SIPRI YEARBOOK 2007

ARMAMENTS, DISARMAMENT AND INTERNATIONAL SECURITY

The **Stockholm International Peace Research Institute** (SIPRI) is an independent international institute for research into problems of peace and conflict, especially those of arms control and disarmament. It was established in 1966 to commemorate Sweden's 150 years of unbroken peace. The Institute is financed mainly by a grant proposed by the Swedish Government and subsequently approved by the Swedish Parliament. The staff and the Governing Board are international. The Institute also has an Advisory Committee as an international consultative body.

The objectives of SIPRI's research are
• to promote transparency in security and arms control
• to contribute to conflict prevention and resolution
• to disseminate information to the broader public.

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SIPRI Yearbook 2007

SIPRI Yearbook 2007 presents a combination of original data in areas such as world military expenditure, international arms transfers, arms production, nuclear forces and multilateral peace operations with state-of the art analysis of important aspects of arms control, peace and international security.

The major analytical theme of *SIPRI Yearbook 2007* is the new perspectives opened up for public security policy by the concept and language of 'risk'. The Introduction elaborates on the risk framework, the challenges of prioritization, the traps of miscalculation, and the benefits of a risk perspective in terms of adjusting how governments and regional and international cooperative bodies go about trying to improve security.

One advantage of risk-based security analysis is its ability to accommodate a rapidly changing array of policy challenges, many of which may not be recognized as 'threats' in the traditional sense. Several of these challenges are examined in the Yearbook. Chapter 6 highlights the relationship between **energy and security**. Chapter 11 looks at the risk posed by the many **civil materials** that can have potentially devastating military applications—and offers recommendations for how to reduce the chance of their falling into the hands of terrorists. The unprecedented influence that **transnational factors**—for example refugees and other migrants, the new widespread availability of global communications, and the covert involvement of foreign states—exerts on contemporary major armed conflicts is discussed in chapter 2.

Chapter 7 examines the implications of risk-based approaches to security analysis for government spending and

particularly questions the cost-effectiveness of military spending as a way of reducing **risks to human lives**. Reliable intelligence is essential for risk assessment: chapter 5 examines how countries are trying to ensure that their **intelligence services** are democratically accountable.

Alongside the regular chapters on the **control of conventional**, **chemical and biological weapons**, this edition of the Yearbook includes an accounting of all the existing world stocks of **nuclear fissile materials** and the security risk they pose, in appendix 12C. Appendix 14A discusses international efforts to curtail the use by terrorists of man-portable air defence systems (**MANPADS**). Appendix 11A examines the implementation and content of **UN Security Council Resolution 1540**—on prevention of proliferation of weapons of mass destruction to non-state actors—and highlights some of the issues surrounding this innovative attempt to create universally applicable laws through the UN Security Council.

Chapter 1 provides an overview of developments in **Euro-Atlantic security**. Four **regional bodies in the former Soviet area** that cooperate on security are compared in chapter 4, using new analytical tools developed by SIPRI for assessing regional cooperation.

Finally, the Yearbook analyses implications of the changing nature of armed conflict. Appendix 2C asks whether the standard **definition of armed conflict**, particularly the criterion that at least one of the conflicting parties must be a state, is now too narrow to produce relevant conflict data. Chapter 3 focuses on how and how well **peacekeeping** has adapted to the changes in conflict.

This booklet presents a selection of the data and key findings from *SIPRI Yearbook 2007.*

Contents

Introduction

The concept of 'risk', which embraces a wide range of problems for human security and survival, is increasingly being used in place of the more traditional 'threat'.

Public policies that take into account the whole spectrum of risk—including natural hazards and social and economic vulnerability, as well as conflict and terrorism—have a better chance of correctly assessing priorities. However, it is difficult to compile and compare all the risks facing a country, for both practical and subjective reasons. Recent events and obvious short-term challenges can distort priorities and it is hard to recognize how many risks are self-created. Action to address one risk may have unforeseen ramifications, aggravating both the original risk and others. Most current technical models for comparing and forecasting risk fail to take into account the transnational, often global, diffusion of many major risk factors today, and to assess the vulnerabilities or resilience of the world system as a whole.

The potential complications revealed by risk-based security analysis suggest that living with some risks—and focusing on resilience and recovery—can be safer than trying to eliminate them. Correct assessment of risk is a useful brake on potential recklessness.

Effective common solutions to common risks—and a sharing of the costs involved in managing them—could be achieved through intensified multilateral cooperation. The modern concept of a 'risk society' may, thus, lead back to the older vision of a 'global society' with common security governance.

Euro-Atlantic security and institutions

Mainstream security analysis has remained essentially unchanged since the fundamental shift in Western security concerns towards a focus on international terrorism after 11 September 2001.

The US-led actions in **Iraq** seem to have created a long-term liability for the international community. Global counter-terrorism efforts have been hampered by attempts to link them to the Iraqi situation.

Both the **European Union** and **NATO** are in transition and are seeking ways to prove their relevance in the context of new challenges. EU foreign and security policy was handicapped in 2006 by the crisis over adoption of a European Constitution and by 'enlargement fatigue'. NATO's long-heralded transformation process made little headway. The lack of a shared vision hindered closer EU–NATO cooperation.

In 2006 the separation of **Serbia and Montenegro** and the prospect of a new status for **Kosovo** were steps towards establishing lasting state structures in the Western Balkans.

Russia has used its energy wealth to revive national pride, to restore its influence in former Soviet neighbours and to maximize its geopolitical influence. The country's employment of energy supply as a major strategic tool in 2006 and early 2007 altered the paradigm of international security and pushed European states to seek closer cooperation.

Russia's behaviour towards much of the Euro-Atlantic community in 2006 encouraged the emergence of a—still not geographically precise—'soft' division between the new, expanded West and the under-reformed, less-integrated parts of Eastern Europe.

Major armed conflicts

Transnationalism—particularly the role of diasporas, state-based transnational conflict networks, and international terrorism and crime—has recently become an important factor in the analysis of armed conflicts, helping to clarify the links between local events and changes in the world order. In the future, finding ways to address the transnational aspects of conflict is likely to be high on the international policy agenda.

In **Afghanistan**, Taliban operations in 2006 were thought to have been supported by bases in neighbouring **Pakistan**.

The conflicts involving **Israel**, **the Palestinian territories** and **Lebanon** in 2006 illustrated the role of regional and transnational conflict networks and the link between state and non-state actors.

Somalia appeared to serve both as a proxy battleground for regional interests and as a focal point in the **USA**'s 'global war on terrorism'. **Ethiopia** intervened militarily to bolster Somalia's Transitional Federal Government. The Somali diaspora, perhaps including large refugee populations, also had an influence on the conflict.

In 2006 the same **17 major armed conflicts** were active in the same 16 locations as in 2005 (the conflict between Israel and Hezbollah in Lebanon in 2006 is not counted as a major armed conflict because the estimated death-toll was below 1000). None of the active conflicts was interstate.

Asia was for the second year running the region with the largest number of major armed conflicts.

Regional distribution and total number of major armed conflicts, 1997–2006
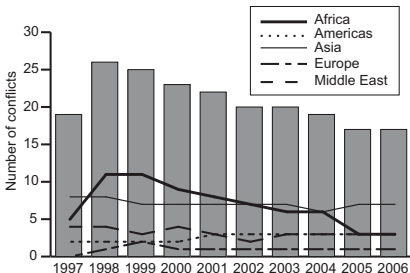
The 17 major armed conflicts in 2006[a]

Africa	**Americas**	**Asia**
Burundi ↓	Colombia ↓	Afghanistan ↑[b]
Sudan ↓	Peru ↓	India (Kashmir) ↓
Uganda ↓	USA ↑	Myanmar ↑
		Nepal ↑
Europe	**Middle East**	Philippines ↑
Russia	Iraq[b]	Philippines
(Chechnya) ↓	Israel ↑	(Mindanao) ↓
	Turkey ↓	Sri Lanka ↑[b]

↓/↑ = Fewer/more battle deaths than in 2005.

[a] For details about the conflicts, refer to the SIPRI Yearbook.

[b] Conflicts in these locations caused 1000 or more battle-related deaths in 2006.

Peacekeeping:
keeping pace with changes in conflict

In 2006 more personnel were deployed to peace missions than in any previous year. Expenditure on peace missions also reached an unprecedented level.

Developments towards the middle of the year forced the international community to confront some recurrent political and operational dilemmas in peacekeeping; to reassess some past missions; and to review more generally the ways in which missions are designed, implemented and evaluated.

The UN and NATO had severe difficulties in expanding, respectively, the **UNIFIL** mission in Lebanon and the international mission **ISAF** in Afghanistan. ISAF assumed full responsibility for all regions of Afghanistan in 2006.

A breakdown of law and order in Timor-Leste led to deployment of a large, multidimensional UN mission, **UNMIT**, just as the UN was intending to withdraw entirely from the country.

In **Darfur**, Sudan, obtaining the Sudanese Government's consent for deployment of UN peacekeepers was particularly challenging in 2006. The government eventually agreed to the deployment of a hybrid **African Union–UN** mission. Consent also became an issue in several other cases where the missions, or contributing countries, were accused by conflicting parties of violating the principles of neutrality and impartiality.

Several mission mandates and other documents included 'defence of the mandate' alongside self-defence as a justification for the use of force. This came at a time when missions were becoming increasingly 'robust', arguably blurring the line between peacekeeping and war fighting.

Multilateral peace operations in 2006

There were **60 peace missions** active for part or all of 2006: 20 led by the UN, 33 led by regional organizations or alliances, and 7 led by ad hoc coalitions.

Excluding the Multinational Force in Iraq (as a statistical outlier), 167 600 military and civilian **personnel** were deployed to 59 peace missions in 2006, a 28 per cent increase in deployments since 2005.

With 73 500 troops and military observers and 14 000 civilian police and civilian staff deployed to 20 missions in 2006, the UN remains the single largest actor in peace operations. It deployed more than twice as many personnel in 2006 as it did in 2000.

For the first time in several years, European countries contributed large deployments to UN missions in 2006.

The combined known **costs** of UN, EU and NATO peace missions reached the record level of $5.5 billion in 2006.

Seven new missions were established in 2006: the UN Integrated Office in Sierra Leone (UNIOSIL); the UN Integrated Mission in Timor-Leste (UNMIT); the Australian-led International Security Forces in Timor-Leste; the AU Mission for Support to the Elections in the Comoros (AMISEC); the EU Police Mission for the Palestinian Territories (EUPOL COPPS); EUFOR RD Congo; and an OSCE mission in Montenegro.

Six missions terminated in 2006: the UN Operation in Burundi (ONUB); the UN Office in Timor-Leste (UNOTIL); AMISEC; the EU's Aceh Monitoring Mission (AMM); the EU Police Advisory Team (EUPAT) in the Former Yugoslav Republic of Macedonia; and EUFOR RD Congo.

Regional security cooperation in the former Soviet area

The former Soviet area has followed a general trend towards multilateral institution building. Four institutions there have notable security dimensions: two Russia-led groups—the Commonwealth of Independent States (CIS) and the Collective Security Treaty Organization (CSTO); one group formed by Georgia, Ukraine, Azerbaijan and Moldova (GUAM); and the Shanghai Cooperation Organization (SCO), consisting of China, Russia and four Central Asian states.

Unlike similar bodies created by the West, none of these except GUAM promotes good governance in internal affairs.

The CIS claims competence for military cooperation, peace operations and anti-terrorism, but its practical achievements have been very limited.

Russia has increasingly diverted its military cooperation from the CIS to **the CSTO**. The CSTO has established joint rapid-deployment forces, is developing a united air defence, promotes equipment collaboration, and has anti-drug and counterterrorism policies. It seems to be the most coherent militarily.

GUAM has a counterterrorism programme and has discussed joint peacekeeping, but the diverging political paths of its members have limited its outputs.

The SCO engages in mutual confidence building and military cooperation against terrorism, extremism and separatism. It shows the most vitality and scope for development.

All these groupings are likely to shape their part of the Eurasian security architecture for some time to come.

Democratic accountability of intelligence services

The 11 September 2001 terrorist attacks on the USA and the 2003 US-led invasion of Iraq focused international attention on the professional adequacy of **Western intelligence services**, their relationship with national governments and their alleged involvement in **human rights abuses**.

Major public and parliamentary investigations into claims of failures or misconduct by intelligence services were carried out in several countries as a result. Concern about the external accountability of intelligence services is clearly high on the public policy agenda.

A comparative study of several democratic countries reveals that during the past 30 years many countries have moved from control of their intelligence agencies by executive decree towards greater democratic accountability.

Intelligence oversight systems now face a number of recurring **challenges and problems**:

- balancing the legitimate need for transparency with the operational need for secrecy of operations, sources and methods;

- the danger of politicization and executive misuse of the intelligence services;

- establishing democratic oversight of intelligence services in post-authoritarian and post-communist states; and

- keeping track of international intelligence cooperation.

The extent to which the relatively young oversight systems in existence are capable of fully addressing these challenges in the post-September 2001 climate remains to be seen.

Energy and security:
regional and global dimensions

Efforts to secure energy supplies are an important factor shaping states' foreign policy and foreign relations today.

In response to the challenges of energy security, some countries have adopted a nationalistic approach, even being ready to use force—military or economic—to protect their energy interests. Other countries have shown more understanding of the need for collective, institutional measures.

Energy security concerns have led to new **strategic alliances and cooperation** between states that are major energy market players: exporters, importers and transit countries. These concerns have also become sources of international tension, rivalry and conflict.

Further **intra-state conflicts** with an energy resource dimension are likely to occur in the future, particularly in Africa. The strategic importance of geographical areas with rich oil and gas reserves will certainly grow over the coming decades, making them increasingly vulnerable to tension and conflict.

Although energy security has traditionally been regarded as a purely national or internal matter, some aspects of it are clearly best addressed multilaterally. Cooperation between major energy market players has the potential to greatly enhance the security of energy supplies. In the field of energy security, international cooperation can coexist with international competition—but they need to be better balanced.

While a breakthrough in the development of alternative energy sources could signficantly change the prospects for energy security, it would also create new security concerns.

Analysing risks to human lives

The rationale that underlies governments' military spending is based on a narrow, traditional concept of security that links it closely to armed threats to states. Recent security analyses—taking different and broader definitions of security—recognize a range of **non-traditional security risks** that cannot be addressed by military means.

The field of public health offers many examples of areas where non-military spending could be far more cost-effective as a means to provide **security of human lives**. In comparison with military expenditure, the prevention strategies developed for the World Health Organization and other United Nations bodies to reduce the risks of premature death and disability—for example basic health interventions or achieving the Millennium Development Goals—are highly cost-effective.

There are overlaps between the risk factors for disease and those for collective violence. This suggests that there is also an overlap in the agendas for '**freedom from want**' and '**freedom from fear**', and thus has important implications for different types of security strategy.

While economic scarcity and competition for resources are potential sources of conflict and violence, using the world's resources constructively to address **hunger**, **environmental challenges** and **poverty**—including through transfers of resources from richer countries to developing countries with high mortality rates—is likely both to improve human survival directly and to strengthen international security indirectly.

Military expenditure

World military expenditure in 2006 is estimated to have reached **$1204 billion** in current US dollars. This represents increases in real terms of 3.5 per cent between 2005 and 2006 and 37 per cent between 1997 and 2006. World military spending in 2006 amounted to **2.5 per cent of world GDP**.

US outlays for national defence increased by 53 per cent in real terms between 2001 and 2006, primarily as a result of allocations of **$381 billion** for military operations in Afghanistan, Iraq and elsewhere.

In 2006 **China** was the fourth biggest military spender in the world, surpassing **Japan** in total spending, although with much lower per capita spending.

The top 10 military spenders in 2006

Values are in constant (2005) US dollars

Country	Total military spending (US$ b.)	Military spending per capita (US$)	World share (%)
USA	528.7	1 756	46
UK	59.2	990	5
France	53.1	875	5
China	49.5	37	4
Japan	43.7	341	4
Germany	37.0	447	3
Russia	34.7	244	3
Italy	29.9	514	3
Saudi Arabia	29.0	1 152	3
India	23.9	21	2
Sub-total	888.7	–	77
World	1 158.0	–	100

Shares of total military spending in 2006, by world region
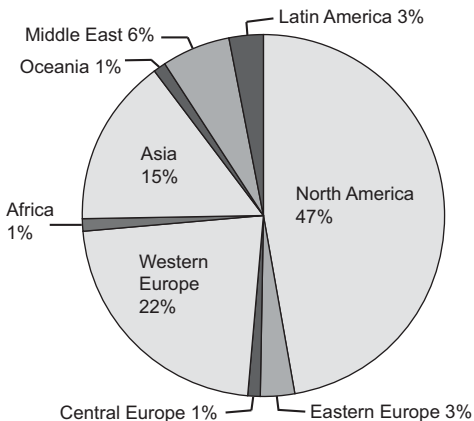
Military expenditure in **Eastern Europe** increased by 12 per cent in relative terms between 2005 and 2006, the largest increase of any world region. In two regions—**Central America** and **Western Europe**—military expenditure decreased slightly between 2005 and 2006. Over the period 1997–2006, six regions increased their military spending by more than 50 per cent in real terms: **Central Asia**, **Eastern Europe**, **the Middle East**, **South Asia**, **North America** and **sub-Saharan Africa**, in descending order of size of spending increase.

Arms production

The arms sales of the 100 largest arms-producing companies in the world (excluding Chinese companies)—the SIPRI Top 100—in 2005 reached an estimated **$290 billion**. This was a 3 per cent increase in real terms over the arms sales of the SIPRI Top 100 for 2004.

Between 2004 and 2005, 6 companies increased their arms sales by more than $1 billion and 19 companies increased their arms sales by more than 30 per cent. This was mostly due to acquisitions rather than organic growth.

The high and rising fixed costs of advanced weapon systems are shaping both developments within the arms industry and national defence and military-industrial policies.

Regional shares of arms sales for the SIPRI Top 100

Eastern Europe 1.9% (9 companies)

Western Europe 29.4.1% (32 companies)

North America 63.1% (41 companies)

Other OECD 2.9% (9 companies)

Other non-OECD 2.8% (9 companies)
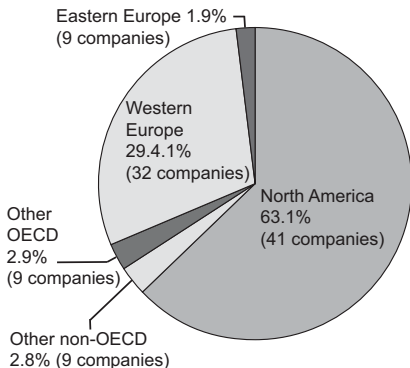
The 25 biggest arms-producing companies

The list below shows the arms sales of the 25 biggest arms-producing companies in the SIPRI Top 100 for 2005. The country or region in which the company is based is given in brackets. The complete listing of the SIPRI Top 100 for 2005 can be found in *SIPRI Yearbook 2007*.

1	Boeing (USA)	$28 050 m.
2	Northrop Grumman (USA)	$27 590 m.
3	Lockheed Martin (USA)	$26 460 m.
4	BAE Systems (UK)	$23 230 m.
5	Raytheon (USA)	$19 800 m.
6	General Dynamics (USA)	$16 570 m.
7	Finmeccanica (Italy)	$9 800 m.
8	EADS (Europe)	$9 580 m.
9	L-3 Communications (USA)	$8 970 m.
10	Thales (France)	$8 940 m.
11	United Technologies Corp. (USA)	$6 840 m.
12	SAIC (USA)	$5 060 m.
13	DCN (France)	$3 520 m.
14	Rolls Royce (UK)	$3 470 m.
15	Computer Sciences Corp. (USA)	$3 400 m.
16	ITT Industries (USA)	$3 190 m.
17	General Electric (USA)	$3 000 m.
18	Honeywell International (USA)	$2 940 m.
19	Halliburton (USA)	$2 720 m.
20	SAFRAN (France)	$2 630 m.
21	Dassault Aviation Groupe (France)	$2 210 m.
22	Mitsubishi Heavy Industries (Japan)	$2 190 m.
23	Saab (Sweden)	$2 110 m.
24	Alliant Techsystems (USA)	$2 060 m.
25	Harris (USA)	$1 870 m.

International arms transfers

There was an almost **50 per cent increase** in the volume of transfers of major conventional weapons between 2002 and 2006, according to the SIPRI trend-indicator values.

The USA and **Russia** were the biggest suppliers of arms in the period 2002–2006, each accounting for around 30 per cent of global deliveries. Exports from **EU** countries to non-EU countries accounted for just over 20 per cent. **China** and **India** were the largest arms importers in the world.

While arms deliveries to **Iran**, mainly from Russia, attracted much media attention in 2006, deliveries from the USA and European countries to **Israel**, **Saudi Arabia** and **the United Arab Emirates** were significantly larger. These included deliveries of long-range conventional strike systems that may have significant impacts on stability in the region.

In the conflict in southern Lebanon in mid-2006, **Hezbollah** proved to be unexpectedly well armed. Most of the weapons are thought to have been supplied by **Iran** and **Syria**.

The rising costs of developing large conventional weapon systems are making nearly all countries dependent on others for weapons and weapon technologies. Some states may respond by trying, at high economic cost, to produce large weapon systems independently or to focus on relatively cheap alternatives such as weapons of mass destruction or war-fighting strategies such as terrorism and cyberwarfare.

In 2006 **the USA** and several African and Middle Eastern countries were accused of breaking the UN arms embargo on **Somalia**. The embargo was lifted in December.

In December 2006 the UN General Assembly adopted a resolution on the creation of an **international arms trade treaty**.

The 10 largest exporters and importers of major conventional weapons in 2002–2006

Exporter	Share of world exports (%)	Importer	Share of world imports (%)
USA	30.2	China	13.7
Russia	28.9	India	9.5
Germany	8.6	Greece	6.8
France	8.3	UAE	6.6
UK	4.2	South Korea	3.6
Netherlands	3.0	Australia	3.2
Italy	2.4	Israel	3.2
China	2.0	Egypt	2.9
Sweden	1.8	Turkey	2.8
Israel	1.6	Iran	2.4

The trend in international transfers of major conventional weapons, 1997–2006
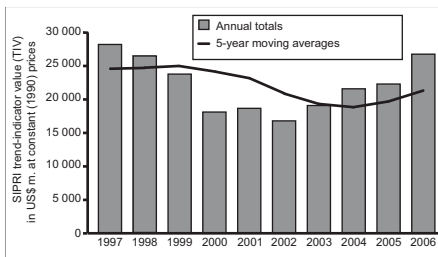
The 5-year moving averages are plotted at the last year of each 5-year period. The SIPRI trend-indicator value indicates volume of transfers, not financial values. See URL <http://armstrade.sipri.org/>.

Reducing security risks by controlling possession and use of civil materials

Certain civil materials, equipment, knowledge and technologies that have no intended military application could be misused in acts of mass-impact **terrorism** or for other harmful purposes but fall outside the scope of arms control. Many of these items are owned by the private sector of industry.

Any system developed to control these civil items should not undermine economic activity. Furthermore, governance solutions cannot be based on emergency powers, nor should they take extensive control away from civil society.

There is a growing consensus that **business and government** will increasingly have to work together as partners in building security. As part of such efforts, regulators need to create a more integrated **set of rules** to control the misappropriation and misuse of civil items for unauthorized military purposes. Awareness should also be raised about corporate security responsibilities across the business community.

Voluntary, certified **security standards for industry** should become an integral part of total quality management within companies. Regulators and companies need to work together to create these standards. Existing processes taking place in the International Organization for Standardization (ISO) and the European Committee for Standardization (CEN) could be the starting point for the development of a comprehensive family of security standards.

UN Security Council Resolution 1540: non-proliferation by means of international legislation

UN Security Council Resolution 1540, adopted on 28 April 2004, brings **non-state actors** within the scope of international non-proliferation efforts. It was the result of a US-led initiative intended to bypass the generally slow and complicated international treaty-making process.

Under Resolution 1540, states must not provide any form of support to non-state actors attempting to manufacture, acquire, possess, develop, transport, transfer or use weapons of mass destruction and their means of delivery. They must also adopt and enforce relevant national legislation.

The adoption of Resolution 1540 raises some **important questions**:

- What authority does the Security Council have to adopt binding resolutions that contain 'legislative' elements under Chapter VII of the UN Charter?

- What are the precise extent and character of the legal obligations established by the resolution?

- How can the resolution be implemented effectively?

The implementation of Resolution 1540 by UN member states has been patchy to date and seems to have had little impact on national legislation and practices.

It appears that securing a 'legislative' UN Security Council resolution—even one that has legally binding force under the UN Charter—offers no guarantee of an effective and prompt response to an urgent threat to international peace and security.

Nuclear arms control and non-proliferation

The five legally recognized nuclear weapon states (**China**, **France**, **Russia**, **the UK** and **the USA**) are all committed to retaining and modernizing their nuclear arsenals. **The UK** has announced its decision to build a new class of nuclear-armed submarines to replace its Trident force in 2020.

North Korea demonstrated a nuclear weapon capability by carrying out an underground nuclear test explosion on 9 October 2006. The test was widely thought to have been only partially successful and it remained unclear whether North Korea could manufacture an operational nuclear weapon.

The Board of Governors of the IAEA reported **Iran**'s case to the UN Security Council after the country resumed its uranium-enrichment programme. Security Council Resolution 1696, adopted in July 2006, demanded that Iran cease all uranium-enrichment and plutonium-separation activities. In response to Iran's defiance of Resolution 1696, the Security Council adopted Resolution 1737 in December, imposing sanctions targeting Iran's nuclear and ballistic missile programmes.

India and the USA took steps towards implementing the controversial **Civil Nuclear Cooperation Initiative** on resuming nuclear commerce between them. In March they agreed on a plan for separating India's nuclear programme into civil and military components. In December the US Congress passed the Hyde Act amending US law to permit the negotiation of a nuclear trade agreement with India. There was dissatisfaction in India with conditions imposed under the act.

Russia and the USA launched the Global Initiative to Combat Nuclear Terrorism at the G8 Summit in July 2006.

World nuclear forces, as of January 2007

Country	Year of first nuclear test	Deployed warheads
USA*a*	1945	5 045
Russia*b*	1949	5 614
UK	1952	*c.*160
France	1960	348
China	1964	*c.* 145
India	1974	*c.* 50*c*
Pakistan	1998	*c.* 60*c*
Israel	–	≤100*c*
North Korea	2006	—*d*
Total		*c.* 11 530

a The total US stockpile, including spares and reserves, contains *c.* 10 000 warheads.

b The total Russian stockpile contains *c.* 15 000 warheads, of which *c.* 9300 are in storage or awaiting dismantlement.

c The nuclear stockpiles of India, Israel and Pakistan are thought to be only partially deployed.

d Based on an estimate of its inventory of separated plutonium, North Korea could produce 6 nuclear warheads.

The states listed in the above table together possessed a total of more than **26 000 nuclear warheads** at the beginning of 2007, including deployed warheads, spares, reserves and those held in storage or scheduled for dismantlement.

There are roughly 1700 tonnes of highly enriched uranium and 500 tonnes of separated plutonium in the world—enough **fissile material** to produce over 100 000 nuclear weapons.

Chemical and biological weapon developments and arms control

At the Sixth Review Conference of the **Biological and Toxin Weapons Convention**, which took place in Geneva from 20 November to 8 December 2006, it was agreed that a series of annual meetings should be held in 2007–10 to consider measures to promote effective implementation of the convention; to improve bio-safety and bio-security at biological facilities; and to improve national capabilities for disease surveillance, detection and diagnosis.

At the 11th Conference of the States Parties to the 1993 **Chemical Weapons Convention**, which took place in The Hague on 5–8 December, it was decided that representatives of the Executive Council should visit chemical weapon facilities in states parties that have requested extensions of chemical weapon destruction deadlines. There is concern that the convention's deadline for the destruction of all chemical weapons—29 April 2012—will not be met by all states.

Bio-security and **bio-safety** were addressed in various national and regional arrangements and activities in 2006.

Further allegations were made in 2006 about the development or use of **chemical and biological weapons** and more information became available about past programmes.

A lack of reliable information and understanding hinder the evaluation and implementation of proliferation threat assessments.

The threat posed by chemical and biological weapons needs to be given greater attention and an ideal combination of national and international measures should be identified.

Conventional arms control

Entry into force of the 1999 **adapted Conventional Armed Forces in Europe (CFE) Treaty** remained hostage in 2006 to disagreements between Russia and Western states over political texts adopted at the Organization for Security and Co-operation in Europe (OSCE) 1999 Istanbul Summit.

Conventional arms control seems to be virtually deadlocked at present because of Russia's non-compliance with its own commitments, the political tug of war between Russia and the NATO member states, 'arms control fatigue' and the deteriorating status of the OSCE.

The 2006 OSCE **Vienna military doctrine seminar** provided an opportunity for discussion and clarification of the current military security thinking and postures of OSCE participants.

Other steps in the fields of confidence building, transparency and stability enhancement in 2006 focused on small arms and surplus ammunition.

As some parties to the 1997 **Anti-Personnel Mines Convention** will miss their deadlines for mine destruction, a process for extending deadlines was established in 2006.

Protocol V on **explosive remnants of war** of the 1981 Certain Conventional Weapons Convention entered into force in 2006.

CFE Treaty limits and total holdings, as of 1 January 2007

	Tanks	ACVs	Artillery	Aircraft	Helicopters	Personnel
Limits	38 262	59 822	37 846	13 172	3 920	5 789 181
Holdings	23 669	43 515	27 705	6 819	1 977	2 812 087

Global efforts to control MANPADS

Since the attempted shooting down of an Israeli airliner in Kenya in 2002, the USA has been the driving force behind unprecedented international efforts to curtail the illicit trade in **man-portable air defence systems** (MANPADS) and to protect civilian airliners from MANPADS missile attacks.

These initiatives have substantially reduced the pool of MANPADS missiles vulnerable to theft, loss and diversion and have laid the groundwork for major improvements in airport perimeter security, export controls and aircraft protection.

Despite this progress, the **terrorist threat** from MANPADS persists. There have recently been reports of missiles seized from, transferred to or used by non-state groups in Afghanistan, El Salvador, Iraq, Lebanon and Somalia. Historically, transfers from governments to non-state actors have been a major, if not the largest, source of MANPADS for these groups.

Further action to control the transfer and illicit use of MANPADS should include:

- feasibility studies of possible launch-control features and the rapid production and installation of the most promising technologies by producer countries;

- universal adoption of rigorous physical security and stockpile management practices; and

- expansion of foreign aid programmes that help to secure weapon depots and to destroy surplus MANPADS, many of which are severely underfunded.

Controls on security-related international transfers

Recent international efforts to prevent the proliferation of **nuclear**, **biological and chemical weapons** have moved towards greater integration of export controls with other non-proliferation instruments. This demands increased cooperation between states and between communities such as intelligence services and the enforcers of export controls, criminal law and financial sanctions.

Measures such as the 2006 UN Security Council resolutions restricting access by **Iran** and **North Korea** to certain proliferation-sensitive items depend on all states applying their national export controls effectively.

A small but growing number of countries participate in **informal groups** to strengthen national export controls, such as the Australia Group, the Missile Technology Control Regime, the Nuclear Suppliers Group and the Wassenaar Arrangement. These states have all adopted national legislation to ensure that proliferation-sensitive items are assessed and authorized by national authorities prior to export.

In cases where it has not been possible to prevent the export of proliferation-sensitive items, the recent strengthened cooperation between law enforcement communities under the **Proliferation Security Initiative** could help to ensure that illegal shipments of such items do not reach their intended end-users.

Building inter-sectoral cooperation and export control enforcement capacity should be given greater emphasis in the **outreach and technical assistance programmes** of the European Union and other organizations.

Arms control and disarmament agreements and agreements on humanitarian law of armed conflict in force as of March 2007

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 Treaty for Collaboration in Economic, Social and Cultural Matters and for Collective Self-defence among Western European States (Brussels Treaty)

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

1954 Protocols to the 1948 Brussels Treaty (Paris Agreements on the Western European Union)

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)

1977 Protocol I Additional to the 1949 Geneva Conventions, and Relating to the Protection of Victims of International Armed Conflicts

1977 Protocol II Additional to the 1949 Geneva Conventions, and Relating to the Protection of Victims of Non-International Armed Conflicts

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)

1991 Treaty on the Reduction and Limitation of Strategic Offensive Arms (START I Treaty)

1992 Treaty on Open Skies

1992 Concluding Act of the Negotiation on Personnel Strength of Conventional Armed Forces in Europe (CFE-1A Agreement)

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 Agreement on Sub-Regional Arms Control (Florence Agreement; now applying to Bosnia and Herzegovina, Croatia, Montenegro and Serbia)

1997 Inter-American Convention against the Illicit Manufacturing of and Trafficking in Firearms, Ammunition, Explosives, and Other Related Materials

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

1999 Vienna Document 1999 on Confidence- and Security-Building Measures

2002 Treaty on Strategic Offensive Reductions (SORT)

Treaties not in force as of March 2007

1972 Treaty on the Limitation of Anti-Ballistic Missile Systems (ABM Treaty): no longer in force as of 13 June 2002

1993 Treaty on Further Reduction and Limitation of Strategic Offensive Arms (START II Treaty)

1996 African Nuclear-Weapon-Free Zone Treaty (Treaty of Pelindaba)

1996 Comprehensive Nuclear Test-Ban Treaty (CTBT)

1999 Agreement on Adaptation of the 1990 Treaty on Conventional Armed Forces in Europe

2006 ECOWAS Convention on Small Arms, Light Weapons, their Ammunition and Other Related Materials

2006 Treaty on a Nuclear-Weapon-Free Zone in Central Asia (Treaty of Semipalatinsk)

Security-related abbreviations

ABM	Anti-ballistic missile
AG	Australia Group
ALCM	Air-launched cruise missile
APM	Anti-personnel mine
ATT	Arms trade treaty
ATTU	Atlantic-to-the Urals (zone)
AU	African Union
BMD	Ballistic missile defence
BTWC	Biological and Toxin Weapons Convention
CADSP	Common African Defence and Security Policy
CBM	Confidence-building measure
CBW	Chemical and biological weapon(s)
CCW	Certain Conventional Weapons (Convention)
CD	Conference on Disarmament
CEMAC	Economic Community of Central African States
CFE	Conventional Armed Forces in Europe (Treaty)
CFSP	Common Foreign and Security Policy
CICA	Conference on Interaction and Confidence-building Measures in Asia
CIS	Commonwealth of Independent States
CSBM	Confidence- and security-building measure
CSCAP	Council for Security Cooperation in the Asia Pacific
CSTO	Collective Security Treaty Organization
CTBT(O)	Comprehensive Nuclear Test-Ban Treaty (Organization)

CTR	Co-operative Threat Reduction
CWC	Chemical Weapons Convention
DDR	Disarmament, demobilization and reintegration
DPKO	Department of Peacekeeping Operations
EAPC	Euro-Atlantic Partnership Council
EDA	European Defence Agency
ENP	European Neighbourhood Policy
ESDP	European Security and Defence Policy
FMCT	Fissile material cut-off treaty
GLCM	Ground-launched cruise missile
GNEP	Global Nuclear Energy Partnership
GTRI	Global Threat Reduction Initiative
GUAM	Georgia, Ukraine, Azerbaijan and Moldova (*in* Organization for Democracy and Economic Development–GUAM)
HCOC	Hague Code of Conduct
HEU	Highly enriched uranium
IAEA	International Atomic Energy Agency
ICBM	Intercontinental ballistic missile
INDA	International non-proliferation and disarmament assistance
INF	Intermediate-range Nuclear Forces (Treaty)
ISAF	International Security Assistance Force
MANPADS	Man-portable air defence system
MIRV	Multiple, independently targetable re-entry vehicle
MOTAPM	Mines other than anti-personnel mines
MTCR	Missile Technology Control Regime

NATO	North Atlantic Treaty Organization
NBC	Nuclear, biological and chemical (weapons)
NPT	Non-Proliferation Treaty
NRF	NATO Response Force
NSG	Nuclear Suppliers Group
OAS	Organization of American States
OCCAR	Organisation Conjointe de Coopération en matière d'Armement
OPANAL	Agency for the Prohibition of Nuclear Weapons in Latin America and the Caribbean
OPCW	Organisation for the Prohibition of Chemical Weapons
OSCE	Organization for Security and Co-operation in Europe
PFP	Partnership for Peace
PSI	Proliferation Security Initiative
SALW	Small arms and light weapons
SCO	Shanghai Cooperation Organization
SECI	Southeast European Cooperative Initiative
SLBM	Submarine-launched ballistic missile
SLCM	Sea-launched cruise missile
SORT	Strategic Offensive Reductions Treaty
SSR	Security sector reform
START	Strategic Arms Reduction Treaty
UNIFIL	UN Interim Force in Lebanon
UNMIT	UN Integrated Mission in Timor-Leste
UNROCA	UN Register of Conventional Arms
WMD	Weapon(s) of mass destruction

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