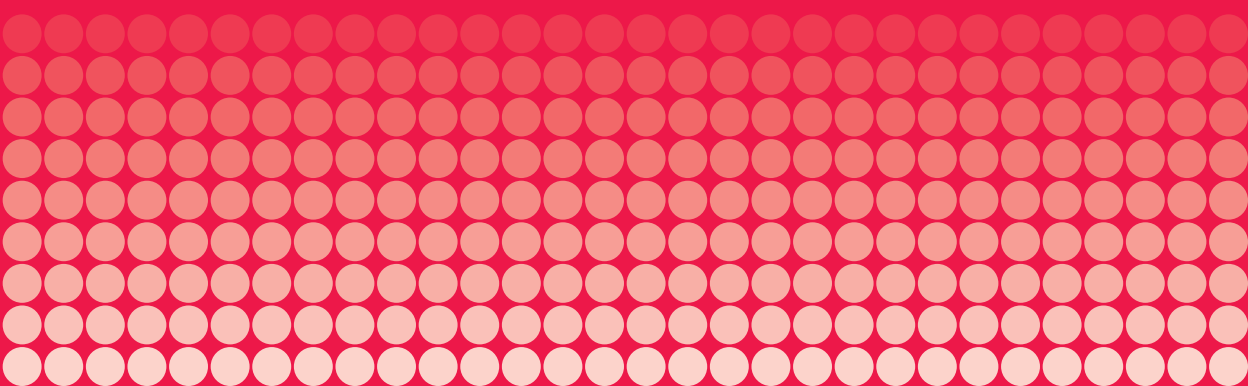# SIPRI YEARBOOK 2016

Armaments, Disarmament and International Security

Summary

THE SIPRI YEARBOOK

SIPRI Yearbook 2016 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. The SIPRI Yearbook, which was first published in 1969, is written by both SIPRI researchers and invited outside experts.

This booklet summarizes the contents of *SIPRI Yearbook 2016* and gives samples of the data and analysis that it contains.

CONTENTS

www.sipriyearbook.org

1. INTRODUCTION. INTERNATIONAL SECURITY, ARMAMENTS AND DISARMAMENT

DAN SMITH

What is the balance sheet on peace and security for 2015? Some of the year's events qualify it as a particularly dark year for international stability and human security. On the negative side of the ledger stand terrorist attacks in Iraq and Syria, in Ankara, Istanbul and Paris, in Tunisia, Afghanistan, Nigeria and Pakistan. The background is an increased number of armed conflicts, with notable degrees of escalation in some. There were huge flows of refugees and migrants from conflict-affected countries and increasing tensions between North Atlantic Treaty Organization (NATO) states and Russia over Ukraine and Syria.

There are also entries on the positive side. First, Iran and the United States resolved their differences and with five other states and the European Union, agreed a Joint Comprehensive Plan of Action to regulate Iran's nuclear programme. This removed a major irritant from Middle East politics, even if the deal's merits were not universally accepted.

A second positive development was agreement at the United Nations on the Sustainable Development Goals (SDGs), also known as Agenda 2030, setting out an ambitious agenda on poverty and peace. Third, in the Paris Agreement on Climate Change, the international community agreed on ambitious measures to restrict global warming and to increase the ability of affected countries to adapt to the inevitable effects of change.

To assess the year overall, there are foundations for both pessimism and

optimism. The statistics on armed conflict suggest a reversal of the two decades of post-cold war peace. In the Middle East and North Africa, the events of 2011 now look less like an Arab Spring and more like the start of a decade of instability and conflict. Events such as the downing of a Russian airliner in October 2015 and the multiple attacks in Paris in November indicate that the violence of the region has no boundaries.

Retaliation for terrorist outrages seems to offer little prospect of ending violence and bringing security. After 14 years of the global 'war on terror', the international reach of al-Qaeda and the Islamic State has grown. This leads to an uncomfortable conclusion: that peace is not being well served by national governments or the array of international institutions, forces and instruments that are currently devoted to enhancing security and international stability. If peace is not actually in retreat, it is certainly under serious pressure.

The international community showed with the SDGs and the Paris Agreement that it has the wherewithal to set ambitious goals and agendas and then gain consensus on them. Hard diplomatic work brought agreement on Iran's nuclear programme and, on paper at least, on the conflict in Ukraine. It was not so effective in relation to Libya, Syria and Yemen. As ever, over issues where agreement was found, implementation remains an open question. Indeed, a review of 2015 should perhaps end only with a question mark. ●

2. ARMED CONFLICT IN THE MIDDLE EAST

In 2015, the Middle East remained an area of major insecurity, and a source of profound problems and challenges for neighbouring regions, most notably in the form of the terrorist attacks in Paris and elsewhere and the displacement of huge numbers of refugees.

Among the key developments in the year were: the intensification of military attacks against Houthi insurgents and their allies in Yemen by a coalition of countries led by Saudi Arabia; continuing warfare in Syria and the entry of Russia into the war in September 2015; continuing and increasingly random violence between Israel and Palestine; a worsening civil war in Libya, with the Islamic State (IS) gaining ground in some eastern coastal areas; challenges to the Iraqi Government from both IS and the separatist claims of Kurdish leaders; and in Egypt an escalating conflict in the Sinai involving an IS affiliate, which claimed responsibility for the in-air destruction of a Russian airliner in 2015.

The Islamic State and the international response

In 2015, IS controlled large areas of Iraq and Syria, and had affiliates and supporters in several other states. The group directed tens of thousands of fighters in Iraq and Syria, and terrorist attacks attributed to IS outside those two countries demonstrated its ability to threaten societies in the wider Middle East, Africa, South Asia and Europe.

Provoking direct confrontation with hostile powers and targeting populations seem to be core aims of the group and a part of what its leaders see as a prophesized civilizational conflict. The interdependent nature of the conflicts and political crises in Iraq, Syria and other countries where IS fighters operate complicates efforts to address the threat, as does the wide range of countries from which it recruits fighters and other kinds of support. In order to defeat IS, it will be necessary to defuse the Sunni Muslim revolt that has been building across the Arab world since 1979, cool the competition for influence and supremacy between Sunni Saudi Arabia and Shiite Iran, and address the social and cultural background to radicalization.
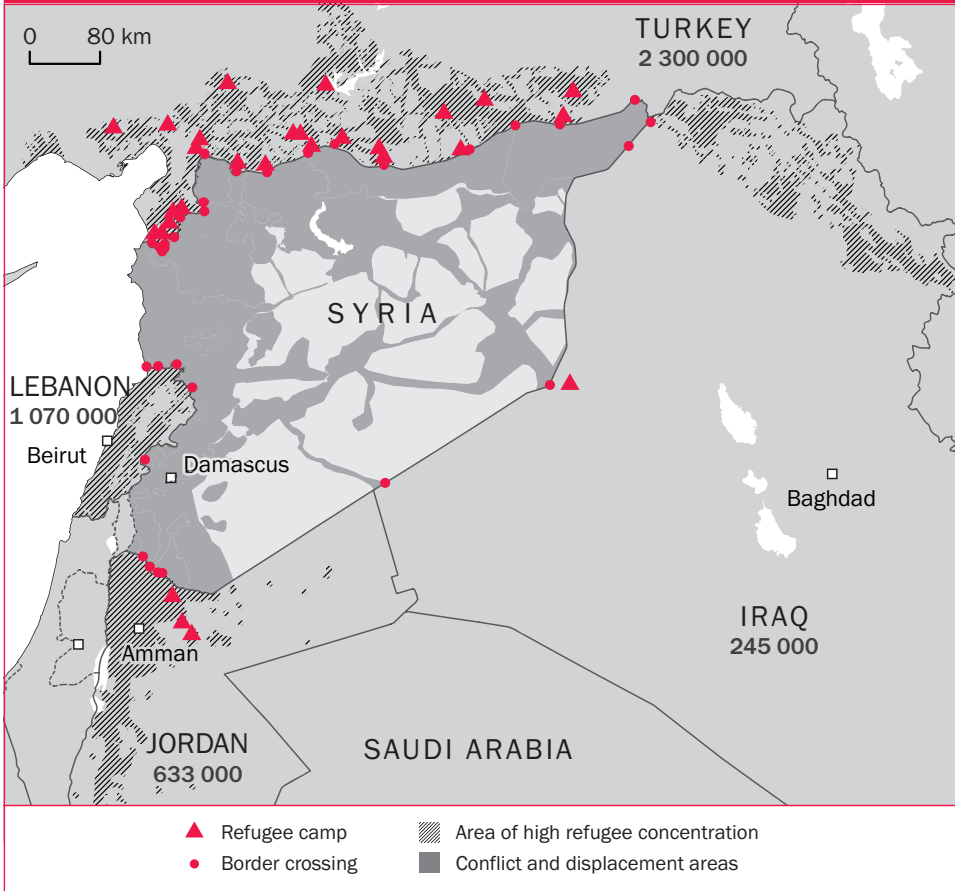
Refugee flows changing the Middle East?

The wars in Iraq and Syria have displaced around 4 million Iraqis and 12 million Syrians. The three countries that currently host the most refugees are Jordan, Lebanon and Turkey. A substantive new underclass of citizens has emerged in four Arab countries: in Syria and Iraq, millions of internally displaced persons are living in precarious conditions, on the run in their own land; in Lebanon and Jordan, refugees have settled in the poorest regions of both countries, triggering a growth in vulnerable populations. If left unaddressed, the fallout from identity-based polarization in the region and the expansion in vulnerable populations will have further profound repercussions for regional and international stability.

The Kurds in the Middle East, 2015

There were important developments in the political trajectory of the Kurds in Turkey, Iraq and Syria during 2015. The estimated 30 million Kurds generally held their own both politically and militarily, and will continue to be an inseparable and difficult to ignore part of the region's politics. In Turkey, a political path to the resolution of

SYRIAN REFUGEES IN NEIGHBOURING COUNTRIES

0   80 km

TURKEY
2 300 000

SYRIA

LEBANON
1 070 000

Beirut

Damascus

Baghdad

IRAQ
245 000

Amman

JORDAN
633 000

SAUDI ARABIA

▲ Refugee camp   ▨ Area of high refugee concentration
● Border crossing   ▮ Conflict and displacement areas

the Kurdish issue was blocked, but in Iraq and Syria Kurdish forces won unequivocal victories against IS, which increased their legitimacy in the West and enabled them to expand the areas under their control. However, the political end point for the Kurds in Turkey, and whether there is life after IS for the aspirations of Syria's and Iraq's Kurds to pursue their own political destiny, remain unclear.

Iran's Middle East dynamics

The July 2015 agreement regulating Iran's nuclear technology programme stood out as an example of cooperative management of conflict risk. However, complex technical and political questions remain over implementation and verification. Iran has evolved over the past 20 years into a status quo power trying to maintain relationships and its own role in the region. Iran's current clout in regional affairs stems mainly from the lack of stability of its neighbours. Its relations with Saudi Arabia have deteriorated, however, and this is affecting conflict zones across the region. ●

3. THE ROLE AND IMPACT OF INTERNATIONAL SANCTIONS ON IRAN

The Joint Comprehensive Plan of Action (JCPOA) agreed in July 2015 might not permanently settle disagreements over the Iranian nuclear programme but it has reduced tensions over the issue and provided a framework that could eliminate the risk of a serious crisis between Iran and the international community.

International sanctions were an important factor before the agreement and will remain one during its implementation. United States-imposed sanctions were in place prior to the escalation in tensions surrounding Iran's nuclear programme. Following the escalation of the crisis, different types of sanctions were imposed on Iran: financial sanctions, trade sanctions, sanctions on the trade in conventional arms and dual-use items, and travel and transportation sanctions. These sanctions spanned a broad range on the targeted through to comprehensive spectrum.

United Nations sanctions

The United Nations put in place targeted nuclear-related sanctions on the transfer of arms and dual-use goods and against Iranian individuals and entities; and other actors, first and foremost the USA and the European Union, applied considerably more extensive sanctions. These autonomous sanctions, which were not mandated by UN decisions, introduced restrictions that were called for in UN resolutions, but not required by them. Over time they also began to include certain kinds of sanction—in particular in regard to financial transactions—for which there was no clear reference point in UN decisions.

If more comprehensive sanctions are seen to have been an important factor in bringing about the conditions for the JCPOA, there could be a strong case for making extensive financial and commercial sanctions mandatory in future Security Council resolutions. This would at least partly reverse the recent trend for favouring more precisely targeted sanctions in order to reduce unintended secondary impacts.

Sanctions relief

The JCPOA opens the way for sanctions relief for Iranian individuals and entities. However, this relief is limited to nuclear-related sanctions and Iran remains subject to a number of other sanctions regimes. If it appears to Iran that the relief provided under the JCPOA is being undermined by measures applied in other sanctions regimes, this might be a threat to the agreement.

Understanding the role and impact of sanctions in regard to the Iranian nuclear programme is therefore important in its own right, but also as an indicator of the role of sanctions in international disputes. ●

4. EXTERNAL SUPPORT IN CIVIL WARS AND OTHER ARMED CONFLICTS

At least two-thirds of all intrastate conflicts active since 1975 have experienced some kind of external support from other states. This support can include the direct participation of military and security personnel but also more indirect forms of aid, such as the provision of intelligence or logistics support, funding, sanctuary or training. Military interventions in the internal conflicts of other states have more than doubled since September 2001, and in recent years the trend has been for increased troop support or 'boots on the ground'. External support is an essential variable to conflict dynamics: it often makes the conflict deadlier, prolongs the fighting and increases the challenges associated with achieving a negotiated settlement. The evidence also suggests that civilian targeting becomes more prevalent and there is a greater risk that interstate conflicts will be initiated.

Research on external support in civil wars shows how patterns of support have shifted over time. Two contemporary armed conflicts—in Syria and Ukraine—exemplify the argument that civil wars are rarely just internal affairs; they also illustrate radically different kinds of conflict, in part, based on the type of external support they receive.

Syria

Syria has been ravaged by a civil war since 2012 that has also served as a proxy battlefield for competing external powers. In 2015 a series of increasingly assertive interventions and counter-interventions by external powers on behalf of their Syrian state and non-state allies or proxies marked a dramatic escalation in third-party intervention. The negotiations over a political settlement to the war provided another forum for this competition. Russia's military intervention in September 2015 on behalf of the Syrian Government was a major turning point in the conflict but seems unlikely to lead to a final military victory or a stabilizing political resolution. Indeed, it may only push Syria's conflict in new, unpredictable directions.

Ukraine

The designation 'civil war' to describe the conflict in Ukraine is contested precisely because of the nature of the intervention by Russia—the scope of which is itself controversial. A baseline for civil conflict existed in Ukraine in late 2013, but arguably most of the key triggers that transformed a situation of local conflict into violence and war—the appearance of first paramilitary and then military forces, arms and other resources—appear to have been supplied by Russia or by Russian- and Ukrainian-based supporters of the deposed Ukrainian president, Viktor Yanukovych. Western support for the interim Ukrainian Government seems to have had less impact on the conflict. The first meaningful ceasefire and further Russian troop withdrawals from eastern Ukraine in September 2015 coincided with Russia's Syrian intervention. However, at the end of 2015, with the Minsk II agreement seemingly unravelling, Ukraine's path to peace internally and with Russia remained uncertain. ●

5. THE IMPLEMENTATION OF THE PEACE PROCESS IN MALI

The ongoing peace process in Mali led to a peace agreement in mid-2015. The conflict, which began in northern Mali in January 2012, displaced roughly a quarter of the population of the northern regions to other parts of Mali and neighbouring countries. A declaration of a cessation of hostilities and a consensual roadmap for peace negotiations were signed in July 2014, paving the way for peace talks in Algiers. The signing of a peace agreement was the result of a year-long negotiation process, led by Algeria and with the participation of a number of international organizations and neighbouring countries.

Challenges to implementing the peace agreement

Four major implementation challenges can be identified: (*a*) the complexity of the conflict; (*b*) the fragmentation of the actors involved; (*c*) the increased presence of violent extremist groups in northern Mali; and (*d*) the growth in organized crime.

The primary conflict in Mali stems from the quest for self-determination by the Tuareg-led movement, which has manifested itself through regular uprisings or rebellions since Malian independence in 1960, but which has deeper roots in the history of Mali and the Sahel. Over time, linked to the core conflict and the mismanagement of its resolution, a number of other conflicts have developed in northern Mali between and within communities, resulting in a complex dynamic and a parallel proliferation of armed groups.

Furthermore, violent religious extremism and organized crime have complex interlinkages with the armed conflict. Violent extremist groups participated in the fighting and eventually transformed the political Tuareg-led armed rebellion into a religious insurgency. This had ominous consequences for Malian citizens as the victorious groups imposed distorted and violent forms of sharia in the areas of northern Mali they temporarily occupied.

External military interventions by French, African and United Nations forces have pushed the extremist groups into hiding, but they have not been defeated and the population is regularly reminded of their existence. The fact that Libya has become another base for militant extremist groups, and in particular the Islamic State, is another serious source of concern.

The 2015 peace agreement has a strong emphasis on governance, socio-economic and cultural issues. However, the peace process has a two-pronged focus: on internal political and human security challenges; and on transnational violent extremism and organized crime. The objectives are ambitious and implementation will require consistent and committed participation and support from a broad range of actors. This is the fifth peace agreement between the Malian state and the Tuareg-led armed movement, which testifies to the difficulty of resolving this persistent conflict even without the additional challenges generated by violent extremism and organized crime. ●

6. ARMED CONFLICT DATA TRENDS

Despite the recent growth in the availability and validity of data sets on various forms of violence, major questions remain about the scope of and current trends in violence. Has there been a general, progressive decline in the level of human-inflicted violence in recent decades? If so, do current trends in armed conflict indicate a reversal of that peace?

Patterns of armed conflict, 2006–15

According to the Uppsala Conflict Data Program (UCDP), the number of active armed conflicts increased from 41 in 2014 to 50 in 2015, largely due to the expansion of the Islamic State (IS) into new territories in 12 countries. Of the 50 active conflicts, only one was fought between states (India–Pakistan). The rest were fought within states and concerned government (19), territory (29) or both (1). However, the levels of violence linked to armed conflict remain much lower than they were during the cold war, in part because the international community has developed better mechanisms for dealing with violence.

A reversal of peace? The role of foreign involvement in armed conflict

What would it take for the current upsurge in armed conflict to translate into a reversal of peace? The decline in the number of battle-related deaths since 1979 was mainly driven by the decrease in foreign involvement in the armed conflicts of East Asia. An exacerbation of the pattern of foreign involvement in armed conflict in the Middle East is the most realistic potential driver of a reversal of peace.

REGIONAL DISTRIBUTION AND TOTAL NUMBER OF ARMED CONFLICTS, 2006–15

One particular conflict can account for a large proportion of battle-related deaths, as was the case in the 1967–75 and 1978–98 Cambodian Civil War and is currently the case in Syria. Many parallels and insights can be found in the two conflicts, most notably that a negotiated settlement to the Cambodian conflict was possible only after the foreign backers had settled their differences.

The state of violence and conflict in the age of the SDGs

Sustainable Development Goal (SDG) 16 calls on the international community to: 'promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels'. The transparent and systematic collection of data on political and social violence is crucial to addressing the vulnerability of citizens to violence. One of the most promising avenues is to bolster the authority and capacity of local institutions to collect, code, store, manage and analyse conflict data in a systematic way. Collecting multiple types of data will ensure that the information gathered is: (*a*) useful for

comparative analysis and global tracking of progress towards achieving SDG 16; (*b*) locally defined, relevant and applicable; and (*c*) effective in shaping the degree to which people feel their society is just, peaceful and inclusive.

Casualty recording in armed conflict

The obligation of states to record casualties, particularly regarding the protection of civilians, remains largely unfulfilled. Accounting for military deaths has been a long-standing practice of states, but close attention to civilian deaths is either rare or inconsistent, and there are growing calls for every casualty in situations of armed conflict to be properly recorded.

Casualty estimation can only ever aim for numbers of how many may have been killed. Casualty recording strives for definitive knowledge of who was killed, and how, when and where. The gathering of such detailed records of the dead aims to keep track of the various types of harm inflicted on a society and to humanize the victims. In many conflicts, the most effective recording is already being practised by civil society organizations. At the heart of casualty recording is the recognition and humanization of victims, and the protection of those who remain. ●

# 7. PEACE OPERATIONS AND CONFLICT MANAGEMENT

Trends and developments in peace operations in 2015

2015 was a year of consolidation with regard to trends and developments in peace operations. There was no shortage of conflicts and crises, but international efforts to resolve them rarely involved a new or significantly enhanced peace operation.

Four relatively small missions started, while three relatively small missions closed. A smaller European Union (EU) military advisory mission replaced the EU Military Operation in the Central African Republic (EUFOR RCA). The Intergovernmental Authority on Development (IGAD) Monitoring and Verification Mechanism (MVM) in South Sudan was succeeded by a new ceasefire monitoring mechanism following the peace agreement. The North Atlantic Treaty Organization (NATO) replaced its mission in Afghanistan. Lastly, an additional EU mission was established in Mali, while the French Operation Licorne in Côte d'Ivoire ended. In total, there were two fewer peace operations active during 2015 compared to 2014.

The 61 operations that were active in 2015 had 162 703 personnel in the field, slightly more than in the previous year. This brought to an end the fall in the total number of personnel deployed in peace operations that began in 2012. The United Nations remained the primary actor in peace operations, deploying roughly one-third of all peace operations (20 out of 61) and 70 per cent of all personnel (113 660 out of 162 703)—an increase of 3336 personnel in 2015 compared to 2014.

NO. OF MULTILATERAL PEACE OPERATIONS, BY TYPE OF CONDUCTING ORGANIZATION, 2006–15
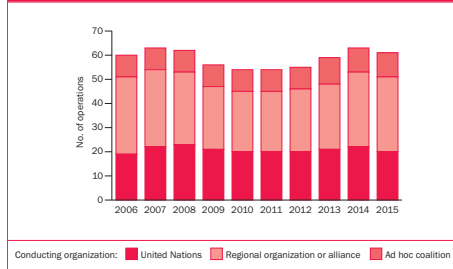
Why consolidation in 2015 and what about the future?

Several factors explain this consolidation in 2015. First, in a number of conflicts geopolitical obstacles, failing peace processes or the security environment prohibit the establishment of new peace operations. Second, in those countries where the interests of great powers converge and the situation allows for a peace operation to be deployed, peace operations were often already being hosted. Third, in their conflict management efforts and in dealing with jihadist groups such as the Islamic State and Boko Haram, international and regional actors relied on other means, such as military interventions and direct or indirect support of local proxies.

It is difficult to predict the direction of next year's trends. A number of operations are on the list for drawdown, potentially decreasing the number of missions and the number of personnel deployed, but there are also possible large-scale stabilization operations on the horizon in places like Burundi, Libya, Syria, Ukraine and Yemen.

High-level Independent Panel on UN Peace Operations

During the year, the High-level Independent Panel on UN Peace Operations (HIPPO) completed its review, which it presented to the UN Secretary-General along with recommendations on how to improve future UN peace operations. What the future brings for the implementation of HIPPO's recommendations remains to be seen. The failure to tie together HIPPO with other major review processes to allow for a more cross-cutting impact on the UN system was a missed opportunity. It would also have been useful to set out clearer recommendations on how UN peace operations should deal with situations where there is 'no peace to keep' or no political process to support. As UN stabilization missions become increasingly common and peacekeepers face asymmetric and unconventional threats,

caution alone is no longer enough. The strong likelihood of a stabilization component should be anticipated and factored into the planning and doctrinal development of UN peace operations. The UN Secretary-General presented a report on how he intends to implement HIPPO's recommendations and at the Leaders' Summit on Peacekeeping many of the HIPPO recommendations were also endorsed by UN member states.

Despite the unprecedented pledges and revived support for peace operations at the Leaders' Summit on Peacekeeping, 2015 was also a year in which the UN's reputation was seriously damaged and its efforts undermined by reports of sexual exploitation and abuse in the Central African Republic and alleged cover-ups. Systems for dealing with such abuse are clearly insufficient and HIPPO's call for change in this area must be urgently heeded. ●

NO. OF MULTILATERAL PEACE OPERATIONS, BY REGION, 2006–15
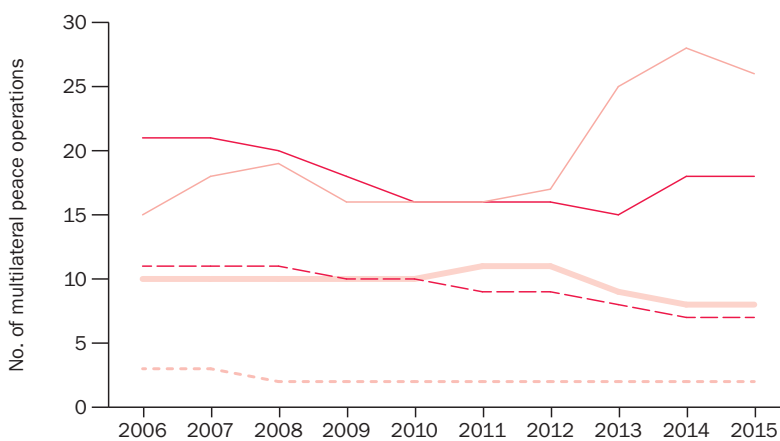
8. WOMEN, PEACE AND SECURITY

The women, peace and security (WPS) agenda consists of eight United Nations Security Council resolutions that inject a gender perspective into various peace and security forums. This perspective calls for women's participation in preventing armed conflict and in peacebuilding, as well as for the protection of women and girls in conflict. The foundational resolution of the WPS agenda, UN Security Council Resolution 1325, was adopted unanimously in October 2000. It was the first Security Council resolution to specifically address the impact of armed conflict on women, and women's contribution to conflict resolution and sustainable peace. This formal agenda has given rise to a transnational epistemic community of governments, private sector actors, researchers and, most notably, civil society. Many in this community have their origins in the women's peace movement.

While the WPS agenda has been lauded for promoting a better understanding of the relevance of a gender perspective within the overall international peace and security discourse, there has also been some criticism regarding the lack of political will and funding for its implementation. In addition, insufficient implementation strategies and tools for evaluation and monitoring remain issues of concern.

UN Security Council Resolution 2242 is the most recent addition to the WPS toolbox and reflects some of the new challenges in global peace and security, including climate change, the increasing number of refugees and internally displaced persons, and violent extremism.

The 15th anniversary of Resolution 1325

The 15th anniversary of UN Security Council Resolution 1325 provided an opportunity for formal reflection on the current and future direction of the WPS agenda. Four key review processes reported in 2015: (*a*) the High-level Review of Women, Peace and Security; (*b*) the Global Study on the Implementation of Resolution 1325; (*c*) the Report of the High-level Independent Panel on United Nations Peace Operations (HIPPO); and (*d*) the Report of the Advisory Group of Experts for the 2015 Review of the United Nations Peacebuilding Architecture. The latter two provide important insights into the current status of the implementation of Resolution 1325 specifically within UN peace operations and peacebuilding.

Security sector reform and health

Implementation of the WPS agenda in security sector reform (SSR) and the health sector demonstrates that all sections of society and government have a role to play, although results are mixed. While there has been some progress, much remains to be done to ensure that SSR programmes, for example, are gender sensitive and include the direct and meaningful participation of women.

An optimistic assessment of the WPS agenda could suggest that it has created a norm of gender mainstreaming and increased gender awareness around conflict, specifically regarding sexual violence in armed conflict. However, major hurdles remain with regard to implementation and creating substantial change in the daily lives of women affected by conflict. ●

9. THE SUSTAINABLE DEVELOPMENT GOALS AND THE CHALLENGES OF RELIEF AND DEVELOPMENT IN DANGEROUS PLACES

Events in 2015 made it a particularly important year for security and development. A new development agenda was enshrined in the Sustainable Development Goals (SDGs) and a number of review processes took stock of what is and is not working in the field of international development. The prospects for delivering the SDGs and the concurrent challenges of providing humanitarian and development assistance in dangerous places remained matters for debate.

The SDG agenda has expanded in scope relative to that of the Millennium Development Goals (MDGs, 2000–15). A number of review and reform initiatives are now being recalibrated to deliver the SDG agenda. The development challenges are particularly acute for the 2.58 billion people living in dangerous places—countries with a high incidence of violent death and the source of large numbers of refugees and/or displaced persons. Dangerous places account for 36 per cent of the world's population, but 61 per cent of the world's poverty and 67 per cent of the children not expected to complete their secondary education in the next 15 years. The development challenges in dangerous places are also security challenges: 78 per cent of the world's violent deaths occur in dangerous places, 98 per cent of the world's refugees come from dangerous places and dangerous places are host to 97 per cent of the world's internally displaced.

Humanitarian emergencies in 2015

Most of the world's emergencies occur in dangerous places, and so the challenges of relief and development will remain interlinked throughout the 15-year timescale of the SDG agenda. A brief review of the principal humanitarian emergencies in 2015 underscores the scale and scope of humanitarian disaster and response. Nearly all such emergencies occur in dangerous places, further demonstrating how relief and security are interlinked in fragile situations.

Nepal and Afghanistan

The Nepal earthquake in 2015 encapsulates the international response to a humanitarian crisis, the effectiveness of which can now be assessed through impact evaluation. The application of impact evaluations, which are common practice in development, to humanitarian assistance should help to make responses to future disasters more efficient and effective.

The Afghan Government and international stakeholders struggled to deliver development, peace and human security for the Afghan population in 2015. Nepal and Afghanistan illustrate the challenges that states face in delivering sustainable development when fragility, violence and emergencies coincide. ●

10. INFORMATION AND COMMUNICATION TECHNOLOGY, CYBERSECURITY AND HUMAN DEVELOPMENT

There is a nexus between access to information and communication technology (ICT), cybersecurity and human development. ICT provides unprecedented potential for people to acquire knowledge and skills and use those capabilities for their own interests and for society as a whole. There have been no large-scale empirical studies to assess the impact of ICT access on human development in developing countries. Some case studies challenge the discourse on the positive transformative power of ICT, illustrating that increased ICT access has in some cases had disruptive effects and reinforced existing patterns of domination and inequality. Large-scale studies on the impact of ICT on development generally focus on economic growth and find a positive correlation between increased access to ICT and economic development.

Cyber risks and threats

ICT can also generate myriad risks as it offers new means for malevolent activities, while the insecurity that cybercrime generates has economic costs. Efforts to support greater access to ICT in the developing world need to integrate considerations of cybersecurity in order to be effective and sustainable, but such efforts may themselves create risks to human development as the security objectives of states and individuals do not always coincide. Increased cyber-surveillance and Internet filtering can have a detrimental effect on fundamental human rights and human security.

Approaching cybersecurity from a human security perspective requires a holistic approach that tackles risks related to cybercrime and sophisticated cyber-threats, but also considers the principles of the rule of law and good governance. The processes through which states alter people's ability to enjoy the opportunities generated by ICT for national security reasons should be transparent, accountable and inclusive.

Digital human rights

Developing countries are unequally equipped technically, politically and legally to deal with the risks that access to ICT pose to human security. Increasingly, development agencies see a need to link initiatives to democratize access to ICT with efforts to strengthen national cybersecurity capabilities and digital human rights.

Initiatives to support cybersecurity commonly entail policy and legal support, training and technical assistance, and cooperation. The International Telecommunication Union is currently the pivotal actor in capacity building. Digital human rights and Internet freedom are usually supported through direct assistance at the policy level, such as by defining law on privacy and data protection, and standards for electronic surveillance. There are, however, no international standards on digital human rights. The definition of standards on electronic surveillance is also a contentious issue. Recent efforts have therefore focused on directly and indirectly limiting the proliferation of electronic surveillance and censorship capabilities to countries that might use them to commit human rights abuses. ●

11. FRAGILITY AND RESILIENCE IN THE EUROPEAN UNION

Security was probably a more important issue for the European Union (EU) in 2015 than it has been at any time in the past 20 years. Thinking about security has become more challenging given a fast-changing context that includes the global mobility of people, the free movement of capital in a fragmented and inadequately regulated financial system, the limited capacity of states to manage change and the evolution of state sovereignty, the rapid advance of technology and the changing demographic and spatial patterns created by globalization, urbanization and digitization.

Spillover from war and extremism

In 2015, conflicts in Libya, Syria/Iraq and Ukraine required an EU response, including measures to address spillover effects, most notably the large-scale displacement of people and an increased threat of terrorism. Cities in the EU experienced mass impact terrorist attacks carried out by religiously inspired individuals and groups. The November 2015 attack on Paris was carried out by a large group of attackers, some with military training and experience from conflict zones, with significant logistic support—posing a different kind of problem for the EU, which has mainly framed terrorism as a matter of law enforcement.

EU citizens have high expectations and many have never known anything other than a peaceful, prosperous and stable environment. They are accustomed to being able to move freely, without undue concern about being the victim of violent attack or being exposed to a high risk of crime. They also expect to be protected against the impact of unexpected and disruptive events.

However, roughly two-thirds of respondents to an April 2015 EU-wide survey believed that the EU will experience increased levels of terrorism and organized crime in the future, and ascribed this increase to a growth in extremist ideologies, the spillover effects of war and political instability outside the EU, as well as persistent poverty and social exclusion. In addition, roughly 70 per cent of respondents believed that climate change and pollution would exacerbate security threats.

A new EU internal security strategy

In 2015 the EU adopted a new internal security strategy with a focus on terrorism and organized crime. A security dimension was also recognized in other public policy frameworks. Energy security was included in a new framework to create an energy union, which is part of a forward-looking policy on climate change and its implications. The re-evaluation of relations with the EU neighbourhood continued.

The EU member states are the primary actors in responding to security threats, but the EU is not just a platform for organizing interstate dialogue and promoting voluntary information exchange. Member states expect and insist that their common instruments will be applied directly to help address complex and interrelated challenges. Citizens expect the EU to play its part in ensuring that their high expectations are met, and are quick to criticize it when the contribution does not seem effective.

The EU's working practices—such as planning and budget cycles that stretch over 5–7 years—equip it to develop a certain
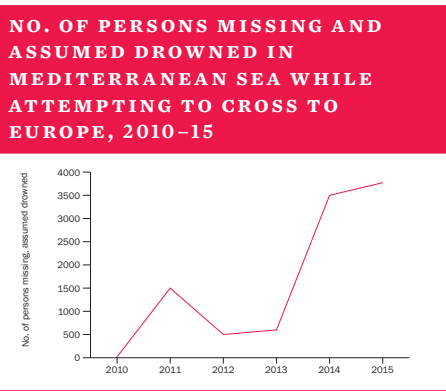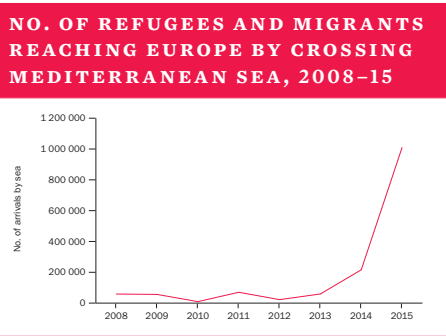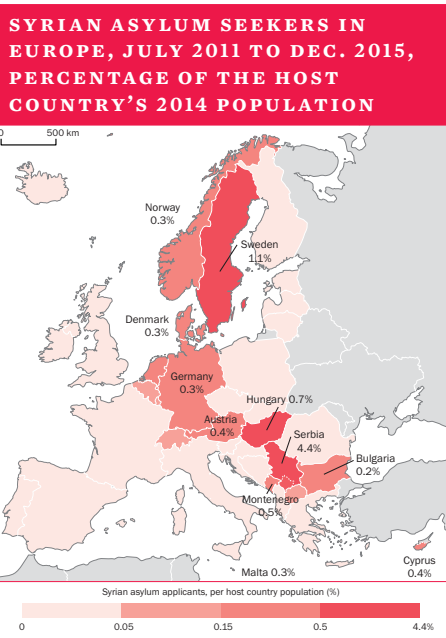
persistence and continuity of action that, while not well suited to crisis response, can bring about important systemic change over time. Moreover, while the balance that has to be struck in a union of 28 sovereign states makes it difficult to agree on a common approach, the continuous dialogue that leads to an agreement promotes continuity once a decision is reached.

Migration and refugees

While migration is the exclusive legal competence of the member states, national decisions about migration have consequences across the EU, including security implications. In 2015, the member states tasked the European Commission with developing a comprehensive Agenda on Migration that might lead to a more integrated approach, depending on their reaction to what is proposed.

In contrast to migration, the EU does have a common framework for addressing refugees from armed conflict and oppression in their home countries. However, while asylum seeking is a familiar problem, existing procedures were not designed to cope with the unprecedented scale of recent arrivals. The sudden arrival of very large numbers of individuals seeking asylum required an emergency response. ●

SYRIAN ASYLUM SEEKERS IN EUROPE, JULY 2011 TO DEC. 2015, PERCENTAGE OF THE HOST COUNTRY'S 2014 POPULATION

Norway 0.3%
Sweden 1.1%
Denmark 0.3%
Germany 0.3%
Hungary 0.7%
Austria 0.4%
Serbia 4.4%
Bulgaria 0.2%
Montenegro 0.5%
Malta 0.3%
Cyprus 0.4%

Syrian asylum applicants, per host country population (%)

0   0.05   0.15   0.5   4.4%

NO. OF REFUGEES AND MIGRANTS REACHING EUROPE BY CROSSING MEDITERRANEAN SEA, 2008–15

NO. OF PERSONS MISSING AND ASSUMED DROWNED IN MEDITERRANEAN SEA WHILE ATTEMPTING TO CROSS TO EUROPE, 2010–15

12. CLIMATE AND SECURITY

The past decade has seen increased acknowledgement within the academic literature and among the policy community of the relationship between climate change and security. Growing evidence of the links between climate change impacts and human security have been detailed in the most recent report by the Intergovernmental Panel on Climate Change (IPCC). Its first ever chapter dedicated to the topic states that 'human security will be progressively threatened as the climate changes'.

Climate change: a 'threat multiplier'

Climate change is best understood as a 'threat multiplier' that interacts with and compounds existing risks and pressures in a given context, and can increase the likelihood of instability or violent conflict. The IPCC sets out evidence that contextual factors such as 'low per capita incomes, economic contraction, and inconsistent state institutions' are drivers of conflict and sensitive to climate change. The IPCC also found that 'People living in places affected by violent conflict are particularly vulnerable to climate change' and that 'conflict strongly influences vulnerability to climate change impacts'. Taking this further, the Group of Seven (G7) commissioned an independent study in 2015: *A New Climate for Peace: Taking Action on Climate and Fragility Risks*. The study identified compound risks such as resource competition, livelihood insecurity, extreme weather events, volatile food prices and trans-boundary water management, as well as the unintended impacts of climate change policies, as some of the main ways in which climate change interacts with fragility. The study also found that both mitigation and adaptation to climate change are highly relevant in addressing security and fragility risks.

Mirroring the growth in academic literature, the potential security implications of climate change have been gaining more attention from foreign and security policymakers at the national and international levels. Debates on climate change and security in the United Nations Security Council in 2007 and 2011 also underscored the issue. In 2011 the Security Council asserted that 'possible adverse effects of climate change may, in the long run, aggravate certain existing threats to international peace and security'.

International policy response

The international policy community faces practical obstacles to addressing these complex links. For example, the 2015 global frameworks—such as the Sustainable Development Goals, the Paris Agreement on Climate Change and the Sendai Declaration on Disaster Risk Reduction—do not acknowledge the linked risks of climate change and security. This has inhibited joined-up policy and action. However, concepts such as resilience have helped to bring the idea of 'interconnectivity' to the fore and an increasing number of donors are integrating individual issues across their policy, programmes and funding decision-making processes. An opportunity exists in the emerging resilience agenda to provide a thematic umbrella to integrate efforts across policy fields. ●

13. MILITARY EXPENDITURE

World military expenditure is estimated to have been $1676 billion in 2015, representing 2.3 per cent of global gross domestic product or $228 per person. Total global expenditure in 2015 was about 1.0 per cent higher in real terms than in 2014.

Military expenditure continued to fall in North America and Western Europe in 2015, albeit at a slower pace than in previous years. Spending also fell in Latin America and Africa, in the latter case reversing many years of increases. By contrast, military expenditure continued to rise in Asia and Oceania, Eastern Europe and those countries in the Middle East for which data is available.

Trends in military spending

The sharp fall in the price of oil, which began in late 2014, led to correspondingly sharp falls in military spending in several oil-producing countries that had been increasing such spending rapidly in recent years when oil prices were high. Although spending rises continued in some other oil-producing countries, it was often at a slower pace than in previous years and with the expectation of falling spending in 2016. Thus, the oil-fuelled boom in non-Western military expenditure appears to be coming to an end.

Military spending by the United States continued to fall in 2015, but there are signs that the decreases are coming to an end with a projected rise in 2016. Nonetheless, the USA remained by far the world's largest military spender in 2015 with $596 billion or 36 per cent of the world total.

Chinese military spending grew again in 2015, roughly in line with economic growth. The 2015 Chinese defence white

WORLD MILITARY SPENDING, 2015		
Region	Spending ($ b.)	Change (%)
Africa	(37.0)	−5.3
North Africa	(17.9)	2.1
Sub-Saharan Africa	(19.1)	−11
Americas	678	−2.5
Central America and the Caribbean	9.5	3.7
North America	611	−2.4
South America	57.6	−4.0
Asia and Oceania	436	5.4
Central and South Asia	68.0	0.9
East Asia	302	5.7
Oceania	25.8	7.7
South East Asia	39.7	8.8
Europe	328	1.7
Eastern Europe	74.4	7.5
Western and Central	253	−0.2
Middle East	. .	. .
World total	**1 676**	*1.0*

( ) = uncertain estimate; . . = data unavailable. Spending figures are in current (2015) US$. All changes are in real terms for the period 2014–15.

paper on military strategy presented a fairly negative view of the geopolitical security environment. It signalled an expansion of China's military ambitions, especially in the maritime domain, and a shift in the focus of the defence strategy from land to sea. The Chinese Government made major efforts to tackle corruption in the military in 2015, including the arrest of numerous senior military officers and officials.

Opportunity costs of military expenditure

The opportunity costs of military expenditure in terms of spending on human, social and economic development is once again a salient topic. A comparison of trends in spending on the military, health

Change in military expenditure (%)
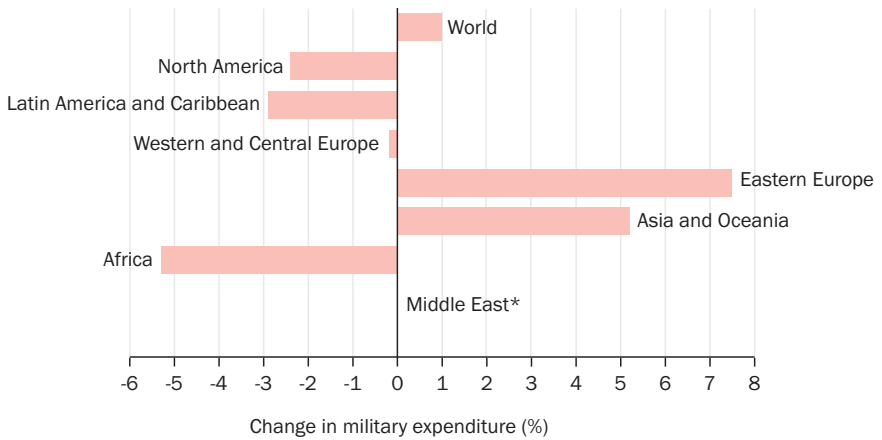
*No estimate published as military expenditure data for the Middle East in 2015 is highly uncertain.

and education since 1995 shows that a majority of countries have increased health and education spending, while reducing military spending. The trend in some states in the Middle East and Eastern Europe, however, has gone in the opposite direction. An increasing majority of countries spend more on health than on military spending, but states in the Middle East, along with many oil-revenue dependent states in other regions, tend to be exceptions. There is no apparent correlation between trends in countries' spending on the military and their spending on health.

A number of studies have considered the cost of achieving the various Sustainable Development Goals (SDGs), which were adopted by the United Nations in 2015. By comparing the sums discussed in these studies with the level of global military spending, assessments can be made about how much could be achieved if a proportion of world military spending were redirected to the SDGs. SDG 4 on education could be

comfortably achieved at a cost of well under 10 per cent of annual global military spending, while eliminating extreme poverty and hunger (SDGs 1 and 2) would cost just over 10 per cent. A little less than half the world's annual military spending would be sufficient to meet the majority of those SDGs for which additional economic resources are a central requirement.

Military expenditure data

National response rates to the UN reporting instrument on military spending continue to decline. The SIPRI tables of military expenditure by country are freely accessible online via the Military Expenditure Database, <www. sipri.org/ databases/milex>. ●

14. ARMS PRODUCTION AND MILITARY SERVICES

Sales by the SIPRI Top 100 arms-producing and military services companies declined for the fourth consecutive year in 2014. Their combined revenue in 2014 was US $401 billion—1.5 per cent lower than in 2013. However, despite the continuing fall, turnover in 2014 was 43 per cent higher than that of the SIPRI Top 100 companies in 2002. This emphasizes the modest level of the decrease observed since the peak in sales reached in 2010, and a slowing in the rate of decline in recent years.

Companies based in the United States and Western Europe continue to dominate the Top 100 revenues, with a combined share of 80.3 per cent of total Top 100 arms sales for 2014. Although this predominance is unlikely to change in the near future, it has been eroding in the wake of the 2008 financial crisis and the end of major US-led military operations in the Middle East.

With a combined increase of 10 per cent, the significant growth in Russian companies' revenues has partially offset the decline of Western-based companies.

Emerging producers

Other 'established producers' ranked in the Top 100 increased their arms sales by 6 per cent in 2014. This rise was mainly due to large increases in arms sales by Polish company PGZ (up 98.4 per cent in real terms) following a major industry consolidation process. Australia and Japan increased their arms sales by 17.5 and 14.7 per cent respectively.

Firms based in the four 'emerging producer' states ranked in the Top 100 (Brazil, India, South Korea and Turkey) realized a collective increase in revenues of 5.1 per cent in 2014, helping to mitigate the

THE 10 LARGEST ARMS-PRODUCING COMPANIES, 2014

Company	Arms sales ($ m.)	Profit ($ m.)
1 Lockheed Martin	37 470	3 614
2 Boeing	28 300	5 446
3 BAE Systems	25 730	1 238
4 Raytheon	21 370	2 258
5 Northrop Grumman	19 660	2 069
6 General Dynamics	18 600	2 819
7 Airbus Group	14 490	3 117
8 United Technologies	13 020	6 220
9 Finmeccanica	10 540	27
10 L-3 Communications	9 810	. .

. . = data unavailable. Companies are US-based, except BAE Systems (UK), Airbus Group (trans-Europe) and Finmeccanica (Italy). Figures are US$. The profit figures are from all company activities, including non-military sales.

fall in Top 100 sales. These companies benefit from significant domestic spending on weapons acquisition but are now offering their products internationally. Brazil secured the largest increase in arms sales in 2014 (24.7 per cent) followed by South Korea (10.5 per cent) and Turkey (9.5 per cent). Indian companies showed an overall 7.1 per cent decrease in sales in 2014.

Falling gross domestic product in countries that derive a significant proportion of their income from oil revenues, such as Russia, Saudi Arabia and Venezuela, could change the dynamics that have influenced the Top 100 in the past four years as military budgets are reconciled with national revenues. Export prospects might disappear as importing countries decide how to manage reductions in their revenues. That said, security concerns in East Asia and the Middle East might lead states to continue to prioritize military spending and arms procurement. ●

15. INTERNATIONAL ARMS TRANSFERS

The volume of international transfers of major weapons grew by 14 per cent between 2006–10 and 2011–15. The five largest suppliers in 2011–15—the United States, Russia, China, France and Germany—accounted for 74 per cent of the volume of exports.

The USA and Russia have consistently been by far the largest suppliers since 1950. Together with Western European suppliers, they have historically dominated the top 10 list of suppliers, and there is no sign of any major change. This group increased its share of the global total between 2006–10 and 2011–15, but has been joined by China which has firmly established itself as one of the world's largest exporters of major weapons.

At the regional level, the flow of arms to the Middle East grew by 61 per cent between 2006–10 and 2011–15. The flow of arms to Asia and Oceania, and Africa also rose during this period, by 26 and 19 per cent respectively. By contrast, the flow of arms to Europe decreased by 41 per cent.

States in Asia and Oceania received 48 per cent of all imports of major weapons in 2011–15. Of the five largest recipients of major weapons, three were located in Asia and Oceania: India, China and Australia.

The ongoing conflicts in many parts of the world in 2015 often had direct links to arms acquisitions from abroad. The Middle East and North Africa (MENA) experienced significant growth in arms imports in the past five years. The use of arms imported by states in the MENA in the conflict in Yemen in 2015 led to discussion of the morality and even legality of exporting arms to states in the region.

THE MAIN EXPORTERS AND IMPORTERS OF MAJOR WEAPONS, 2011–15

|	Exporter	Global share (%)		Importer	Global share (%)
1	USA	33	1	India	14
2	Russia	25	2	Saudi Arabia	7.0
3	China	5.9	3	China	4.7
4	France	5.6	4	UAE	4.6
5	Germany	4.7	5	Australia	3.6
6	UK	4.5	6	Turkey	3.4
7	Spain	3.5	7	Pakistan	3.3
8	Italy	2.7	8	Viet Nam	2.9
9	Ukraine	2.6	9	USA	2.9
10	Netherlands	2.0	10	South Korea	2.6

NO. OF SUBMISSIONS TO THE UNITED NATIONS REGISTER OF CONVENTIONAL ARMS (UNROCA), 1992–2014
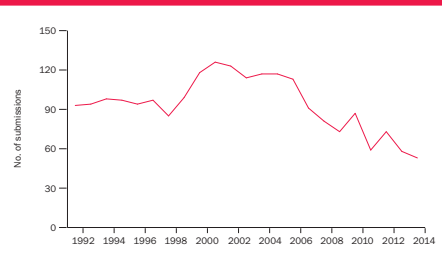
PERCENTAGE OF EUROPEAN UNION MEMBER STATES PROVIDING A FULL SUBMISSION FOR THE EU ANNUAL REPORT ON ARMS EXPORTS, 2003–13
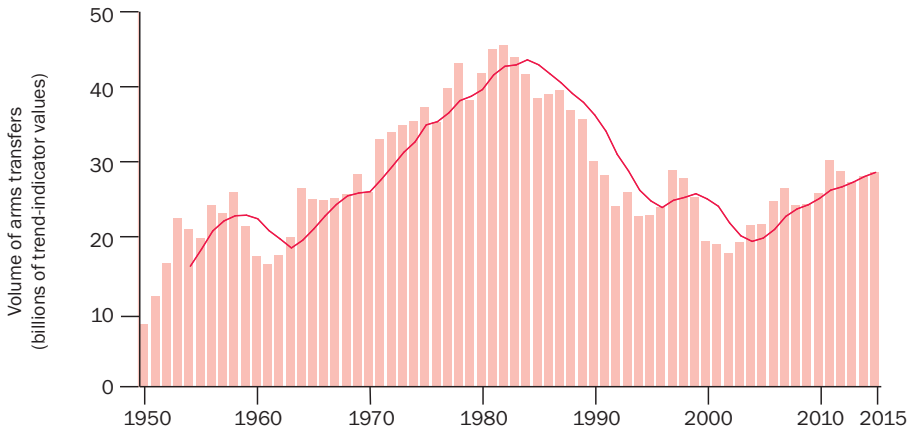
Transparency in arms transfers

Following the trend set in recent years, 2015 proved to be another disappointing year for transparency in arms transfers. The number of states reporting their arms imports and exports to the United Nations Register of Conventional Arms (UNROCA) fell again in 2015. Only just over a quarter of all UN member states used the UNROCA mechanism to report basic data on imports and exports. In the period 2010–14, which covers the five most recent reporting years, several of the top 10 suppliers of major arms as recorded by SIPRI failed to report to the UNROCA every year, and a number of the largest importers were absent in all five years. Participation in some regions, particularly Africa and the Middle East, has been consistently low in recent years. With the exception of the reporting mechanisms used in Western Europe, participation in regional reporting mechanisms also appears to be in decline. Neither Asia nor the Middle East has such a mechanism.

The financial value of arms exports, 2014*

Although SIPRI data does not represent the financial value of arms transfers, many arms exporting states do 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 2014 to be at least $94.5 billion. However, the true figure is likely to be higher.

  *The latest year for which data is available. ●

16. WORLD NUCLEAR FORCES

At the start of 2016, nine states—the United States, Russia, the United Kingdom, France, China, India, Pakistan, Israel and the Democratic People's Republic of Korea (DPRK, North Korea)—possessed approximately 15 395 nuclear weapons, of which 4120 were deployed with operational forces. Roughly 1800 of these weapons are kept in a state of high operational alert.

Nuclear arsenals

The total number of nuclear warheads in the world is declining, primarily due to the USA and Russia reducing their nuclear arsenals, as a result of the 2010 Treaty on Measures for the Further Reduction and Limitation of Strategic Offensive Arms (New START) and unilateral reductions. The pace of reductions appears to be slowing, however, and neither party has made significant reductions in its deployed strategic nuclear forces since early 2011. Furthermore, both the USA and Russia have extensive and expensive modernization programmes under way for their remaining nuclear delivery systems, warheads and production facilities.

The other nuclear-armed states have considerably smaller nuclear arsenals, but all are also either developing or deploying new weapon systems or have announced their intention to do so. The UK (which opted in 2015 for 'like-for-like' Trident replacement) and France are committed to maintaining and modernizing their nuclear forces and infrastructure; China has embarked on a long-term modernization programme to make qualitative improvements to its nuclear forces; India and Pakistan are both expanding their nuclear weapon stockpiles as well as developing land-, sea- and air-based missile delivery systems; Israel is testing a long-range nuclear-capable ballistic missile; and North Korea continues to prioritize its military nuclear programme, with uncertainty as to whether it has developed a nuclear warhead that can be carried by a ballistic missile.

Inadequate transparency

The existence of reliable information on the status of the nuclear arsenals and capabilities of the nuclear-armed states varies considerably. The USA has disclosed substantial information about its stockpile and forces, while the UK and France declare some information. Even though it shares such information with the USA, Russia does not otherwise disclose the detailed breakdown of its forces counted under New START. China remains highly non-transparent. 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 respective arsenals. Israel neither officially confirms nor denies that it possesses nuclear weapons, and North Korea provides no public information about its nuclear weapon capabilities.

Fissile materials

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 HEU and plutonium for use in their nuclear weapons; India and Israel have produced mainly plutonium; and Pakistan has produced mainly HEU. All states with a civilian nuclear enrichment or reprocessing industry are capable of producing fissile materials. ●

Country	Deployed warheads	Other warheads	Total inventory
USA	1 930	2 500	7 000
Russia	1 790	2 800	7 290
UK	120	–	215
France	280	10	300
China	–	–	260
India	–	..	100–120
Pakistan	–	..	110–130
Israel	–	..	80
North Korea	–	(10)	(10)
Total	**4 120**	**5 310**	**~15 395**

. . = not applicable or not available; – = zero; ( ) = uncertain figure. All estimates are approximate and as of Jan. 2016.

GLOBAL STOCKS OF FISSILE MATERIALS, 2015

Materials that can sustain an explosive fission chain reaction are essential for all types of nuclear explosive, from first-generation fission weapons to advanced thermonuclear weapons. The most common of these fissile materials are highly enriched uranium (HEU) and plutonium.

For their nuclear weapons, China, France, Russia, the UK and the USA have produced both HEU and plutonium; India, Israel and North Korea have produced mainly plutonium; and Pakistan is moving from mainly HEU to plutonium weapons. All states with a civilian nuclear enrichment or reprocessing industry have some capability to produce fissile materials for weapons.

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

	Global stocks, 2015
Highly enriched uranium	~1 355 tonnes
Separated plutonium	
Military stocks	~230 tonnes
Civilian stocks	~275 tonnes

SIPRI FACT SHEETS

Each year, in the run-up to the next edition of the SIPRI Yearbook, SIPRI has a number of major data-set launches, covering the latest year for which data is available. Each launch features a detailed, up-to-date fact sheet that highlights the topic's key findings—findings which are explored in more depth in the corresponding yearbook chapter. The fact sheets are comprehensive in themselves, while offering a glimpse of the more expansive coverage to come.

Fleurant, A., Perlo-Freeman, S., Wezeman, P. D., Wezeman, S. T. and Kelly, N., 'The SIPRI Top 100 arms-producing and military services companies, 2014', SIPRI Fact Sheet, December 2015, <https://www.sipri.org/publications/2015/sipri-fact-sheets/sipri-top-100-arms-producing-and-military-services-companies-2014>.

Fleurant, A., Perlo-Freeman, S., Wezeman, P. D. and Wezeman, S. T., 'Trends in international arms transfers, 2015', SIPRI Fact Sheet, February 2016, <https://www.sipri.org/publications/2016/sipri-fact-sheets/trends-international-arms-transfers-2015>.

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17. NUCLEAR ARMS CONTROL AND NON-PROLIFERATION

Iran's nuclear deal

The highlight in nuclear non-proliferation in 2015 was the landmark multinational agreement on limitations on Iran's nuclear programme. Negotiations between Iran and France, Germany, the United Kingdom, China, Russia and the United States, facilitated by the European Union (the E3/EU+3) yielded the Joint Comprehensive Plan of Action (JCPOA), which defines a wide-ranging monitoring and verification regime to be implemented by the International Atomic Energy Agency (IAEA) to ensure Iran's nuclear programme remains exclusively peaceful. The JCPOA was signed in Vienna on 14 July 2015 in parallel with a 'Road-map for the clarification of past and present outstanding issues regarding Iran's nuclear programme' signed by Iran and the IAEA. The provisions of the JCPOA were incorporated into United Nations Security Council Resolution 2231, which paves the way for the lifting of all multilateral sanctions on Iran.

Throughout 2015 Iran continued to implement its Safeguards Agreement with the IAEA as well as the measures under the work plan referred to as the 'Joint Statement on a Framework for Cooperation', agreed between the IAEA and Iran on 11 November 2013, and the Joint Plan of Action (JPA) agreed with the E3/EU+3 on 24 November 2013. During 2015, as in previous years, the IAEA maintained its safeguards conclusion on the non-diversion of declared nuclear material at the nuclear facilities and locations declared by Iran under its Safeguards Agreement. However, the IAEA was not in a position to provide credible assurances about the absence of undeclared nuclear material and activities in Iran, and therefore to conclude that all nuclear material in Iran remains in use in peaceful activities. This broader conclusion can only be reached for states with an additional protocol in force and for which the IAEA has carried out its safeguards assessment for the 'state as a whole'.

The 2015 NPT Review Conference

The low point of the year was the rejection by Canada, the UK and the USA of the final document of the 2015 NPT Review Conference. The failure of the NPT Review Conference lay in disagreements over the establishment of a zone free of nuclear and other weapons of mass destruction in the Middle East and on the humanitarian consequences of nuclear weapons, as well as the lack of progress on nuclear disarmament.

The UN General Assembly voted in 2015 to establish an Open Ended Working Group on 'Taking forward multilateral nuclear disarmament negotiations'.

The Conference on Disarmament (CD) once again failed to agree on a Programme of Work and therefore was unable to commence negotiations on any item on its agenda. At a CD High Level Segment on 2–9 March 2015, foreign ministers and senior officials from 31 member states emphasized, among other things, the importance of the 2015 NPT Review Conference and the humanitarian consequences of the use of nuclear weapons. ●

18. REDUCING SECURITY THREATS FROM CHEMICAL AND BIOLOGICAL MATERIALS

Biological arms control

In 2015 the states parties to the 1972 Biological and Toxin Weapons Convention (BTWC) met at the last intersessional annual meetings before the Eighth Review Conference to be held in November 2016. The three standing agenda items for the intersessional meetings were cooperation and assistance, a review of developments in science and technology, and the strengthening of national implementation. The special biennial topic for 2015 was implementation of Article VII of the BTWC, which relates to assistance to those threatened by biological weapons.

Legal and political frameworks for biological and chemical safety and security include activities that strengthen international prohibitions against chemical and biological warfare. The United States National Science Advisory Board for Biosecurity devoted substantial attention in 2015 to the security and safety implications of gain-of-function research. This research has safety and security implications in cases where the ability of a pathogen to cause disease is enhanced.

Chemical arms control and disarmament

The Organisation for the Prohibition of Chemical Weapons (OPCW) continued to verify compliance with the 1993 Chemical Weapons Convention (CWC). It remained heavily engaged in the work, begun in 2013, to confirm the accuracy and completeness of Syria's declarations on, and destruction of, its chemical weapons and associated infrastructure. The last of the toxic chemicals and precursors removed from Syria during maritime operations in 2013–14 were destroyed in January 2016.

Investigation of allegations of chemical weapon use in Syria

There were further allegations, some of which were confirmed, of the use of chemical weapons in Syria, and perhaps the surrounding region. This prompted the United Nations Security Council to pass Resolution 2235 on 7 August 2015, which established an OPCW–UN Joint Investigative Mechanism (JIM). The JIM, which comprises 24 experts, became fully operational on 13 November 2015 and will operate for 12 months. It is tasked with identifying the wider context of the alleged chemical weapon attacks, including co-conspirators, organizers, financial backers and sponsors. ●

SIPRI YEAR OF REFLECTION

To celebrate its 50th anniversary, SIPRI has produced a short film series, *2016—A Year of Reflection*, which focuses on SIPRI's 50 years of fact-finding for peace and its role in building a more peaceful future. To watch the series, visit SIPRI's YouTube channel, <www.youtube.com/user/SIPRIorg/playlists>.

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19. DUAL-USE AND ARMS TRADE CONTROLS

The Arms Trade Treaty

The First Conference of States Parties (CSP1) to the Arms Trade Treaty (ATT) took place in Cancun, Mexico on 24–27 August 2015. Despite disagreement on key issues during the preparatory process, vital procedural decisions were made that laid the groundwork for implementation of the ATT, including the location of the ATT secretariat. However, major obstacles remain to the ATT having any practical impact. Important arms supplying and recipient states, such as China, India, Russia and Saudi Arabia, remain outside the treaty and the United States is yet to ratify it. An increase in rates of accession, particularly among states in Africa and Asia, as well as capacity building to enable treaty implementation, will also be required.

Multilateral arms embargoes

In 2015, 38 multilateral arms embargoes were in force: 15 imposed by the United Nations, 22 by the European Union (EU) and 1 by the League of Arab States. Of the EU embargoes, 11 directly implemented UN decisions, 3 implemented UN embargoes with modified geographical scope or coverage and 8 had no UN counterpart. The single Arab League arms embargo (on Syria) had no UN counterpart.

The UN imposed an arms embargo on the Houthi armed group in Yemen in 2015 and made significant changes to the arms embargo on Iran. The EU did not impose any new embargoes during the year. Several violations of UN embargoes were reported in 2015, involving arms exports by Iran and arms supplies to Libya that were

carried out without the permission of the relevant UN sanctions committee. Unlike UN arms embargoes, there are no systematic mechanisms in place for monitoring compliance with EU and Arab League arms embargoes.

Export control regimes

All the multilateral export control regimes—the Australia Group, 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—sought to update their trade controls on goods, software and technologies that have uses in

---

MULTILATERAL ARMS EMBARGOES IN FORCE, 2015

United Nations (15 embargoes)
• Central African Republic • Democratic Republic of the Congo (NGF) • Côte d'Ivoire • Eritrea • Iran • Iraq (NGF) • ISIL, al-Qaeda and associated individuals and entities • North Korea • Lebanon (NGF) • Liberia (NGF) • Libya (NGF) • Somalia • Sudan (Darfur) • Taliban • Yemen (NGF)

European Union (22 embargoes)
Implementations of UN embargoes (11):
• Al-Qaeda, the Taliban and associated individuals and entities • Central African Republic • Democratic Republic of the Congo (NGF) • Côte d'Ivoire • Eritrea • Iraq (NGF) • Lebanon (NGF) • Liberia (NGF) • Libya (NGF) • Somalia (NGF) • Yemen (NGF)
Adaptations of UN embargoes (3): • Iran • North Korea • Sudan (Darfur)
Embargoes with no UN counterpart (8):
• Belarus • China • Egypt • Myanmar • Russia • South Sudan • Syria • Zimbabwe

Arab League (1 embargo)
• Syria

NGF = non-governmental forces.

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connection with chemical, biological, nuclear and conventional weapons.

Discussions on agreeing common standards for controls on transit and trans-shipment resulted in the adoption of a best practice document in the Wassenaar Arrangement. All the regimes faced difficulties with admitting new members, due to the consensus requirement for approving applications. In 2015 there was an ongoing discussion in all the regimes about how to engage with non-participating states. These efforts included formalizing the status of unilateral adherence in regimes other than the MTCR and giving such status increased visibility and further incentives through enhanced information sharing.

The regimes also sought to increase the added value of their outreach dialogue beyond sharing publicly available information. Discussions continued on India's participation in the regimes, in particular the NSG and the MTCR. The MTCR did not approve India's membership, reportedly due to a veto based on an unrelated matter. The regimes also amended the common control lists to address the challenges of emerging technologies and the procurement strategies of those seeking to acquire weapons of mass destruction and advanced delivery systems.

EU export control developments

EU export controls on conventional arms and dual-use items were subject to review in 2015. The review of the EU Common Position defining common rules governing control of exports of military technology and equipment was concluded in 2015. While it did not result in changes to the instrument, the guidance attached to certain export criteria was amended, partly in order to take account of sections of the ATT, including its reference to gender-based violence.

The EU's revision of its regulation on the export, transit and brokering of dual-use items continued throughout 2015. The European Commission is expected to put forward a legislative proposal in 2016 that is likely to include expanded controls on transfers of surveillance technologies. It could also lead to a shift beyond the civilian-use or military-use paradigm by framing the range of goods controlled in relation to the end user (i.e. systems used by intelligence and law enforcement agencies).

Export controls and the private sector

The expansion in the range of private sector entities potentially subject to trade controls and the increased complexity of trading patterns have helped drive two developments among national licensing authorities, the EU's export control regimes and—to a lesser extent—international forums: (*a*) a growing shift to a reduction in licensing requirements for less sensitive exports, through the use of global and general licences; and (*b*) ongoing attempts to incentivize the adoption of internal compliance programmes in companies and research institutions. ●

SIPRI DATABASES

SIPRI Military Expenditure Database

Gives consistent time series on the military spending of 172 countries since 1988, 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 GDP.

SIPRI Arms Transfers Database

Shows all international transfers in seven categories 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 EU or UN, 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.

SIPRI Inventory of Arms Control and Disarmament Agreements

Lists multi- and bilateral treaties, conventions, protocols and agreements relating to arms control and disarmament.

SIPRI Inventory of International Security Cooperation Bodies

Lists the main international organizations, intergovernmental bodies, treaty-implementing bodies and transfer control regimes whose aims include the promotion of security, stability, peace or arms control.

Access the SIPRI databases at **www.sipri.org/databases**

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  www.razumkov.org.ua

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