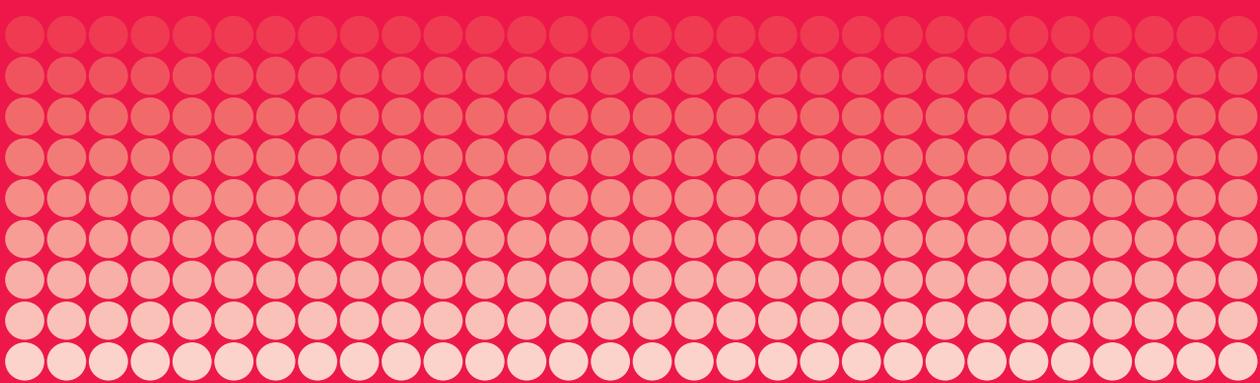


SIPRI YEARBOOK 2018

**Armaments,
Disarmament and
International
Security**

Summary



STOCKHOLM INTERNATIONAL PEACE RESEARCH INSTITUTE

SIPRI is an independent international institute dedicated to research into conflict, armaments, arms control and disarmament. Established in 1966, SIPRI provides data, analysis and recommendations, based on open sources, to policymakers, researchers, media and the interested public.

THE SIPRI YEARBOOK

SIPRI Yearbook 2018 presents a combination of original data in areas such as world military expenditure, international arms transfers, arms production, nuclear forces, armed conflicts and multilateral peace operations with state-of-the-art analysis of important aspects of arms control, peace and international security.

This booklet summarizes the contents of *SIPRI Yearbook 2018* and provides samples of the data and analysis that it contains.

CONTENTS

1. Introduction	1
Part I. Armed conflict and conflict management, 2017	
2. Armed conflicts and peace processes	2
3. Peace operations and conflict management	4
Part II. Military spending and armaments, 2017	
4. Military expenditure	6
5. International arms transfers and developments in arms production	8
6. World nuclear forces	10
Part III. Non-proliferation, arms control and disarmament, 2017	
7. Nuclear disarmament, arms control and non-proliferation	12
8. Chemical and biological security threats	14
9. Conventional arms control	15
10. Dual-use and arms trade controls	16
Annexes	18



1. INTRODUCTION.

INTERNATIONAL STABILITY AND HUMAN SECURITY IN 2017

DAN SMITH

Global security has deteriorated markedly in the past decade. The number, complexity and lethality of armed conflicts have increased, and there has been prolonged and shocking violence in large parts of the Middle East, Africa and South Asia. The world total of forcibly displaced people is over 65 million and has been climbing sharply in recent years. Further layers of complexity exacerbating human insecurity are the internationalization of what often start as purely internal conflicts, the nexus of criminal violence and the activities of a multitude of armed groups, and the impact of climate change.

International transfers of major weapons have increased and global military spending has stabilized at a high plateau. Although the number of deployed nuclear warheads has continued to decline, the measures that achieved these cuts are under threat: Russia and the United States have accused each other of infringing the 1987 Treaty on the Elimination of Intermediate-Range and Shorter-Range Missiles (INF Treaty); and, although it is being implemented, the 2010 Treaty on Measures for the Further Reduction and Limitation of Strategic Offensive Arms (New START) expires in February 2021 and there are no current talks on extending or replacing it.

The global nuclear non-proliferation picture is mixed. North Korea has joined the ranks of nuclear weapon-possessing states, despite major international efforts to prevent it, while the Joint Comprehensive

Plan of Action (JCPOA) agreed with Iran has thus far been regarded as a success. The adoption of the Treaty on the Prohibition of Nuclear Weapons (TPNW) in July 2017 generated considerable opposition from the nuclear weapon states and their allies, while for supporters it offers a potentially decisive opportunity to restart progress towards complete nuclear disarmament. However, long-standing and deep philosophical differences remain regarding the relationship between nuclear weapons and international security.

International tensions and shifting dynamics of power were also to the fore in 2017. The ailing relationship between Russia and the USA—fuelled by, among other things, Russia’s annexation of Crimea and engagement in the conflict in eastern Ukraine, as well as allegations of Russian interference in Western domestic politics—ended any likelihood in the medium term of Russian integration with the West. Other significant areas of international tension included the South China Sea, the East China Sea, China–India tensions, reignition of the India–Pakistan conflict over Kashmir, the regional rivalry between Iran and Saudi Arabia, and intra-North Atlantic Treaty Organization (NATO) tensions with Turkey.

Beyond tensions between dyads of rivals or within specific geographic zones, there is a bigger picture of shifting geopolitical and geostrategic relationships and power dynamics. Neither the bipolar global model of the cold war era nor the unipolar model following its end is useful for explaining what is happening now. While it is clear that change is under way, it is not clear what the outcome will be. ●



2. ARMED CONFLICTS AND PEACE PROCESSES

In contrast to historical patterns, contemporary armed conflicts tend to be concentrated in urban areas and affect more civilians in terms of casualties than the military. In the first 11 months of 2017 at least 15 399 civilians were killed by explosive weapons, the vast majority in cities, which is an increase of 42 per cent compared with 2016. The number of forcibly displaced people worldwide at the end of 2016 was 65.6 million, and it seems likely that these record numbers continued into 2017, especially in light of a new displacement crisis in Myanmar and protracted displacement crises in many other places, including Afghanistan, Central America, the Democratic Republic of the Congo (DRC), Somalia, South Sudan, Syria and Yemen. Armed conflicts also contributed to increased food insecurity in 2017, with seven countries recording crisis or emergency levels of food insecurity in at least a quarter of their people: Afghanistan, the Central African Republic (CAR), Lebanon, Somalia, South Sudan, Syria and Yemen.

The Americas

In the Americas, there were positive signs that the ongoing peace process in Colombia might soon bring the only active armed conflict in the western hemisphere to a close. However, in several countries in Central and South America (including El Salvador, Mexico and Paraguay) the levels of political and criminal violence remained high. Cities in the Americas are some of the world's most dangerous, and there is an escalating crisis of forced displacement especially from northern Central America.

Asia and Oceania

Five countries in Asia and Oceania were involved in active armed conflicts in 2017: Afghanistan, India, Myanmar, Pakistan and the Philippines. In Myanmar, the forced displacement of the Rohingya caused spillover effects in Bangladesh, while in other places such as the Philippines, state security forces committed widespread violence with impunity. In Afghanistan and the Philippines, the Islamic State (IS) is a growing threat, while other parts of Asia and Oceania continued to be affected by instability from a variety of causes. Most notably, tensions are rising in North East Asia, which is one of the world's most militarized regions, chiefly due to the nuclear weapon and ballistic missile programmes of North Korea. On a more positive note, ongoing peace processes in Nepal and Sri Lanka contributed to growing stability in those two countries.

Europe

Two armed conflicts were active in Europe in 2017: in Nagorno-Karabakh (involving Armenia and Azerbaijan) and in Ukraine. Some unresolved conflicts, although inactive, seemed as intractable as ever: Cyprus, Georgia (Abkhazia and South Ossetia), Moldova (Trans-Dniester) and Kosovo. In the background, tensions remained heightened between Russia and members of the North Atlantic Treaty Organization (NATO) and the West in general, and there were allegations of Russian interference in Western domestic politics. European states also continued to prioritize combating terrorism.



The Middle East and North Africa

There were seven active armed conflicts in the Middle East and North Africa in 2017: in Egypt, Iraq, Israel and Palestine, Libya, Syria, Turkey and Yemen. Many of these conflicts are interconnected and involve regional and international powers as well as numerous substate actors. Key regional developments included the continuing fallout from the Arab Spring, the regional rivalry between Iran and Saudi Arabia, and the territorial losses of IS.

Egypt is facing its worst human rights situation in decades and open civil war in the Sinai. Iraq has the daunting task of reconstruction in the areas once held by IS—especially in Mosul, which suffered widespread destruction—and achieving genuine political reconciliation between and within the Shia, Kurdish and Sunni communities. The complex war in Syria involving regional and international powers has led to the displacement of half the population—over 5.4 million refugees and over 6.1 million internally displaced persons—and 6.5 million people with acute food insecurity and a further 4 million at risk of the same. Neither the United Nations-mediated peace talks nor the parallel Astana negotiations made much progress. In Yemen, the Saudi Arabian-led coalition maintained its partial blockade of

Houthi-controlled territories with devastating humanitarian consequences: at least 17 million people, or 60 per cent of the population, faced acute food insecurity.

Sub-Saharan Africa

There were seven active armed conflicts in sub-Saharan Africa in 2017: in Mali, Nigeria, the CAR, the DRC, Ethiopia, Somalia and South Sudan. A number of other countries experienced post-war conflict and tension or were flashpoints for potential armed conflict, including Burundi, Cameroon, Gambia, Kenya, Lesotho, Sudan and Zimbabwe. Two broad developments can be identified in sub-Saharan Africa. First, many conflicts overlap across states and regions as a result of transnational activities of violent Islamist groups, other armed groups and criminal networks. In many countries, and especially those in the Sahel and Lake Chad regions, these overlapping conflicts are linked to extreme poverty, instability, economic fragility and low resilience—situations that are further exacerbated by climate change, corruption, inadequate economic policies and mismanagement. Second, there appears to be a growing internationalization of counterterrorism activities in Africa, led primarily by two external state actors: France and the United States. ●



3. PEACE OPERATIONS AND CONFLICT MANAGEMENT

In contrast to 2016, 2017 was a hectic year for peace operations, both in the field and at headquarters, particularly for the United Nations. The fall in the total number of personnel deployed in peace operations, which began in 2012 with the drawdown of the International Security Assistance Force (ISAF), continued in 2017. The total number of personnel deployed in the field declined by 4.5 per cent during 2017 to 145 911. Although UN deployments had been on the rise before 2016, they fell in 2017, by 7.6 per cent, whereas the number of personnel in non-UN operations increased by 2.3 per cent to 47 557.

Trends and developments in peace operations in 2017

There were 63 multilateral peace operations active during 2017, one more than in 2016. Three UN peace operations closed: the UN Operation in Côte d'Ivoire (UNOCI), the UN Mission in Colombia (UNMC) and the UN Stabilization Mission in Haiti (MINUSTAH). The latter two were replaced by smaller missions: the UN Verification Mission in Colombia (UNVMC) and the UN Mission for Justice Support in Haiti (MINUJUSTH). Only one non-UN mission closed during the year—the Regional Assistance Mission to the Solomon Islands (RAMSI)—while three new non-UN operations were established: the Economic Community of West African States (ECOWAS) Mission in the Gambia (ECOMIG); the European Union (EU) Advisory Mission in support of Security Sector Reform in Iraq (EUAM Iraq); and the Southern African Development Community (SADC) Preventive Mission in the Kingdom of Lesotho (SAPMIL).

Although the UN clearly remains the principal actor in peace operations, the two non-UN operations deployed by African regional economic communities show how African actors are claiming an increasing role on the peace operations stage. This is also reflected in the establishment of the Group of Five for the Sahel (G5 Sahel) Joint Force (Force Conjointe des Etats du G5 Sahel, FC-G5S), a multilateral non-peace operation that falls into the grey zone outside the SIPRI definition of a multilateral peace operation.

Tensions with host states

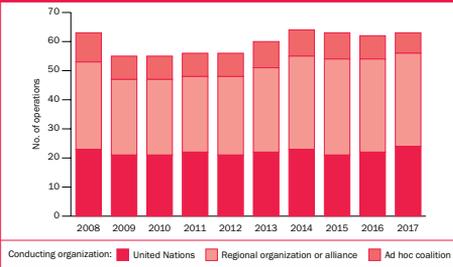
Under the sustaining peace agenda, UN peace operations are giving increased attention to political processes, peacebuilding and conflict prevention. In so doing, they increasingly encounter tensions over national sovereignty and operate on the boundary of host-state consent. This is already evident in Burundi, the Democratic Republic of the Congo and South Sudan, where host governments see UN efforts as an infringement of their sovereignty and respond by obstructing deployment. Outside the UN system, much more has been possible. Host governments have tended to favour predominantly military solutions in support of their authority, such as the FC-G5S and the Multinational Joint Task Force (MNJTF) against Boko Haram. In the cases of Gambia and Lesotho, regional organizations were able to intervene in small countries, even though the amount of host government support was debatable in the former.

Peacekeeper fatalities

In previous years, peacekeeper fatalities linked to hostile acts had primarily been a



NO. OF MULTILATERAL PEACE OPERATIONS, BY TYPE OF CONDUCTING ORGANIZATION, 2008-17



challenge for the UN Multidimensional Integrated Stabilization Mission in Mali (MINUSMA). In 2017, however, the UN Multidimensional Integrated Stabilization Mission in the Central African Republic (MINUSCA) and the UN Stabilization Mission in the Democratic Republic of the Congo (MONUSCO) also faced substantial losses. A particular low point was the attack on a MONUSCO Company Operating Base at Semuliki, North Kivu, on 7 December, in which 15 Tanzanian peacekeepers were killed and at least 53 injured.

Overall, the UN witnessed a dramatic escalation in fatalities linked to hostile acts—in both absolute terms (from 34 in 2016 to 61 in 2017) and as a ratio of the number of personnel deployed (from 0.31 to 0.61 per 1000). An independent review into the security of peacekeepers, led by Lieutenant General Carlos Alberto dos Santos Cruz, left one main question unanswered: How would the UN generate the agile and mobile forces needed for the more robust and proactive force posture required to deal with these more challenging mission environments?

United Nations peacekeeping reform and the budget

Peacekeeping reform, including implementation of the report by the UN High-level Independent Panel on Peace Operations, continued to be discussed in the General Assembly and the Security Council. At times, this discussion was overshadowed by two other developments: the greater insecurity of personnel deployed in UN peace operations, and the efforts by the administration of United States President Donald J. Trump to drastically reduce the UN peacekeeping budget.

In 2017, UN peace operations, like African peace operations, could no longer be certain of ‘predictable and sustainable funding’. The budget cuts sought by the Trump administration, in particular, meant that the UN had to rethink its strategy in many operations. A number of finance-contributing countries hoped that these budget cuts might be used pragmatically to strengthen peacekeeping reform. However, the effects of ‘salami-slicing tactics’ on some operations, such as MONUSCO, and of more substantial drawdowns in other operations, such as the African Union/UN Hybrid Operation in Darfur (UNAMID), might put peacekeepers more at risk and leave populations more vulnerable. If so, it raises the question: Is it realistic to expect the UN to continue to do more with less, and is it worth taking the risk? ●



4. MILITARY EXPENDITURE

World military expenditure is estimated to have reached \$1739 billion in 2017, the highest level since the end of the cold war, equivalent to 2.2 per cent of global gross domestic product (GDP) or \$230 per person. Total global expenditure in 2017 was marginally higher compared with 2016, up by 1.1 per cent in real terms.

Military spending in North America fell for the seventh consecutive year, down by 0.2 per cent compared with 2016. By contrast, military expenditure in East Asia continued to rise, for the 23rd year in succession, and was up by 4.1 per cent compared with 2016. In Western Europe, spending increased for the third consecutive year, up by 1.7 per cent from 2016. There were mixed spending trends in the rest of the world: military spending decreased in Africa, Central America and the Caribbean, and Eastern Europe, while spending increased in Central Europe, the Middle East (based on the countries for which data is available) and South America.

At \$610 billion, the United States remained the world's largest spender, accounting for 3.1 per cent of its GDP, unchanged from the level in 2016. While US military expenditure in 2017 was 22 per cent below the peak reached in 2010, the trend of falling US spending has tapered off. In late 2017 the US Senate approved a new military budget for 2018 of \$700 billion, a substantial increase over the 2017 budget.

China, the world's second largest spender, allocated an estimated \$228 billion to its military in 2017, an increase of 5.6 per cent compared with 2016—the lowest increase since 2010 but remaining in line with GDP growth plus inflation. Saudi Arabia became the third largest spender in 2017 following a 9.2 per cent increase in

WORLD MILITARY SPENDING, 2017

Region	Spending (US\$ b.)	Change (%)
Africa	(42.6)	-0.5
North Africa	(21.1)	-1.9
Sub-Saharan Africa	21.6	0.9
Americas	695	0.0
Central America and Caribbean	7.6	-6.6
North America	630	-0.2
South America	57.0	4.1
Asia and Oceania	477	3.6
Central and South Asia	82.7	3.0
East Asia	323	4.1
Oceania	29.9	-0.6
South East Asia	41.1	0.1
Europe	342	-2.2
Central Europe	24.1	12
Eastern Europe	72.9	-18
Western Europe	245	1.7
Middle East
World total	1 739	1.1

() = uncertain estimate; .. = data unavailable. Spending figures are in current (2016) US\$. All changes are in real terms for the period 2016–17.

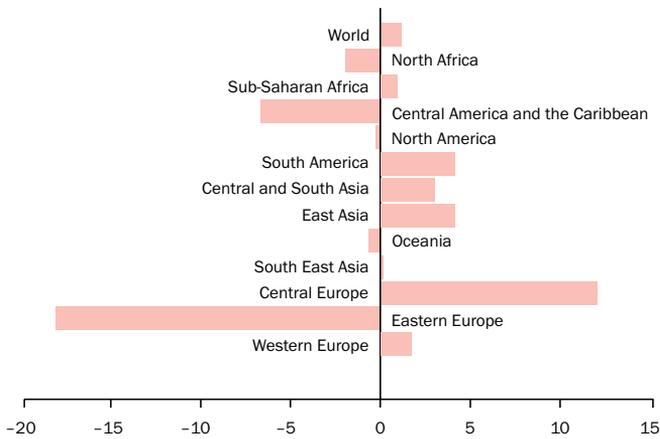
military expenditure to \$69.4 billion. By contrast, Russia's military spending fell by 20 per cent to \$66.3 billion, making it the fourth largest spender in 2017. India, where spending rose by 5.5 per cent in 2017 to \$63.9 billion, was the fifth largest spender.

Debt, oil price and military expenditure

For countries whose economies are dependent on the export of oil, the size of government oil revenues plays an important role in decisions on spending. The fall in the price of oil in 2014 (and low prices since then) has severely reduced oil revenues in these countries, leading to a need for alternative sources of finance (e.g. borrowing or debt) to fund spending, including military expenditure. An



PERCENTAGE CHANGES IN MILITARY EXPENDITURE, BY REGION, 2016–17



assessment of the trend in the price of oil compared with the trend in military spending and debt as a share of GDP for 15 oil export-dependent countries—Algeria, Angola, Azerbaijan, Ecuador, Iran, Iraq, Kazakhstan, Kuwait, Mexico, Nigeria, Norway, Russia, Saudi Arabia, South Sudan and Venezuela—showed that when oil revenue fell, alternative forms of finance were required and found. For these 15 countries, military expenditure between 2014 and 2017 decreased by an average of 16 per cent, but the price of oil dropped by over 45 per cent and the average increase in total debt as a share of GDP was around 154 per cent. The differences between revenue and expenditure in these countries have mostly been funded through debt.

Transparency in military expenditure

SIPRI made major steps in 2017 to improve transparency in military expenditure by mapping off-budget funding in Peru and Venezuela. Off-budget spending, which is not part of the state budget and is often non-transparent, is usually earned from natural resource exports. It may be used

without the knowledge of the parliament or the finance ministry to pay for arms purchases and other activities. Off-budget funds offer lucrative opportunities for self-enrichment to public officials and businesses involved in the decision-making processes. In the cases of Venezuela and Peru, such funding amounted to billions of dollars of spending, often without accountability or oversight.

Military expenditure transparency at the international level remains a concern, specifically in the context of the United Nations Report on Military Expenditures. By 31 July 2017, at least 42 states had submitted a report to the UN on their military spending in 2016. No submission had been received from any state in Africa or the Middle East or from four of the five largest military spenders in the world: the USA, China, Saudi Arabia and India. Continued low participation in, and the lack of comprehensiveness of, the UN reporting mechanism puts into question its future viability. ●



5. INTERNATIONAL ARMS TRANSFERS AND DEVELOPMENTS IN ARMS PRODUCTION

The volume of international transfers of major weapons rose by 10 per cent between 2008–12 and 2013–17, to reach its highest level since the end of the cold war. The increase marks a continuation of the steady upward trend that began in the early 2000s.

The five largest arms suppliers in 2013–17 were the United States, Russia, France, Germany and China, and they accounted for 74 per cent of the total global volume of exports of major weapons. Since 1950 the USA and Russia (or the Soviet Union before 1992) have consistently been by far the largest suppliers and, together with West European suppliers, have historically dominated the top 10 list of suppliers.

The top five arms importers were India, Saudi Arabia, Egypt, the United Arab Emirates and China, which together accounted for 35 per cent of total arms imports. Asia and Oceania was the main recipient region, accounting for 42 per cent of the total global volume of imports of major weapons in 2013–17, followed by the Middle East, which accounted for 32 per cent. The flow of arms to the Middle East

THE MAIN EXPORTERS AND IMPORTERS OF MAJOR WEAPONS, 2013–17

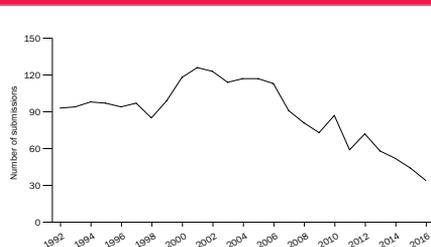
Exporter	Global share (%)	Importer	Global share (%)
1 USA	34	1 India	12
2 Russia	22	2 Saudi Arabia	10
3 France	6.7	3 Egypt	4.5
4 Germany	5.8	4 UAE	4.4
5 China	5.7	5 China	4.0
6 UK	4.8	6 Australia	3.8
7 Spain	2.9	7 Algeria	3.7
8 Israel	2.9	8 Iraq	3.4
9 Italy	2.5	9 Pakistan	2.8
10 Netherlands	2.1	10 Indonesia	2.8

grew by 103 per cent between 2008–12 and 2013–17. The flow of arms to Asia and Oceania also rose, by 1.8 per cent. By contrast, the flow of arms to Europe decreased notably, by 22 per cent, as did those to the Americas, by 29 per cent, and Africa, by 22 per cent.

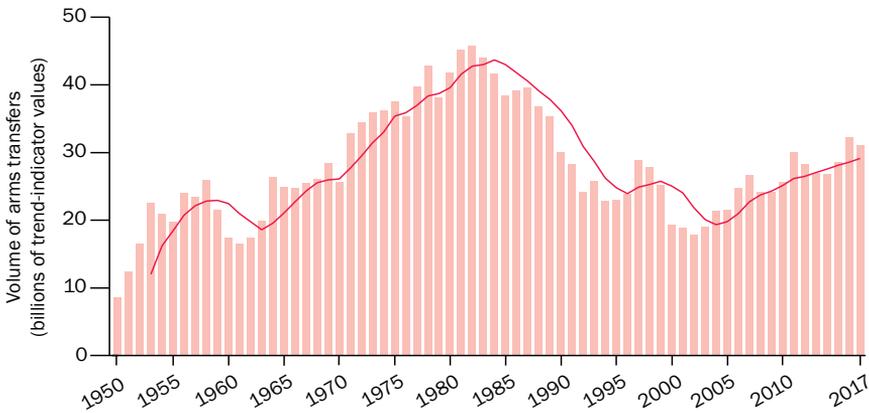
Transparency in arms transfers

As has been the case for the past few years, there were few positive developments in official public transparency in arms transfers in 2017. The number of states reporting their arms exports and imports to the United Nations Register of Conventional Arms (UNROCA) dropped to an all-time low and no major changes occurred with respect to the various national and regional reporting mechanisms. However, most of the growing number of states that have ratified the 2013 Arms Trade Treaty have fulfilled their obligation of reporting arms exports and imports.

NO. OF SUBMISSIONS TO THE UNITED NATIONS REGISTER OF CONVENTIONAL ARMS, 1992–2016



THE TREND IN TRANSFERS OF MAJOR WEAPONS, 1950–2017



The financial value of states' arms exports, 2016*

While SIPRI data on arms transfers does not represent their financial value, many arms-exporting countries publish figures on the financial value of their arms exports. Based on such data, SIPRI estimates the total value of the global arms trade in 2016 to have been at least \$88.4 billion.

Arms production and military services

The SIPRI Top 100 arms-producing and military services companies ranks the largest companies in the arms industry (outside China) by their sales, both domestic and for export. The total sales of the SIPRI Top 100 for 2016* totalled almost \$375 billion, a 1.9 per cent increase compared with 2015. This was the first year of increase since the peak of 2010. The rise is mainly attributable to the overall increase in the arms sales of US-based companies, which dominate the Top 100. Taken together, the arms sales of West European arms producers were stable in

2016. The combined arms sales of Russian companies continued to grow in 2016, while there were mixed trends in arms sales for the arms producers in countries with emerging arms industries and other countries with established arms industries. Major drivers for the growth in arms sales of the Top 100 include international tensions and armed conflict on the demand side and the implementation of military industrialization strategies at the national level on the supply side. Other key causes of changes can be company mergers, acquisitions and divestments.

*The latest year for which data is available. ●



6. WORLD NUCLEAR FORCES

At the start of 2018 nine states—the United States, Russia, the United Kingdom, France, China, India, Pakistan, Israel and the Democratic People’s Republic of Korea (DPRK, or North Korea)—possessed approximately 14 465 nuclear weapons, of which 3750 were deployed with operational forces. Nearly 2000 of these are kept in a state of high operational alert.

Nuclear arsenals

Overall, inventories of nuclear warheads continue to decline. This is mainly due to the USA and Russia, which collectively account for approximately 92 per cent of global nuclear weapons, reducing their strategic nuclear forces in line with the 2010 Treaty on Measures for the Further Reduction and Limitation of Strategic Offensive Arms (New START). Despite making reductions in their arsenals, both the USA and Russia have extensive and expensive programmes under way to replace and modernize their nuclear warheads, missile and aircraft delivery systems, and nuclear weapon production facilities.

The nuclear arsenals of the other nuclear-armed states are considerably smaller, but all are either developing or deploying new weapon systems or have announced their intention to do so. China, India, North Korea and Pakistan are thought to be expanding the size of their nuclear arsenals.

North Korea conducts sixth nuclear test explosion

North Korea continues to prioritize its military nuclear programme as a central element of its national security strategy, and conducted its sixth test explosion in

2017. The test took the total number of nuclear explosions recorded worldwide since 1945 to 2058.

Inadequate transparency

The availability of reliable information on the status of the nuclear arsenals and capabilities of the nuclear-armed states varies considerably. The USA has disclosed important information about its stockpile and nuclear capabilities, and the UK and France have also declared some information. Russia refuses to disclose the detailed breakdown of its forces counted under New START even though it shares the information with the USA, and the US Government has stopped releasing detailed information about Russian and Chinese nuclear forces. The governments of India and Pakistan make statements about some of their missile tests but provide no information about the status or size of their arsenals. Israel has a policy of not commenting on its nuclear arsenal and North Korea provides no information about its nuclear capabilities. ●



WORLD NUCLEAR FORCES, 2017

Country	Deployed warheads	Other warheads	Total inventory
USA	1 750	4 700	6 450
Russia	1 600	5 250	6 850
UK	120	95	215
France	280	20	300
China	–	280	280
India	–	130–140	130–140
Pakistan	–	140–150	140–150
Israel	–	80	80
North Korea	–	(10–20)	(10–20)
Total	3 750	10 715	14 465

– = zero; () = uncertain figure not included in the total. ‘Other warheads’ includes operational warheads held in storage and retired warheads awaiting dismantlement. The figures for Russia and the USA do not necessarily correspond to those in their 2010 Treaty on Measures for the Further Reduction and Limitation of Strategic Offensive Arms (New START) declarations because of the treaty’s counting rules. Total figures include the highest estimate when a range is given. All estimates are approximate and as of Jan. 2018.

GLOBAL STOCKS OF FISSILE MATERIALS, 2017

The raw material for nuclear weapons is fissile material, either highly enriched uranium (HEU) or separated plutonium. China, France, Russia, the UK and the USA have produced both HEU and plutonium for use in their nuclear weapons; India and Israel have produced mainly plutonium; and Pakistan has produced mainly HEU, but it is expanding its ability to produce plutonium. North Korea has produced plutonium for use in nuclear weapons but may have produced HEU as well. All states with a civilian nuclear industry are capable of producing fissile materials.

The International Panel on Fissile Materials compiles information on global stocks of fissile materials.

Global stocks, 2017	
Highly enriched uranium	~1 340 tonnes
Separated plutonium	
Military stocks	~230 tonnes
Civilian stocks	~290 tonnes



7. NUCLEAR DISARMAMENT, ARMS CONTROL AND NON-PROLIFERATION

There was important new momentum behind global efforts to promote nuclear disarmament and non-proliferation in 2017.

Treaty on the Prohibition of Nuclear Weapons

The year was marked by the negotiation and opening for signature of the Treaty on the Prohibition of Nuclear Weapons (TPNW). The treaty is the first legally binding international agreement to comprehensively prohibit nuclear weapons, with the ultimate goal of their total elimination. The opening of negotiations on the treaty had been mandated by a United Nations General Assembly resolution at the end of 2016, which had in turn been motivated by the growing international awareness of the devastating humanitarian consequences of any use of nuclear weapons. These steps reflected the frustration of many non-nuclear weapon states that the nuclear weapon states were not taking seriously their obligation under the 1968 Treaty on the Non-Proliferation of Nuclear Weapons (Non-Proliferation Treaty, NPT) to pursue nuclear disarmament. While proponents of the TPNW acknowledged that it would have no immediate impact on existing nuclear arsenals, they highlighted its long-term normative impact—it would serve to delegitimize and stigmatize nuclear weapons and thereby contribute to achieving the ultimate goal of nuclear disarmament. At the same time, there was a recognition during 2017 that the relationship between the TPNW, the NPT and related agreements would have to be

IRAN AND THE JOINT COMPREHENSIVE PLAN OF ACTION

Iran continued to implement the Joint Comprehensive Plan of Action (JCPOA) to limit its nuclear programme in 2017. The JCPOA was agreed in July 2015 between Iran and the E3/EU+3, which refers to three member states of the European Union (EU)—France, Germany and the United Kingdom, known as the E3—as well as China, Russia and the USA. During the year, however, political tensions between Iran and the USA threatened to undermine the agreement. In October, US President Donald J. Trump refused to certify that the continued lifting of US sanctions on Iran was proportional to Iran's actions under the JCPOA—a decision that under US law triggered a 60-day review period for the US Congress to decide whether to reimpose the sanctions. Although the Congress did not subsequently decide to do so, Trump's decertification decision put the USA at odds with all the other signatories of the JCPOA.

defined over time in order to prevent the fragmentation of nuclear disarmament efforts.

Russian–US nuclear arms control

Russia and the United States continued to implement the 2010 Treaty on Measures for the Further Reduction and Limitation of Strategic Offensive Arms (New START), which places numerical limits on their strategic nuclear forces. However, the prospects for sustaining the progress made in Russian–US nuclear arms control since the end of the cold war appeared to be increasingly in doubt. Neither Russia nor the USA indicated that it would agree to extend New START before its scheduled expiration in 2021. They also showed little interest in negotiating deeper reductions in



their nuclear arsenals beyond those mandated by New START. At the same time, the USA continued to allege that Russia was violating an important cold war-era arms control treaty, the 1987 Soviet–US Treaty on the Elimination of Intermediate-Range and Shorter-Range Missiles (INF Treaty), by deploying a new ground-launched cruise missile proscribed by the treaty. These developments come against a background of further deterioration in political relations between Russia and the USA, underscoring fundamental differences in their respective goals and priorities for arms control.

Multilateral arms control

There were also developments during 2017 related to other multilateral treaties and initiatives on nuclear disarmament, arms control and non-proliferation. In February, the Conference on Disarmament (CD), the world's sole multilateral forum for negotiating arms control and disarmament agreements, renewed efforts to break the deadlock that has left it unable to adopt a programme of work since 2009. It established a working group to take stock of the progress on all CD agenda items and to identify common ground for a programme of work with a negotiating

mandate. In May, the first session of the Preparatory Committee for the 2020 NPT Review Conference was convened in Vienna, Austria. There were also events connected with two unresolved items on the multilateral disarmament and non-proliferation agenda: a fissile material cut-off treaty (FMCT), and the 1996 Comprehensive Nuclear-Test-Ban Treaty (CTBT). In July and August, a high-level expert preparatory group met in Geneva, Switzerland, to consider ways to commence negotiations on an FMCT. In September, the 10th Conference on Facilitating the Entry into Force of the CTBT was held in New York, USA.

Sanctions on North Korea

The Democratic People's Republic of Korea's (DPRK, or North Korea) programme to develop nuclear and other weapons of mass destruction, in contravention of UN Security Council resolutions, remained a source of grave international concern. During 2017 the Security Council adopted three additional resolutions imposing new or expanded sanctions on North Korea in response to its nuclear weapon and ballistic missile testing activities. ●



8. CHEMICAL AND BIOLOGICAL SECURITY THREATS

Allegations of chemical weapon use in Iraq and Syria

The United Nations, the Organisation for the Prohibition of Chemical Weapons (OPCW), and governments continued to evaluate allegations of chemical weapon (CW) use in Iraq and Syria in 2017. Both the UN Security Council and the OPCW Executive Council remained deadlocked on the question of Syrian Government responsibility for CW use, including with regard to the use of sarin at Khan Shaykhoun on 4 April. This attack prompted the United States to launch retaliatory Tomahawk cruise missile strikes against a Syrian airbase.

The mandate of the OPCW–UN Joint Investigative Mechanism (JIM) in Syria expired in November because the Security Council was unable to agree terms for an extension. While it operated, the JIM issued seven reports and concluded that the Syrian Government was responsible for four cases of CW use and that non-state actors were responsible for two cases. The work of the OPCW Declaration Assessment Team on the completeness and correctness of Syria's declarations to the Technical Secretariat and of the OPCW Fact-finding Mission (FFM) to evaluate allegations of CW use in Syria will continue in 2018. The FFM provided the information baseline on allegations of CW use to the JIM.

As the Islamic State lost territory in both Iraq and Syria, various governments undertook further efforts to ascertain the group's CW-related intentions and capabilities. The work of international criminal investigations and prosecutions, such as the 'International, Impartial and

Independent Mechanism to Assist in the Most Serious Crimes under International Law Committed in the Syrian Arab Republic since March 2011' established by the UN General Assembly at the end of 2016, could eventually facilitate the achievement of a common international understanding on responsibility for all the documented instances of confirmed CW use.

Chemical arms control

Russia—formerly the largest possessor of chemical weapons—completed the destruction of its stockpile in 2017, as required by the 1993 Chemical Weapons Convention (CWC). The 22nd Conference of the States Parties (CSP) to the CWC convened in November 2017. It reviewed the status of planning for the Fourth CWC Review Conference, which will be held in 2018, and elected Ambassador Fernando Arias of Spain as the next Director-General.

Biological arms control

In December, the annual Meeting of States Parties (MSP) to the 1972 Biological and Toxin Weapons Convention (BTWC) agreed a further inter-sessional process of annual meetings for the period 2018–20. The states parties will continue to discuss and promote common understanding and effective action on selected topics. Although some states parties wish to move the interactions among the membership towards more specific discussions about compliance, the outcome of the 2017 MSP represents a continuation of the status quo, whereby information, views and best practices on the convention's various provisions are exchanged in annual Meetings of Experts and MSPs with the support of the Geneva-based Implementation Support Unit (ISU). ●



9. CONVENTIONAL ARMS CONTROL

Humanitarian arms control

The regulation of different categories of weapons as a means of trying to improve compliance with international humanitarian law has become an important theme in conventional arms control. However, participation in humanitarian arms control agreements is far from universal and states parties to such agreements still face many implementation challenges. According to some states and civil society groups, there are also gaps in humanitarian arms control and disarmament law that need to be addressed. In 2017, negotiations to address some of these challenges continued within the framework of the 1981 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 (CCW Convention); the 1997 Convention on the Prohibition of the Use, Stockpiling, Production, and Transfer of Anti-Personnel Mines and on their Destruction (APM Convention); and the 2008 Convention on Cluster Munitions (CCM).

Afghanistan and Lebanon joined the CCW Convention in 2017, bringing the total number of states parties to 125. The CCW Convention has also been a vehicle for discussions on how to regulate new or emerging technologies, and the focus in 2017 was on lethal autonomous weapon systems (LAWS). For the first time, these discussions took place in the format of a Group of Governmental Experts (GGE), which considered the technological, military and ethical/legal dimensions of emerging technologies in the area of LAWS.

While no substantive decisions were made, it was recommended that the GGE should convene again in 2018 for 10 days, with a focus on the characterization of systems under consideration and the implications of human-machine interaction.

The growing international concern over the use of incendiary weapons and explosive weapons in populated areas, including the use of improvised explosive devices (IEDs) by non-state armed groups, failed to generate new concrete outcomes during discussions within the framework of the CCW Convention. The lack of consensus was compounded by the fact that several expert meetings were cancelled due to a lack of funding. States parties agreed to discuss some of the issues further in 2018.

Anti-personnel mines and cluster munitions

Sri Lanka and Palestine became the 163rd and 164th states parties to the APM Convention in 2017, which celebrated its 20th anniversary in September. In 2016, global casualties from APMs were at their highest level since 1999, largely as a result of the armed conflicts in Afghanistan, Libya, Ukraine and Yemen. In 2017, Algeria and Mozambique declared themselves free of landmines, but 57 states and 4 other areas remained contaminated by mines. Discussions on mines other than anti-personnel mines (MOTAPM) also took place within the framework of the CCW Convention in 2017; and Benin and Madagascar ratified the CCM, bringing the total number of states parties to 102. There was continued use of cluster munitions in Syria and Yemen during the year. ●



10. DUAL-USE AND ARMS TRADE CONTROLS

Global, multilateral and regional efforts continued in 2017 to strengthen controls on the trade in conventional arms and in dual-use items connected with conventional, biological, chemical and nuclear weapons and their delivery systems. Membership of the different international and multilateral instruments that are aimed at establishing and promoting agreed standards for dual-use and arms trade controls expanded further. As in previous years, ensuring effective implementation of these instruments remained a challenge. This could be seen in disagreements between non-governmental organizations (NGOs) and states about how to measure and ensure effective implementation of the 2013 Arms Trade Treaty (ATT), the many reported violations of United Nations arms embargoes, and the difficulties associated with ensuring that dual-use and arms trade controls keep pace with advances in technology and evolving trade patterns.

The Arms Trade Treaty

The third conference of ATT states parties took place in Geneva, Switzerland, in September 2017. While the conference took a number of key decisions, the tensions between states parties and the community of NGOs that supported the creation of the ATT were again on display. Moreover, even though the number of states parties to the treaty continued to increase, the levels of compliance with reporting and funding obligations continued to fall short in several areas. Efforts to increase the number of states parties have focused on Asia in recent years and the region faces a number of the security challenges that the ATT is intended to address. However, the region's

MULTILATERAL ARMS EMBARGOES IN FORCE, 2017

United Nations (13 embargoes)

- Central African Republic (NGF)
- Democratic Republic of the Congo (NGF)
- Eritrea • Iran • Iraq (NGF) • ISIL (Da'esh), al-Qaeda and associated individuals and entities • Korea, North • Lebanon (NGF)
- Libya (NGF) • Somalia (NGF) • Sudan (Darfur) • Taliban • Yemen (NGF)

European Union (21 embargoes)

- Implementations of UN embargoes (9):
- Al-Qaeda, the Taliban and associated individuals and entities • Central African Republic (NGF) • Democratic Republic of the Congo (NGF) • Eritrea • Iraq (NGF)
 - Lebanon (NGF) • Libya (NGF) • Somalia (NGF) • Yemen (NGF)
- Adaptations of UN embargoes (3):
- Iran
 - Korea, North • Sudan (Darfur)
- Embargoes with no UN counterpart (9):
- Belarus • China • Egypt • Myanmar
 - Russia • South Sudan • Syria • Venezuela
 - Zimbabwe

Arab League (1 embargo)

- Syria

NGF = non-governmental forces.

current political dynamics also place significant obstacles in the way of further increases in the number of states parties.

Multilateral arms embargoes

Thirty-five multilateral arms embargoes were in force in 2017: 13 imposed by the UN, 21 by the European Union (EU) and 1 by the League of Arab States. Of the EU's 21 embargoes, 9 implemented UN arms embargoes directly, 3 were similar to UN embargoes but differed in geographical scope or the types of weapon covered, and 9 had no UN counterpart. Most of these embargoes only covered conventional arms. However, the UN and EU embargoes on



Iran and North Korea, and the EU embargo on Russia, also covered exports of dual-use items. One new multilateral arms embargo was imposed in 2017: an EU embargo on Venezuela. As in previous years, investigations by the UN revealed problems in the implementation of its embargoes, with numerous reported cases of violations. However, the scope and significance of these violations varied considerably, with some involving large shipments of arms in contravention of the embargo and others involving a failure by a supplier or recipient state to notify a sanctions committee about a transfer.

Export control regimes

Each of the four multilateral export control regimes—the Australia Group (AG), the Missile Technology Control Regime (MTCR), the Nuclear Suppliers Group (NSG) and the Wassenaar Arrangement on Export Controls for Conventional Arms and Dual-use Goods and Technologies (Wassenaar Arrangement, WA)—updated its respective trade control lists in 2017. As in previous years, a key challenge that all the regimes faced was ensuring that the control lists continue to account for and cover the often rapid advances in goods, software and technology. In recent years all of the regimes have faced difficulties with admitting new members, owing to the requirement that all existing members must approve an application. However, in 2017 India was admitted to the WA and in early 2018 it was admitted to the AG. This follows its admission to the MTCR in 2016. India's application to join the NSG continues to be strongly opposed by a group of countries led by China. There were few changes in EU export controls during 2017, with the main developments involving

ongoing discussions about the proposed recast of the EU Dual-use Regulation.

Controls on intangible transfers of technology

The main export control regimes, EU controls on the trade in arms and dual-use items, and UN and EU arms embargoes all include requirements to exert controls on intangible transfers of technology (ITT). ITT are generally divided into those that involve transfers of technical data and those that involve transfers of knowledge and technical assistance. ITT are seen as being particularly difficult to detect, making enforcement hard for national authorities. In addition, controls on ITT can generate significant compliance costs for companies and research institutes. The problems in this area are only going to become more acute in the years to come, as new trading patterns and technologies increase the volume and range of ITT that are potentially subject to export controls. During 2017 there were discussions about how controls on ITT should be best structured and applied, particularly within the context of the review of the EU Dual-use Regulation but also in the export control regimes. Key challenges in this area include if and how export controls should apply to cloud computing and the challenges presented by additive manufacturing (also known as 3D printing) as both an enabler of ITT and a multiplier of associated proliferation risks. ●



ANNEXES

Arms control and disarmament agreements in force, 1 January 2018

- 1925 Protocol for the Prohibition of the Use in War of Asphyxiating, Poisonous or Other Gases, and of Bacteriological Methods of Warfare (1925 Geneva Protocol)
- 1948 Convention on the Prevention and Punishment of the Crime of Genocide (Genocide Convention)
- 1949 Geneva Convention (IV) Relative to the Protection of Civilian Persons in Time of War; and 1977 Protocols I and II Relating to the Protection of Victims of International and Non-International Armed Conflicts
- 1959 Antarctic Treaty
- 1963 Treaty Banning Nuclear Weapon Tests in the Atmosphere, in Outer Space and Under Water (Partial Test-Ban Treaty, PTBT)
- 1967 Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, Including the Moon and Other Celestial Bodies (Outer Space Treaty)
- 1967 Treaty for the Prohibition of Nuclear Weapons in Latin America and the Caribbean (Treaty of Tlatelolco)
- 1968 Treaty on the Non-Proliferation of Nuclear Weapons (Non-Proliferation Treaty, NPT)
- 1971 Treaty on the Prohibition of the Emplacement of Nuclear Weapons and other Weapons of Mass Destruction on the Seabed and the Ocean Floor and in the Subsoil thereof (Seabed Treaty)
- 1972 Convention on the Prohibition of the Development, Production and Stockpiling of Bacteriological (Biological) and Toxin Weapons and on their Destruction (Biological and Toxin Weapons Convention, BTWC)
- 1974 Treaty on the Limitation of Underground Nuclear Weapon Tests (Threshold Test-Ban Treaty, TTBT)
- 1976 Treaty on Underground Nuclear Explosions for Peaceful Purposes (Peaceful Nuclear Explosions Treaty, PNET)
- 1977 Convention on the Prohibition of Military or Any Other Hostile Use of Environmental Modification Techniques (Enmod Convention)
- 1980 Convention on the Physical Protection of Nuclear Material and Nuclear Facilities
- 1981 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 (CCW Convention, or 'Inhumane Weapons' Convention)
- 1985 South Pacific Nuclear Free Zone Treaty (Treaty of Rarotonga)
- 1987 Treaty on the Elimination of Intermediate-Range and Shorter-Range Missiles (INF Treaty)
- 1990 Treaty on Conventional Armed Forces in Europe (CFE Treaty)
- 1992 Treaty on Open Skies
- 1993 Convention on the Prohibition of the Development, Production, Stockpiling and Use of Chemical Weapons and on their Destruction (Chemical Weapons Convention, CWC)
- 1995 Treaty on the Southeast Asia Nuclear Weapon-Free Zone (Treaty of Bangkok)
- 1996 African Nuclear-Weapon-Free Zone Treaty (Treaty of Pelindaba)
- 1996 Agreement on Sub-Regional Arms Control (Florence Agreement)
- 1997 Inter-American Convention Against the Illicit Manufacturing of and Trafficking in Firearms, Ammunition, Explosives, and Other Related Materials (CIFTA)
- 1997 Convention on the Prohibition of the Use, Stockpiling, Production and Transfer of Anti-Personnel Mines and on their Destruction (APM Convention)
- 1999 Inter-American Convention on Transparency in Conventional Weapons Acquisitions



- 2001 Protocol on the Control of Firearms, Ammunition and other related Materials in the Southern African Development Community (SADC) Region
- 2004 Nairobi Protocol for the Prevention, Control and Reduction of Small Arms and Light Weapons in the Great Lakes Region and the Horn of Africa
- 2006 ECOWAS Convention on Small Arms and Light Weapons, their Ammunition and Other Related Materials
- 2006 Treaty on a Nuclear-Weapon-Free Zone in Central Asia (Treaty of Semipalatinsk)
- 2008 Convention on Cluster Munitions
- 2010 Treaty on Measures for the Further Reduction and Limitation of Strategic Offensive Arms (New START)
- 2010 Central African Convention for the Control of Small Arms and Light Weapons, Their Ammunition and All Parts and Components That Can Be Used for Their Manufacture, Repair and Assembly (Kinshasa Convention)
- 2011 Vienna Document 2011 on Confidence- and Security-Building Measures
- 2013 Arms Trade Treaty (ATT)

Agreements not yet in force, 1 January 2018

- 1996 Comprehensive Nuclear-Test-Ban Treaty (CTBT)
- 1999 Agreement on Adaptation of the CFE Treaty
- 2017 Treaty on the Prohibition of Nuclear Weapons

Security cooperation bodies

On 29 March 2017 the UK notified the European Council of its intention to leave the European Union on 29 March 2019 by triggering Article 50 of the Treaty on European Union. Other developments in 2017 included Morocco joining the African Union; and Saint Vincent and the Grenadines joining the International Atomic Energy Agency (IAEA). ●

CHRONOLOGY 2017, SELECTED EVENTS

- 1 Jan. António Guterres becomes the ninth Secretary-General of the United Nations
- 28 Feb. China and Russia veto a UN Security Council resolution that would have imposed sanctions against Syria for the use of chemical weapons
- 31 Mar. The UN Security Council recognizes the significance of the Lake Chad crisis and unanimously issues Resolution 2349 against terrorism and human rights violations in the region
- 13 Apr. The United States drops the largest non-nuclear bomb ever deployed in combat (the GBU-43/B Massive Ordnance Air Blast bomb), targeting an Islamic State (IS) base in Afghanistan
- 6 May A partial ceasefire is agreed in the west of Syria, and de-escalation zones are created in an agreement between Iran, Russia, Syria and Turkey
- 1 June US President Donald J. Trump announces that he is withdrawing the USA from the Paris Agreement on climate change
- 7 July The Treaty on the Prohibition of Nuclear Weapons is adopted
- 28 Aug. A border confrontation between India and China ends after a 73-day standoff
- 3 Sep. North Korea conducts its sixth and largest nuclear test
- 6 Oct. The International Campaign to Abolish Nuclear Weapons wins the Nobel Peace Prize
- 16 Nov. The mandate of the Organisation for the Prohibition of Chemical Weapons–UN Joint Investigative Mechanism in Syria expires
- 9 Dec. Iraq declares victory in its war against IS



SIPRI DATABASES

SIPRI Military Expenditure Database

Gives the annual military spending of countries since 1949, allowing comparison of countries' military spending in local currency at current prices; in US dollars at constant prices and exchange rates; and as a share of gross domestic product.

SIPRI Arms Industry Database

Contains annual data on total revenue and revenue from arms sales and military services since 2002 for the 100 companies with the highest arms sales in the world (with the exception of Chinese companies).

SIPRI Arms Transfers Database

Shows all international transfers of major conventional arms since 1950, the most comprehensive publicly available source of information on international arms transfers.

SIPRI Arms Embargoes Database

Gives information on all arms embargoes that have been implemented by an international organization, such as the European Union or the United Nations, or by a group of nations. All embargoes that are in force, or have been in force since 1998, are included.

SIPRI National Reports Database

Provides links to all publicly accessible national reports on arms exports and is constantly updated to include links to newly published national reports on arms exports.

SIPRI Multilateral Peace Operations Database

Offers information on all UN and non-UN peace operations conducted since 2000, including location, dates of deployment and operation, mandate, participating countries, number of personnel, costs and fatalities.

Access the SIPRI databases at the SIPRI website.



HOW TO ORDER SIPRI YEARBOOK 2018

SIPRI Yearbook 2018: Armaments, Disarmament and International Security

Published in print and online by Oxford University Press

ISBN 978-0-19-882155-7, hardback

ISBN 978-0-19-186088-1, online

More information is available at **www.sipriyearbook.org**



STOCKHOLM INTERNATIONAL PEACE RESEARCH INSTITUTE

Signalistgatan 9
SE-169 72 Solna, Sweden
Telephone: +46 8 655 97 00
Email: sipri@sipri.org
Internet: www.sipri.org



SIPRI YEARBOOK 2018

Armaments, Disarmament and International Security

Long appreciated worldwide by politicians, diplomats, journalists, scholars and students, the SIPRI Yearbook is an authoritative and independent source of data and analysis on armaments, disarmament and international security. It provides an overview of developments in international security, weapons and technology, military expenditure, the arms trade and arms production, and armed conflicts and conflict management, along with efforts to control conventional, nuclear, chemical and biological weapons.

This booklet summarizes the 49th edition of the SIPRI Yearbook, which covers developments during 2017, including

- *Armed conflicts and conflict management*, with an overview of armed conflicts and peace processes in five regions (Americas, Asia and Oceania, Europe, the Middle East and North Africa, and sub-Saharan Africa), as well as a focus on global and regional trends in peace operations
- *Military expenditure, international arms transfers and developments in arms production*, featuring analysis of the relationship between debt, military expenditure and the oil price in oil export-dependent countries, as well as transparency in military expenditure and arms transfers, and the financial value of arms exports
- *World nuclear forces*, with an overview of each of the nine nuclear-armed states and their nuclear modernization programmes, as well as the North Korean nuclear test explosion
- *Nuclear arms control*, featuring the negotiation and opening for signature of the 2017 Treaty on the Prohibition of Nuclear Weapons, Russian–US nuclear arms control and disarmament, implementation of Iran’s nuclear deal, and international non-proliferation sanctions against North Korea
- *Chemical and biological security threats*, including the investigation of allegations of chemical weapon use in the Middle East
- *Conventional arms control*, with a focus on humanitarian arms control, including efforts to regulate lethal autonomous weapon systems and explosive weapons in populated areas
- *Dual-use and arms trade controls*, featuring developments in the Arms Trade Treaty, multilateral arms embargoes and export control regimes, including the challenges of seeking to control intangible transfers of technology and additive manufacturing

as well annexes listing arms control and disarmament agreements, international security cooperation bodies, and key events in 2017.