: Glossary

2030 Agenda: The 2030 Agenda for Sustainable Development with its 17 goals forms a global frame of reference regarding the three inextricably-linked dimensions of the economy, the environment and society. Switzerland recognises the 2030 Agenda as an important orientation framework. Although it is not a legally binding, it provides a mechanism for setting domestic and foreign policy objectives and forming opinions. It also serves as a frame of reference for digital foreign policy.

AI system: AI systems are machine-based systems that can process problems clearly defined by humans by making predictions, recommendations, or decisions that affect real or virtual environments. AI systems can be designed to have varying degrees of autonomy.

Ammunition: In arms control policy, ammunition is defined as a device charged with explosives, propellants, pyrotechnics, initiating composition, or nuclear, biological or chemical material. A distinction is made between ammunition for weapons of mass destruction and ammunition for conventional weapons. Conventional ammunition includes ammunition for small arms and light weapons (see 'Small arms and light weapons'), ammunition for major weapon and equipment systems, rockets, landmines and other types of mines as well as other conventional ammunition.

Anti-missile defence: Anti-missile defence refers to military technology used to detect and protect against enemy missiles. Incoming missiles are usually detected using radar systems; defence instruments include interceptor missiles and lasers.

Arms control: In a broad sense, arms control refers to multilateral or bilateral instruments and efforts to counter the uncontrolled accumulation and proliferation of conventional weapons and weapons of mass destruction. The aim is to strengthen international stability and security through arms control, to prevent the escalation of conflict and to restrict humanitarian suffering in the event of war. Export controls are a component of non-proliferation efforts.

Artificial intelligence: Artificial intelligence (AI), now sometimes called 'machine intelligence', is defined as "building or programming a computer to do things that normally require human or biological abilities or skills ('intelligence')", for example visual perception (image recognition), speech recognition, written translation, audiovisual translation, and game-playing (with specific rules). AI refers to 'intelligent' machines that can perform tasks normally performed by humans. It refers to the process of creating 'learning machines', i.e. making machines 'intelligent'.

Autonomous weapons: Weapons systems which can potentially independently select and engage targets using artificial intelligence, algorithms and sensor inputs.

Ballistic missiles: Ballistic missiles are projectiles which take a ballistic trajectory during a short guided phase after launch and then fly into the target.

Biological weapon: Biological weapons spread pathogenic organisms or toxins to harm or kill people, animals or plants. They can be contagious. This means the impact of the deliberate release of biological weapons or toxins is not necessarily limited to the place of release but can instead spread. Such events can also result in food shortages, environmental catastrophes, devastating economic losses and fear and mistrust amongst the population. Together with nuclear and chemical weapons, biological weapons are categorised as weapons of mass destruction (see 'Weapons of mass destruction').

Biotechnology: Biotechnology is situated within the life sciences and covers a wide range of processes which change living organisms for human purposes that go back to the domestication of animals, the cultivation of plants and their breeding using artificial selection (see 'life sciences'). Modern usage also covers genetic engineering as well as cell and tissue culture technologies.

Blockchain: The term blockchain refers to decentralised collaborative data management. Multiple copies of the data are stored on the computers of a decentralised network. A transaction is carried out without a central authority managing the account. The transactions are grouped in blocks and stored unalterably.

Chemical weapon: A chemical weapon is any chemical that due to its toxic effects on life processes can bring about death, temporary incapacitation or permanent harm to humans or animals. The definition of chemical weapons also includes ammunition, devices and other items of equipment specially developed for use as a weapon with toxic chemicals. In addition to nuclear and biological weapons, chemical weapons are categorised as weapons of mass destruction (see 'Weapons of mass destruction').

Cluster munitions: Cluster munitions belong to the family of conventional weapons and are designed to disperse or release certain explosive sub-munitions. In this context, see also the Convention on Cluster Munitions.

Confidence-building measures: Measures taken in political, economic or social areas to increase transparency and confidence between parties in order prevent the outbreak or escalation of conflicts. These may include joint activities to address a certain problem, establishing reliable communication channels or the institutionalisation of contacts. In relation to military matters, the term 'confidence and security building measures' is used.

Confidence and security building measures in Europe: The term stems from the Helsinki Final Act, which sets out the "need to contribute to reducing the dangers of armed conflict and of misunderstanding or miscalculation of military activities." The key document covering this issue is the Vienna Document.

Conventional arms control in Europe: According to the 'Framework for Arms Control' set out in the Lisbon Document (adopted at the OSCE summit in December 1996), arms control, including disarmament and confidence and security-building, is integral to the OSCE's comprehensive and cooperative concept of security. The framework document sets out four key principles for future negotiations: sufficiency, transparency through information exchange, verification and limitations on forces. The following treaties are considered as the three pillars for conventional arms control in Europe: the Treaty on Conventional Armed Forces in Europe, the Treaty on Open Skies and the Vienna Document.

Conventional weapons: Conventional weapons are all weapons that are not weapons of mass destruction. Heavy conventional weapons include, for example, combat tanks, artillery systems, armoured combat vehicles, combat helicopters, fighter aircraft and warships. Small arms and light weapons also come under the conventional weapons category (see 'Small arms and light weapons'), as well as anti-vehicle and anti-personnel mines, cluster munitions, and other types of conventional munitions.

Critical infrastructure: Critical infrastructure refers to organisations or facilities of fundamental importance to the functioning of public bodies, the failure of or damage to which would result in long-lasting supply bottlenecks, significant disruption to public security or other dramatic consequences.

Cyberattack: Intentional unauthorised act committed by a person or group in cyberspace in order to compromise the integrity, confidentiality or availability of information and data; depending on the type of attack, this may also have physical effects.

Cybersecurity: Cybersecurity concerns all aspects of security in information and communications technology. This includes all information technology associated with the internet and comparable networks, and incorporates communication, applications, processes and information processed on this basis. International cooperation of state- and non-state actors in the area of cybersecurity aims to develop and protect an open, free and stable cyberspace. It can also reduce the risks of cyberattacks between states.

Cyberspace: Cyberspace refers to a virtual information space created by humans. It is used for digital data processing and networking and the logging and management of systems and processing. Cyberspace is part of the more broadly defined digital space (see 'Digital space').

De-alerting: This term means reducing the operational readiness of nuclear weapons. De-alerting is a key element in risk reduction and can contribute towards reducing the role and importance of nuclear weapons in military and security policy concepts, doctrines and strategies.

Deterrence: Mainly used in relation to nuclear weapons, the deterrence doctrine is a military strategy based on the balance of terror. Mutually assured destruction deters an adversary from launching an (initial) attack based on the threat of also being impacted on a critical scale as a consequence.

Digital space: This term refers to the entire physical and virtual space that is opened up or permeated by digitalisation (see 'Digitalisation'). The digital space refers not only to systems, but also to actors and processes.

Digitalisation: Digitalisation involves the integration of digital technologies in society, government and business. Digitalisation comprises a wide range of digital applications, such as new communication technologies, robotics, cloud computing, big data analytics, artificial intelligence, the internet of things and 3D printing. It also permeates other areas of our day-to-day lives, in some cases fundamentally altering them.

Disarmament: Disarmament refers to national and international efforts to reduce the quantity of arms or to limit their effects, in order to increase international stability and security. Switzerland is committed to an international ban and the elimination of all categories of weapons of mass destruction.

Disinformation: Disinformation is the targeted dissemination of false information with the aim of deceiving society, individual groups or individuals for political or economic purposes. Disinformation also refers to false information itself.

Drones (also pilotless aircraft): A drone is a pilotless aircraft which can be operated and navigated autonomously via remote control by a computer or from the ground without a crew on board.

Dual-use goods: Goods that can be used for both civil and military purposes, with goods encompassing physical goods, technologies and software. The export of dual-use goods is subject to authorisation to ensure that they will be used neither to make, develop, use, transfer, nor deploy weapons of mass destruction or their means of delivery nor for destabilising conventional armament.

Export control: Export control makes the transfer of certain goods subject to authorisation. The controlled categories of goods generally include armaments or dual-use goods which can be used for developing, manufacturing, using, transferring, or deploying weapons of mass destruction or can facilitate the manufacturing of conventional weapons.

Global governance: This term refers to the development of an institutional and regulatory system and of mechanisms for international cooperation to tackle global problems and cross-border matters. It involves the UN system, international organisations, state- and non-state actors and regional organisations. Switzerland traditionally plays a key role in this, and International Geneva is one of the key centres (see 'International Geneva').

Hypersonic weapon: A hypersonic weapon is a missile that travels at hypersonic speed for a long period of time (faster than Mach 5), using the Earth's atmosphere for propulsion. These weapons systems combine the benefits of intercontinental and cruise missiles. On the one hand, a hypersonic weapon is fast and has a large range which means any point on Earth can be reached in theory. On the other, hypersonic missiles can be flexibly controlled during flight.

International Geneva: Geneva is the heart of the multilateral system and the location of the UN's European headquarters. Thirty-eight international organisations, programmes and funds, as well as 179 states and 750 NGOs are represented there. International Geneva provides 45,000 jobs and contributes more than 11% to the GDP of the canton (1% of Swiss GDP). Around 3,300 international conferences are held in Geneva every year, the main themes of which are: 1) peace, security, disarmament; 2) humanitarian aid and international humanitarian law, human rights, migration; 3) labour, economy, trade, science, telecommunication; 4) health; 5) the environment and sustainable development.

International humanitarian law: International humanitarian law governs conduct in hostilities and protects the victims of armed conflicts. It applies in all international and non-international armed conflicts, regardless of the legitimacy or cause of the use of force.

International law: International law is the result of collaboration between states and regulates how they coexist. It underpins peace and security and aims to ensure the protection and well-being of persons. International law comprises different areas, such as the prohibition of the use of force, protection of individuals during wars and conflicts (see 'international humanitarian law'), prevention and prosecution of war crimes, crimes against humanity, genocide, transnational organised crime and terrorism. It also regulates other areas, such as the environment, trade, development, telecommunications and transport. On account of the sovereignty of states, international law only applies for each state insofar as it has agreed to adopt certain international obligations. This excludes mandatory international law, which comprises basic standards that no state may override, such as the prohibition of genocide.

Life sciences: All sciences focusing on living nature and the scientific exploration of life, e.g. biology, the neurosciences and medicine (see 'Biotechnology').

Mine Action: Mine action refers to all activities which aim to reduce the social, economic and environmental impact of mines and explosive remnants of war, including unexploded sub-munitions. It comprises five complementary groups of activities: mine risk education, humanitarian demining (including surveys, mapping, marking and clearance of contaminated areas), victim assistance (including medical care, rehabilitation and social and economic reintegration), stockpile destruction and advocacy for the ban of anti-personnel mines.

Mines: A mine is a munition designed to be placed under, on or near the ground or other surface and to be exploded by the presence, proximity or contact of a person or a vehicle.

Multilateralism: Multilateralism is when issues of public interest are discussed and negotiated between more than two states. International organisations and bodies such as the UN, the OSCE and the Council of Europe are platforms for such discussions. Multilateralism allows Switzerland to achieve leverage through alliances and thus increase its influence.

Multi-stakeholder approach: This refers to the idea that as many relevant stakeholders as possible should be involved in decisions and regulatory efforts.

Neutrality: Switzerland's rights and obligations as a neutral state are derived from international law (see 'International law'). The core of these obligations involves Switzerland not being allowed to offer military support in the event of an inter-state conflict. At the national level, neutrality is mentioned in the Federal Constitution as an instrument to safeguard Switzerland's independence. The neutrality policy ensures the effectiveness and credibility of Switzerland's engagement.

Non-proliferation: A key element of arms control is the non-proliferation of arms and dual-use goods. It includes international efforts to control the proliferation of certain weapons systems, components and technologies and to prevent the uncontrolled or undesired build-up of arms. A key instrument of non-proliferation is export control (see 'Export control').

Nuclear weapons: A nuclear weapon's impact is based on nuclear physical reactions – nuclear fission and/or fusion. Together with biological and chemical weapons, nuclear weapons are weapons of mass destruction (see 'Weapons of mass destruction'). When a nuclear weapon explodes, a huge amount of energy is released in the form of heat, blast waves and ionising radiation. Accordingly, their impact is massive and they have long-term consequences.

Peacebuilding: Civilian peacebuilding includes contributions to the prevention, mitigation and resolution of violent conflicts, in particular through confidence-building, mediation and the promotion of international humanitarian law and human rights (see 'International humanitarian law'). Post-conflict peacebuilding activities comprise a range of activities, including dealing with the past, contributions to promoting democratic processes and elections, and strengthening human rights. Peacebuilding creates and reinforces the framework conditions necessary for sustainable development. It comprises both civilian and military measures.

Risk reduction (nuclear weapons): Risk reduction in relation to nuclear weapons, sometimes also called 'strategic risk reduction', includes measures which contribute towards limiting the risk of the intentional or accidental use of nuclear weapons. Hotlines are a key element of risk reduction in relation to accidents, miscalculations, miscommunication or the outbreak of a nuclear war.

Rules-based international order: This term refers to rules that apply equally to all states and are the prerequisite for peaceful coexistence within the international community. In addition to norms of international law, this order includes non-legally-binding standards and rules of conduct. Switzerland is dependent on a rules-based order for its prosperity, security and independence. This also includes multilateral standards and rules necessary for effective results-oriented multilateralism (see also 'Multilateralism').

Science diplomacy: This term refers to, for example, the use of scientific collaboration between states to address common problems and to develop international partnerships. At the interface between science, technology and foreign policy, articulating issues and objectives from a scientific perspective can support confidence-building and stimulate both bilateral and multilateral discussions. Science diplomacy is also an important approach in digital foreign policy, especially at the multilateral level.

Small arms and light weapons: Man-portable weapons. Small arms are, broadly speaking, weapons designed for individual use. They include, inter alia, revolvers and assault rifles. Light weapons are, broadly speaking, weapons designed for use by several persons serving as a crew. They include, inter alia, heavy machine guns, portable anti-aircraft guns and mortars of a calibre of less than 100 millimetres.

Universalisation: Universal application or applicability of a certain norm.

Verification: Verification refers to an inspection process through which the actors participating in an international agreement can obtain a sufficient degree of certainty that and to what extent the contractually agreed norms and rules are being complied with by all participants. The verification can either be carried out by the contracting states themselves or by a supervisory organisation set up and tasked by them to perform this mandate.

Weapons of mass destruction: Weapons of mass destruction are chemical, biological or nuclear weapons. Switzerland is committed to banning and eliminating all categories of weapons of mass destruction.

Annex 3: Postulate 21.3012 – Clear Rules on Autonomous Weapons and Artificial Intelligence

1. Introduction

By adopting postulate 21.3012 of 25 January 2021, the National Council's Security Policy Committee tasked the Federal Council with assessing how an operational doctrine for future autonomous weapons systems and artificial intelligence in security infrastructure could be formulated, taking account of international ethical standards, and with identifying opportunities for Switzerland to promote relevant ethical standards internationally. In its opinion on the postulate of 24 February 2021, the Federal Council indicated that the use of artificial intelligence (AI) and autonomy in military applications presents many opportunities but also entails foreign and security policy, legal (international law) and ethical challenges. It agreed to fulfil the postulate as part of the Arms Control and Disarmament Strategy 2022–2025. The National Council adopted the postulate on 10 June 2021.

In fulfilment of postulate 21.3012, this annex to the Strategy supplements and deepens the statements on autonomous weapons (section 4.4). After definitions of the relevant terminology, explanations are provided in relation to the Swiss Armed Forces, whereby four guiding principles are defined. Finally, Switzerland's contributions to international discussions and proposals outlined in the strategy are specified.

2. Definitions

Switzerland does not intend to procure fully autonomous weapons systems. However, it does have an interest in exploiting the potential offered by advances in AI and greater autonomy of weapons systems for military defence capabilities. Harnessing the potential of technologies in a sustainable and responsible way calls for a differentiated approach, which in turn requires terminological and conceptual clarity:

An international definition of 'autonomous weapons systems' does not yet exist.[25] Switzerland is actively involved in the UN's work to conceptualise and define them. It considers it central not to stigmatize technologies, but to develop technology-neutral approaches. The focus is on how the technology is used.

By way of a national **working hypothesis,** which can still change during the course of the discussions, two types of 'autonomous weapons systems' can be defined in Switzerland's view.

Fully autonomous weapons systems can be characterised as weapons systems that operate autonomously using sensor input and algorithmic decision-making systems and which can select targets and use force against them after activation *without* direct human supervision or control. They are designed to operate or capable, by virtue of a basic configuration, of operating *outside* of a clear and effective system of human control on account of their basic configuration.

Partially autonomous weapons systems can be characterised as weapons systems which operate autonomously using sensor input and algorithmic decision-making systems and which can select targets and use force against them after activation *with* human supervision or control. They are designed and capable of operating *within* a defined framework with a sufficient degree and quality of human control.

25 The lack of a definition is partly explained by political reasons. It is also attributable to various interpretations of the term autonomy. Under the CCW, autonomy in weapons systems is generally understood to be the technological spectrum on which the role of humans changes qualitatively and quantitatively. An interpretation of autonomy in the sense of self-determination or independence blurs the nuances (see explanations on combining autonomy and control in section 4.b below).

Systems which only use autonomy for functions other than target identification and combat (e.g. for mobility) are deemed neither partly nor fully autonomous weapons systems.

Artificial intelligence (AI), now sometimes called 'machine intelligence', is defined as "building or programming a computer to do things that normally require human or biological abilities or skills ('intelligence')", for example visual perception (image recognition), speech recognition, written translation, audiovisual translation, and game-playing (with specific rules). AI refers to 'intelligent' machines that can perform tasks normally performed by humans. It refers to the process of creating 'learning machines', i.e. making machines 'intelligent'.

AI systems are machine-based systems that can process problems clearly defined by humans by making predictions, recommendations, or decisions that affect real or virtual environments. AI systems can be designed to have varying degrees of autonomy.[26]

3. Guiding principles of the Swiss Armed Forces

The debate over autonomous weapons systems and the integration of AI into defence applications creates expectations at military, legal and ethical levels. This presents major challenges for the Swiss Armed Forces.

- The Armed Forces are a modern institution at the cutting edge of technology. To fulfil its defence mission efficiently, it needs a framework that allows it to take advantage of the many opportunities presented by the integration of new technologies;

- The Armed Forces are committed to the rule of law and compliance with the law It must therefore be able to determine whether the systems integrating these technologies can be used and produce effects which comply with international humanitarian law (IHL) before they can be deployed;

- In addition to legal aspects, the values of an institution are also reflected by ethical aspects which act as a compass. The Armed Forces have a strong identity with its own code of ethics based on the values and ethics of society and it wishes to develop its positioning on the ethical dimension.

Taking account of the opportunities and challenges presented by the integration of AI and autonomy into its systems and platforms, the Armed Forces set out its own guiding principles which govern its actions in this area:

- **Legality.** The Armed Forces only deploy weapons systems which have proven their capacity for use in accordance with IHL and that produce effects in accordance with IHL. No technology may challenge the validity of IHL;

- **Responsibility.** The Armed Forces always integrate these systems into a command chain in which humans exercise control over the evaluation and the decisions relating to their use. The personnel have adequate training on the technology being used. Responsibility for the use of force can never, under any circumstances, be delegated to a machine;

- **Reliability.** The Armed Forces only use weapons systems whose effects and consequences can be reasonably foreseen. It adopts a neutral approach vis-à-vis technology and no technology jeopardises the principle of responsible use and a high level of reliability;

- **Agility**. The Armed Forces have an interest in following the development of technological innovation in relation to autonomy and in exchanging good practices with other armed forces and other relevant actors. By doing so it gains experience and optimises its processes to ensure they remain relevant in an environment of rapid change.

4. International positioning

a. Rejection of systems not in conformity with international law

In its national submissions as part of the CCW process, Switzerland has already adopted a position against **fully autonomous weapons systems** which are designed for or capable of operating *outside* of an effective system of human control.

In this regard, it affirmed in 2020 that autonomous weapons systems whose outcomes cannot be reasonably predicted, whose effects cannot be limited in accordance with IHL or otherwise cannot be used in accordance with IHL would be unlawful. Such systems would not pass the Swiss Armed Forces' legal review. Such far-reaching autonomy also hardly makes sense from a military point of view. The Swiss Armed Forces has no need for or interest in such systems. Switzerland has also underlined that such systems would hardly satisfy ethical considerations.

Based on this rejection, the Federal Council advocates in the multilateral framework the **prevention of fully autonomous weapons systems** which meet one of the following criteria:

26 For further explanations on artificial intelligence and Swiss policy in this area, see the Federal Council's report Artificial Intelligence and International Rules (2022, forthcoming) and the Digital Foreign Policy Strategy 2021–2024.

A. cannot **perform their functions with a sufficiently high degree of reliability or predictability** in line with the intent of a human operator or commander, or could **function outside of their defined parameters;**

B. whose **effects cannot be limited in accordance with the provisions of international humanitarian law,** for example because **the extent and timing of the use of force** cannot be sufficiently restricted;

C. which cannot otherwise be **used in accordance with international humanitarian law.**

The best approach and normative framework for effectively rejecting such systems internationally has yet to be determined. Various levels are available for international rules and standards. They are explained in the Digital Foreign Policy Strategy 2021–2024. In the Federal Council's view, a regulation concerning autonomous weapons should be introduced as part of the CCW, for example in the form of a new protocol. A broad-based approach should be adopted to ensure maximum impact.

b. Ensuring human control

The Federal Council has stated on several occasions that *partial autonomy* in weapons systems could provide military benefits under certain circumstances. However, autonomous capabilities must be used responsibly. Certain limits must be placed on such applications. At the CCW, Switzerland underlined that future autonomous weapons must operate in compliance with international law and *within* a framework that ensures a sufficient degree of and a type of human control that, in Switzerland's view, must cover the entire life cycle a weapon system. This is vitally important because when using autonomous weapons systems – as with any weapons system – humans must ensure legal conformity and, in particular, compliance with IHL under all circumstances.

The Federal Council wants to promote international dialogue on the appropriate combination of autonomy and control to ensure the responsible use of autonomy in weapons systems. On the one hand, the benefits of autonomous capabilities should be used. On the other, (human) control is required to master this autonomy. Here Switzerland, supports the view that control and autonomy should not be viewed as a zero-sum game but should instead mutually complement one another. A whole series of situationally dependent factors interact and influence this conjunction of human control and autonomy. These include:

- The **operational context,** in other words the context in which the weapon is deployed: If a system operates in an environment where a high presence of civilians or civilian objects can be expected to be present, a much more differentiated control is required than in a context where only military targets are to be expected.
- The **characteristics and capabilities of the weapons system** and the degree of autonomy in relevant functions: The degree of autonomy is related to the activity to be carried out and the context in which sufficient situational awareness is required to perform the mission in a lawful manner. The potential mobility of a system and the duration of operation are also relevant factors.
- The anticipated **targets:** Depending on how clearly legitimate military targets can be distinguished, differentiated control measures are warranted. For example, systems that engage targets that have a very high probability of being correctly identified as legitimate military targets (for example, battle tanks) will generally require less immediate control than systems whose targets' status is volatile and can change quickly (combatant who surrenders; the military significance of a bridge). In addition, ethical considerations on control would also be relevant if a system could designate and engage humans as a target or if collateral damage could occur. In addition, a clear limitation of potential targets by determining a clear target profile taking into account the operating environment, is likely to be appropriate.

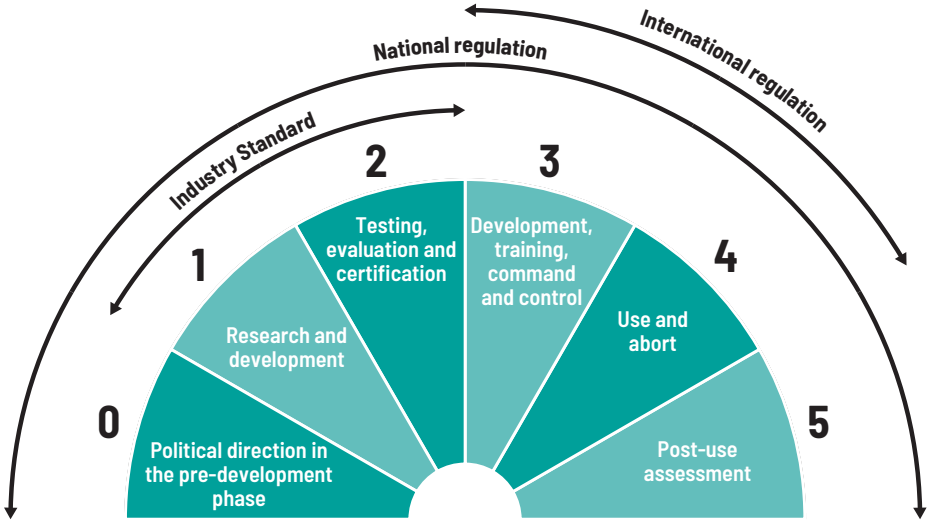
There is still need for international clarification of the considerations outlined here. This is why the Federal Council wishes to foster dialogue on the responsible use of autonomous weapons systems. The need for situational consideration of the appropriate combination of human control and autonomy can be illustrated with specific examples: Systems already exist today which possess a certain degree of autonomy but can essentially be deployed in accordance with international law and are not controversial. One example here are systems which can autonomously detect and engage incoming missiles, rockets, artillery fire or aircraft, at short distances, according to criteria determined by the human operator. Another example is sensor-fused ammunition for artillery systems where sensors scan the target area, locate targets and trigger the firing signal.

In addition to promoting such dialogue, the Federal Council also advocates international standards for the group of autonomous weapons which can be used responsibly, in other words which operate *within* a framework with a sufficient degree and nature of human control.

Such control is important to ensure legal compliance. However, in addition to legal requirements, such control may also be necessary or expedient for ethical considerations – or for purely operational, practical or military reasons. Even if a system can essentially be used in accordance with international law and within an effective system of **human control,** there may be other relevant considerations – such as military, security policy or ethical ones – speaking against the system's use.

Various approaches to control are conceivable – control of the environment, control of the weapons parameters or the design of human-machine interaction (see graphic 12). A differentiated approach is required to determine the type and extent of human control.

In addition, effective control must be possible at different levels (industry standards, national regulation, international regulation) and throughout a system's entire life cycle:



Graphic 16: Control at different levels during the entire life cycle of an autonomous weapons system (source: GGE LAWS).

This means specific touch points for control can be established **during the design, programming and development stages.** Examples include:

- Integration of fail-safe mechanisms which can be triggered when the system operates outside of the defined mission parameters or when a malfunction occurs.
- Integration of black-box systems to record information so that actions can be traced.
- Programming should ensure that algorithms cannot operate beyond defined parameters.
- Ethical aspects could also be taken into account as early as the development and procurement stages.

In addition, controls can also be carried out **as part of testing during the procurement stage as well as training.** Examples include:

- A central and integral element of human control are the legal weapons reviews which Switzerland carries out as a State party to Additional Protocol I to the Geneva Conventions (Art. 36 of AP I). These checks ensure that no weapons system intended for the Swiss Armed Forces can be developed or procured without (in Switzerland: explicit positive confirmation of) compliance with international law. In view of the complexity of autonomous weapons systems, great importance is attached to the performance of legal reviews to ensure compliance with international law. The authority responsible for the review of weapons takes account of the specific challenges arising from greater autonomy.
- Further technical tests and clarifications regarding risk assessment may also constitute integral elements of human control throughout the entire life cycle. The degree of autonomy is a key factor in determining safety precautions (technical and organisational safety precautions; qualification and validation procedures) with a view to ensuring a system's reliability. The following points are taken into account: 1) the applicable legal norms, 2) the nature of the tasks to be performed, 3) the complexity of the environment, 4) the complexity of the systems and 5) the cognitive abilities and workload of the human supervisor.
- The integration of the system into a military command structure for which humans are responsible is important in this respect. The relevant military units also require special training affording them an understanding of the challenges involved in the autonomous functions.

Beyond this, **human control is key when deciding on the deployment, its parameters and targets.** Of particular importance is the quality of the human-machine interaction. The interfaces must be designed in such a way that they can be used in a "meaningful" way – in the sense of using autonomy while ensuring the necessary level of control. Examples include:

- The deployment decision can only be carried out as a result of an assessment made by the human. The decision-maker – a human being – must be able to grasp and understand the operational context and determine the mission parameters accordingly.

- To maintain the ability to intervene in the operation of the system (e.g. deactivation or neutralisation) for as long as possible and appropriate, even after an attack has been initiated.

The best approach for an effective, broad-based international regulatory framework to ensuring human control remains to be clarified for this category of autonomous weapons. Switzerland therefore structures its proposals on ensuring human control in a way that is relevant to international work regardless of which form an instrument would ultimately take. Under the CCW, a legally binding new protocol would be an option but so too would the development of basic principles. These rules would be specified during technical follow-up work in both cases.

5. Conclusion

The technological and military developments described above are in a state of flux. Some of the related issues are relatively new. This means the national and international debates are also at an early stage. Certain technical, political and regulatory issues require further consideration. The broad lines of a Swiss policy outlined here are therefore not be viewed as conclusive.

The general thrusts and goals outlined in this Strategy – together with the notes in this annex – nevertheless provide a solid basis for Switzerland to actively participate in the development of clear rules.

Overview of relevant ADN agreements, organisations and instruments*

	NUCLEAR WEAPONS	CHEMICAL WEAPONS	BIOLOGICAL WEAPONS	
Treaties	**Treaty on the Non-Proliferation of Nuclear Weapons** www.un.org/disarmament/wmd/nuclear/npt/ **Comprehensive Nuclear-Test-Ban Treaty** www.ctbto.org/the-treaty/ **Int. Convention for the Suppression of Acts of Nuclear Terrorism** www-ns.iaea.org/security/ nuclear_terrorism_convention.asp **Convention on the Physical Protection of Nuclear Material** www-ns.iaea.org/security/cppnm.asp **Treaty on the Prohibition of Nuclear Weapons** https://www.un.org/disarmament/wmd/nuclear/tpnw/	**Convention on the Prohibition of the Development, Production, Stockpiling and Use of Chemical Weapons and on their Destruction** www.opcw.org/chemical-weapons-convention/	**Convention on the Prohibition of the Development, Production and Stockpiling of Bacteriological (Biological) and Toxin Weapons and on their Destruction** www.unog.ch/bwc	
		Protocol for the Prohibition of the Use of Asphyxiating, Poisonous or Other Gases, and of Bacteriological Methods of Warfare www.un.org/disarmament/wmd/bio/1925-geneva-protocol/		
Organisations Secretariats	**International Atomic Energy Agency** www.iaea.org/ **Comprehensive Nuclear-Test-Ban Treaty Organization** www.ctbto.org/	**Organization for the Prohibition of Chemical Weapons** www.opcw.org/	**BWC Implementation Support Unit** www.unog.ch/bwc	
Political initiatives and instruments	**International Partnership for Nuclear Disarmament Verification** www.state.gov/t/avc/ipndv/ **Stockholm Initiative for Nuclear Disarmament** https://www.government.se/government-policy/stockholm-initiative-for-nuclear-disarmament/ **Creating an Environment for Nuclear Disarmament**	**UN Secretary-General's Mechanism for Investigation of Alleged Use of Chemical and Biological Weapons** www.un.org/disarmament/wmd/secretary-general-mechanism/		
Export control Non-proliferation	**Nuclear Suppliers Group** www.nuclearsuppliersgroup.org/	**Australia Group** www.australiagroup.net/		
	UN Security Council Resolution 1540 www.un.org/en/sc/1540/			

* This overview is intended to give a schematic overview of the key instruments and makes no claims to completeness.

	DELIVERY SYSTEMS	CONVENTIONAL WEAPONS	IN EUROPE	
		Convention on Prohibitions or Restrictions on the Use of Certain Conventional Weapons which may be deemed to be Excessively Injurious or to have Indiscriminate Effects www.unog.ch/ccw **Arms Trade Treaty** http://thearmstradetreaty.org/ **Protocol against the Illicit Manufacturing of and Trafficking in Firearms, their Parts and Components and Ammunition** www.unodc.org/unodc/en/firearms-protocol/ **Convention on Cluster Munitions** www.clusterconvention.org/ **Convention on the Prohibition of the Use, Stockpiling, Production and Transfer of Anti-Personnel Mines and on Their Destruction** www.apminebanconvention.org/	**Treaty on Conventional Armed Forces in Europe** www.osce.org/library/14087 **Open-Skies Treaty** www.osce.org/library/14127	**Treaties**
		CCW Implementation Support Unit www.unog.ch/ccw **ATT Secretariat** http://thearmstradetreaty.org/ **CCM Implementation Support Unit** www.clusterconvention.org/isu/ **APMBC Implementation Support Unit** www.apminebanconvention.org/	**Organization for Security and Cooperation in Europe** www.osce.org/ **Forum for Security Co-operation** www.osce.org/forum-for-security-co-operation	**Organisations Secretariats**
	Hague Code of Conduct against Ballistic Missile Proliferation www.hcoc.at/	**UN Programme of Action to Prevent, Combat and Eradicate the Illicit Trade in Small Arms and Light Weapons in All Its Aspects** www.poa-iss.org/ **International Instrument to Enable States to Identify and Trace, in a Timely and Reliable Manner, Illicit Small Arms and Light Weapons** www.poa-iss.org/InternationalTracing/ InternationalTracing.aspx	**Vienna Document** www.osce.org/fsc/86597 **OSCE Document on Small Arms and Light Weapons** www.osce.org/fsc/20783 **OSCE Document on Stockpiles of Conventional Ammunition** www.osce.org/fsc/15792 **Group of like-minded States on the Future of Conventional Arms Control in Europe**	**Political initiatives and instruments**
	Missile Technology Control Regime http://mtcr.info/	**Wassenaar Arrangement On Export Controls for Conventional Arms and Dual-Use Goods and Technologies** www.wassenaar.org/		**Export control Non-proliferation**

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