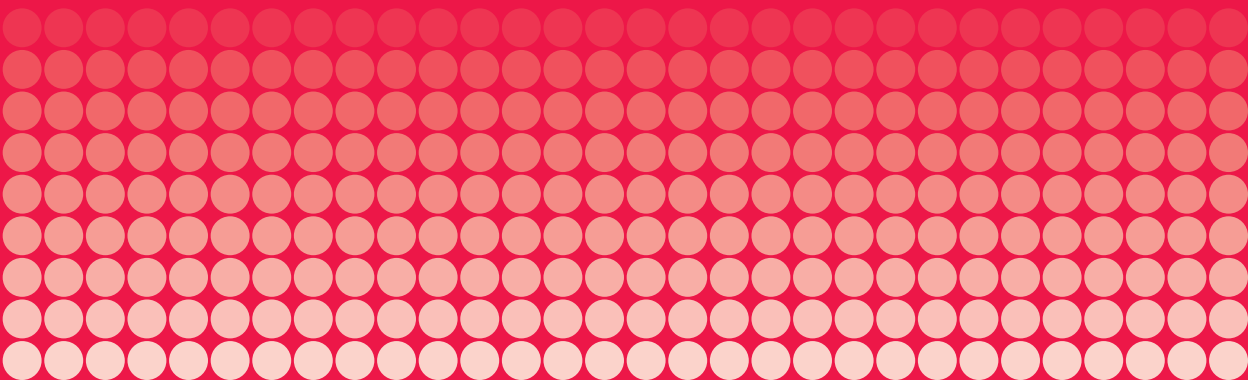


SIPRI YEARBOOK 2011

**Armaments,
Disarmament and
International
Security**

Summary



STOCKHOLM INTERNATIONAL PEACE RESEARCH INSTITUTE

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

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THE SIPRI YEARBOOK

SIPRI Yearbook 2011 presents a combination of original data in areas such as world military expenditure, international arms transfers, arms production, nuclear forces, major 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 2011* and gives samples of the data and information in its appendices and annexes.

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INTRODUCTION. INTERNATIONAL SECURITY, ARMAMENTS AND DISARMAMENT

BATES GILL

The research and findings in *SIPRI Yearbook 2011* highlight three important security-related themes that have stood out in recent years: intensifying non-state influence; the emergence of global and regional powers; and increasing institutional inefficiency, uncertainty and weakness.

The security governance system—the institutions, agreements and processes intended to manage the challenges of global and regional security, armaments and disarmament—is under mounting pressure from within and outside. Many organizations that promote peace and security find it increasingly difficult to generate the political will and financial resources that are required to meet their mandates or to establish needed governance mechanisms.

World security is becoming more dynamic, complex and transnational, with intensified and increasing flows of information, people, capital and goods. States continue to be the dominant security actors, but *SIPRI Yearbook 2011* underscores the growing importance of non- and quasi-state actors in shaping the global and regional security scene. While non-state actors could contribute more to peaceable outcomes, some have had a debilitating effect on peace and security. An important step forward would be partnerships and other forms of cooperation with non-state actors,

although such steps are difficult to realize.

Powers that previously took the lead to bolster security governance at global and regional levels are less able to do so and have been weakened by the global financial crisis. While commentators on the international security situation frequently remark on the continued expansion of the role and impact of ‘new powers’ at global and regional levels, *SIPRI Yearbook 2011* provides a factual and analytical basis to inform those discussions and looks ahead to the implications. The global and regional security governance institutions need to accelerate the equitable integration of these powers. Such steps could include an expansion in the permanent membership of the UN Security Council and a more active security-related role for the Group of 20 (G20) major economies.

In light of these challenges, the world is likely to face a difficult period of growing uncertainty and fragility, and a diffusion of risks and threats. SIPRI and the *SIPRI Yearbook* will continue to diligently observe and analyse these and other developments related to international security, armaments and disarmament.



1. CORRUPTION AND THE ARMS TRADE: SINS OF COMMISSION

ANDREW FEINSTEIN, PAUL HOLDEN AND BARNABY PACE

Studies suggest that corruption in the arms trade contributes roughly 40 per cent to all corruption in global transactions. This corruption exacts a heavy toll on purchasing and selling countries, undermining democratic institutions of accountability and diverting valuable resources away from pressing social needs towards corrupt ends.

A number of systemic features of the arms trade encourage corruption, of which two are particularly important. First, its deep and abiding link to matters of national security obscures many deals from oversight and accountability. Second, the rubric of national security facilitates the emergence of a small coterie of brokers, dealers and officials with appropriate security clearances. These close relationships blur the lines between the state and the industry, fostering an attitude that relegates legal concerns to the background.

The now infamous arms deal that took place in South Africa in 1999 provides numerous examples of the above types and causes of corruption. During the selection process, a number of highly questionable decisions were taken to ensure that certain contractors were selected. One example is the purchase of the Hawk trainer aircraft from British Aerospace (now BAE Systems).

Subsequent investigations have uncovered a trail of payments made to key decision makers during the selection process. Most notably, the British Serious Fraud Office identified £115 million (\$207 million) in ‘commission’ payments made by BAE to ‘overt’ and ‘covert’ advisors related to the contract.

Political mechanisms of oversight—such as parliamentary and independent investigative bodies—were sidelined and bullied by the executive to prevent a proper investigation into the deal, undercutting South Africa’s fragile new democratic dispensation. Large sums of money were diverted to the arms deal that arguably should have been spent relieving the devastating legacy of apartheid. Without corruption, the state would have spent at least an estimated 30 per cent less on the deal, freeing up funds for other social goods.

In order to combat corruption in the arms trade, multilateral agreements, such as an arms trade treaty, could include clauses that both outlaw corruption and provide mechanisms for enforcement. National governments, too, could introduce a number of reforms such as a ‘cooling off’ period between employments in the state and in the arms industry. These reforms require political will, which, in turn, demands that the public voice its opposition to the status quo.



2. RESOURCES AND ARMED CONFLICT

NEIL MELVIN AND RUBEN DE KONING

MAJOR ARMED CONFLICTS, 2010

In 2010, 15 major armed conflicts were active in 15 locations around the world.

	Conflict location
<i>Africa</i>	Rwanda*↓
	Somalia↑
	Sudan↑
	Uganda*↓
<i>Americas</i>	Colombia
	Peru↓
	USA*↓
<i>Asia</i>	Afghanistan↑
	India (Kashmir)
	Myanmar (Karen)↑
	Pakistan*↓
	Philippines↑
<i>Middle East</i>	Iraq↓
	Israel (Palestinian territories)↓
	Turkey ('Kurdistan')* ↑

Where a conflict is over territory, the disputed territory appears in parentheses after the country name. All other conflicts are over government.

* Fighting in these conflicts also took place in other locations in 2010.

↑ Increase in battle-related deaths from 2009.

↓ Decrease in battle-related deaths from 2009.

Only 4 of the major armed conflicts in 2010 were over territory, with 11 being fought over government. Except for the year 2007, conflicts over government outnumbered those over territory in every year of the period 2001–10.

For the seventh year running, no major interstate conflict was active in 2010. Over the decade 2001–10, only 2 of the total of 29 major armed conflicts have been interstate.

In the past two decades the relationship between natural resources and conflict risk has re-emerged as a key issue in international security. The current debate about the linkage between natural resources and the onset, duration and termination of conflicts around the globe focuses on three distinct perspectives: economic theories of violence; environmental factors, especially linked to climate change, as risk multipliers for conflict; and resource geopolitics.

These approaches highlight the direct and indirect ways that resource issues can cause conflict. For example, both resource scarcity and resource dependence can interact with social and institutional vulnerabilities to create the conditions for conflict. Key elements of this include informal or illicit trade and violent criminal groups pursuing illegal exploitation of and trade in natural resources. National over-dependence on natural resource revenues is also closely associated with state weakness, even failure, producing conditions under which armed groups can emerge.

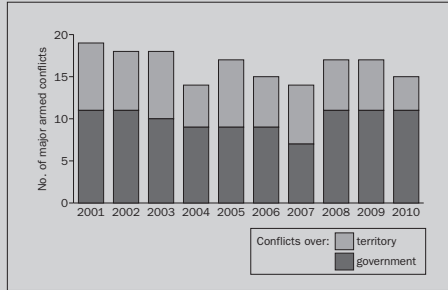
The rise of dynamic and large consumer markets in Asia—principally China and India—has also raised the priority of resource issues on the international security agenda. Record levels of demand and commodity prices have led international organizations,



governments, businesses and civil society to launch various initiatives designed to mitigate the interactions between resource issues and conflict. Other responses include the creation of conflict monitoring and early warning systems and efforts to incorporate resource management into peacebuilding agendas.

Several high-level initiatives have been established to regulate illegal resource trade, most notably the Kimberley Process for ‘conflict diamonds’. Provisions in national legislation, such as the Dodd-Frank Act in the United States, are designed to obstruct trade in ‘conflict resources’. However, efforts to manage the different aspects of natural resources and their relationship to conflict and security—notably the effort to regulate trade while still ensuring market access—have highlighted the complex balance required in such initiatives. Thus, more effective global resource governance frameworks should be part of the international effort to weaken and eventually break the links between resources and conflict.

Major armed conflicts, by type, 2001–10



THE GLOBAL PEACE INDEX 2011

The Global Peace Index (GPI) seeks to determine what cultural attributes and institutions are associated with states of peace. It ranks 153 countries by their relative states of peace using 23 indicators.

Rank	Country	Score
1	Iceland	1.148
2	New Zealand	1.279
3	Japan	1.287
4	Denmark	1.289
5	Czech Republic	1.320
149	North Korea	3.092
150	Afghanistan	3.212
151	Sudan	3.223
152	Iraq	3.296
153	Somalia	3.379

Iceland regained first place due to restored political stability. Island nations generally fare well, with most in the top half of the GPI, as do small, stable and democratic countries.

These facts and data are taken from appendix 2A, ‘Patterns of major armed conflicts, 2001–10’, by Lotta Themnér and Peter Wallensteen, Uppsala Conflict Data Program (UCDP), based on the UCDP Database, <<http://www.ucdp.uu.se/database/>>, and appendix 2B, ‘The Global Peace Index 2011’, by Camilla Schippa and Daniel Hyslop, Institute for Economics and Peace.



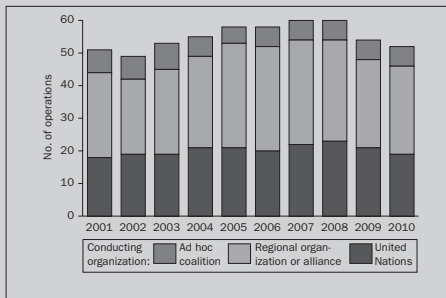
3. PEACE OPERATIONS: THE FRAGILE CONSENSUS

THIERRY TARDY

PEACE OPERATIONS, 2010

A total of 52 multilateral peace operations were conducted in 2010, in 33 locations. Two peace operations closed during 2010, making it the second consecutive year in which the total number of operations fell.

Number of peace operations, 2001–10



The upward trend in the total number of personnel deployed to peace operations continued to gather pace, with totals increasing by 20 per cent between 2009 and 2010, to reach 262 842. Of these, 91 per cent were military personnel, 6 per cent were civilian police and 3 per cent were civilian staff.

The main reason for this significant increase was reinforcement of the International Security Assistance Force (ISAF) operation in Afghanistan run by the North Atlantic Treaty Organization (NATO). Its troop level increased from 84 146 in 2009 to 131 730 in 2010, an increase of 57 per cent. For the fifth year

The broad consensus on principles, purpose and methods of contemporary peace operations is ever more fragile. Key characteristics of United Nations peace operations are continually revised, while a shared understanding of what these operations should achieve is increasingly lacking. Peace operations suffer from a commitment gap between different categories of states, divergences on some of the key parameters of interventions, and a normative disconnect between established and new state actors.

After the surge in deployments of the past decade, UN operations seem to have reached a plateau, and the focus is now on consolidation. Yet needs for peacekeeping and peacebuilding remain high, even as the operations are increasingly contested by host countries and challenged in their efficacy by a combination of overstretch and weak political support. Simultaneously, the consensus that peace operations have enjoyed is undermined by the very nature of the liberal model that peacekeeping and peacebuilding actors promote. What is at stake is the question of how far the international community can go in trying to establish and sustain peace while maintaining the legitimacy of the intervention as well as a degree of acceptability at all levels in the host countries.

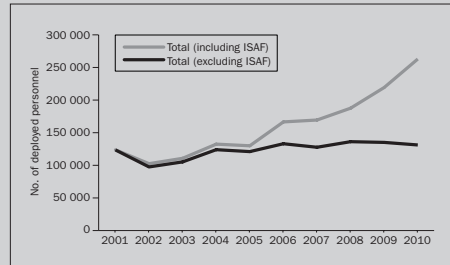


In this context, the consensus on peace operations is potentially challenged by the increasing engagement of emerging regional powers—in particular Brazil, China, India and South Africa. Their contributions represent a quantitative as well as a qualitative shift for peace operations but can also pose a threat to the Northern-dominated agenda. Emerging powers have a principled approach to peace operations, with conceptions of sovereignty, non-interference and local ownership that may impact the actual peace operation mandates.

However, if existing norms and practices have indeed been challenged by emerging powers, the clash of normative agendas with Northern countries has not yet materialized. Emerging powers have so far revealed a high degree of pragmatism, which has shaped their policies in line with current practices rather than along fundamentally different paths. The question arises whether peacekeeping, as a relatively low-profile activity, is for these countries worth the clash that normative divergences could imply—leading, in turn, to the question of what role emerging powers will play in building a new consensus on peace operations.

running, ISAF was the largest multilateral peace operation. Indeed, the number of troops deployed with ISAF exceeded the total number of personnel deployed to all other operations combined.

Personnel deployed to peace operations, 2001–10



The United Nations continued to be the main conductor of peace operations in 2010. The African Union (AU) was the only organization besides NATO to significantly increase its personnel deployments.

Peace operations, by organization, 2010

Conducting organization	No. of operations	Total personnel deployed
United Nations	20	103 404
African Union	1	7 999
CEEAC	1	880
CIS	1	1 452
EU	12	4 606
NATO	3	140 354
OAS	1	30
OSCE	7	363
Ad hoc coalition	6	3 754
Total	52	262 842

These facts and data are taken from appendix 3A, 'Multilateral peace operations, 2010', by Sigrún Andrésdóttir, and are based on the SIPRI Multilateral Peace Operations Database, <<http://www.sipri.org/databases/pko/>>.



4. MILITARY EXPENDITURE

SAM PERLO-FREEMAN, JULIAN COOPER, OLAWALE ISMAIL, ELISABETH SKÖNS
AND CARINA SOLMIRANO

MILITARY EXPENDITURE DATA, 2010

Military expenditure in 2010 increased by 1.3 per cent in real terms to reach \$1630 billion. The slower rate of increase compared to previous years is partly due to the delayed effects of the global economic crisis.

Military spending grew most rapidly in South America (5.8 per cent), Africa (5.2 per cent) and Oceania (4.1 per cent). Across Asia and Oceania the increase was only 1.4 per cent, one of the lowest rates in recent years, while military spending fell in Europe, by 2.8 per cent.

Military expenditure, by region, 2010

Region	Spending (\$ b.)
Africa	30.1
North Africa	10.6
Sub-Saharan Africa	19.5
Americas	791
Central America and the Caribbean	6.5
North America	721
South America	63.3
Asia and Oceania	317
Central and South Asia	52.1
East Asia	211
Oceania	25.7
South East Asia	28.7
Europe	382
Eastern	65.5
Western and Central	316
Middle East	111
World total	1 630

The spending figures are in current (2010) US dollars.

While the United States has led the global rise in military spending over the past decade, this trend has been followed by many emerging (or re-emerging) regional powers such as China, Brazil, India, Russia, South Africa and Turkey. These countries all have rapidly growing economies and key economic and political roles in their respective regions and, in some cases, globally. All six are also developing as military powers, engaging in significant military modernization programmes. Apart from Turkey, all have been increasing military spending, often very rapidly.

The motives for these countries' military modernization and accompanying increases in military spending vary. In all cases, economic growth is a key enabler; in no case has military spending grown faster than gross domestic product (GDP) since 2001. Economic growth can also be a direct driver, as troops' salaries share in general increases in salaries.

In some of these six cases, current conflict is a driver of military spending. For India, the perennial conflict with Pakistan and in Kashmir has been joined by the growing Naxalite rebellion. In Turkey, in contrast, the reduction in the intensity of the conflict with the Kurdistan Workers' Party (PKK) is a factor behind falling military spending.



Regional disputes and rivalries also create a desire not to lag behind other countries, even where relations are currently peaceful. For China, the overwhelming US military dominance in the region is a concern, especially in relation to potential conflict over Taiwan. In turn, India is concerned by China's growing military might, given the two countries' border disputes and rivalry for influence in the Indian Ocean. Russia meanwhile views an expanding NATO as a potential, if not a current, threat. Even in the absence of regional rivalries, a perception of military power as a source of status may be a motivating factor, as in the cases of Brazil, South Africa and, increasingly, Turkey.

High military spending can be controversial in the face of more pressing social needs. In Brazil, this tension has recently led to changes in budget priorities regarding military spending. In South Africa, the recent major arms procurement package has been severely criticized for diverting funds from poverty and development goals, as well as for corruption. In India, however, civil society criticism of military spending is countered by strong popular concern over Pakistan.

The top 10 military spenders, 2010

Rank	Country	Spending (\$ b.)	World share (%)
1	USA	698	43
2	China	[119]	[7.3]
3	UK	59.6	3.7
4	France	59.3	3.6
5	Russia	[58.7]	[3.6]
6	Japan	54.5	3.3
7	Saudi Arabia	45.2	2.8
8	Germany	[45.2]	[2.8]
9	India	41.3	2.5
10	Italy	[37.0]	[2.3]
World total		1630	

[] = SIPRI estimate. The spending figures are in current (2010) US dollars.

The 10 largest military spenders in 2010 accounted for 75 per cent of world military spending. The USA alone accounted for 43 per cent, far more than China in second place.

The share of their GDPs that the major spenders devoted to military spending (the military burden) varied considerably, from just 1.0 per cent in the case of Japan to 10.4 per cent for Saudi Arabia. However, only 3 of the top 10 spenders—Russia, Saudi Arabia and the USA—have military burdens above the global average of 2.6 per cent.

These facts and data are taken from appendix 4A, 'Military expenditure data, 2001–10', by Sam Perlo-Freeman, Olawale Ismail, Noel Kelly, Elisabeth Sköns and Carina Solmirano, and are based on the SIPRI Military Expenditure Database, <<http://www.sipri.org/databases/milex>>.



5. ARMS PRODUCTION

SUSAN T. JACKSON

THE SIPRI TOP 100 FOR 2009

The SIPRI Top 100 list ranks the largest arms-producing companies in the world (outside China) according to their arms sales.

The 10 largest arms-producing companies, 2009

	Company (country)	Arms sales (\$ m.)	Profit (\$ m.)
1	Lockheed Martin	33 430	3 024
2	BAE Systems (UK)	33 250	-70
3	Boeing	32 300	1 312
4	Northrop Grumman	27 000	1 686
5	General Dynamics	25 590	2 394
6	Raytheon	23 080	1 976
7	EADS (trans-Europe)	15 930	-1 060
8	Finmeccanica (Italy)	13 280	997
9	L-3 Communications	13 010	901
10	United Technologies	11 110	4 179

Companies are US-based, unless indicated otherwise. The profit figures are from all company activities, including non-military sales.

In general, the arms sales of companies in the Top 100 remained high in 2009.

The total arms sales of the SIPRI Top 100 increased by \$14.8 billion to reach \$400.7 billion in 2009.

In 2009 for the first time a Kuwaiti company—the military services company Agility—entered the Top 100, at rank 34. The arms sales of some of the largest Russian arms producers fell, even as the Russian Government continued to invest in the industry.

Despite the financial crisis of 2008 and the ensuing global economic recession, arms producers and military services companies continued their upward trend in arms sales. At the same time, large-scale acquisitions returned to the arms industry in 2010, while acquisition activity in general increased, including acquisitions by non-OECD countries in OECD arms markets. The military spending cuts proposed in 2010 in Western Europe and the USA are likely to have an impact on arms producers in the future, but to what extent remains to be seen.

Companies outside of North America and Western Europe—those regions that dominate the SIPRI Top 100 and the global arms industry overall—also displayed resilience in light of the economic recession.

As smaller OECD countries outside the Euro-Atlantic region with arms producers in the SIPRI Top 100 for 2009, the cases of Israel, South Korea and Turkey illuminate small state experiences in pushing for globally competitive arms industries. In each case, the underlying technological and industrial infrastructures have determined when and to what extent technological developments are integrated into domestic arms production and whether the integration leads to indigenous technological sophistication.



Access to arms technology via transfers is also a key factor in the development of domestic arms industries. A requirement for offset investment in return for large arms procurement contracts can lead to technology transfers, although limitations are imposed by the USA on re-exports of US technology. In contrast, domestically funded military research and development allows national control over the resulting technology.

National or regional shares of arms sales for the SIPRI Top 100 for 2009

Region/ country	No. of companies	Arms sales (\$ b.)
USA	45	247.2
Western Europe	33	120.3
Russia	6	9.2
Japan	4	6.5
Israel	3	6.3
India	3	4.5
South Korea	2	1.9
Kuwait	1	2.5
Singapore	1	1.5
Canada	1	0.7
Turkey	1	0.6
Total	100	400.7

Figures refer to the arms sales of Top 100 companies headquartered in each country or region, including those of their foreign subsidiaries, not the sales of arms actually produced in that country or region.

ARMS INDUSTRY ACQUISITIONS, 2010

While there were no acquisitions of arms-producing companies worth over \$1 billion in 2009, there were three in 2010.

The largest acquisitions in the OECD arms industry, 2010

Buyer company	Acquired company	Deal value (\$ m.)
Babcock	VT Group	2 000
Cerberus Capital Management	DynCorp	1 500
Triumph Group	Vought Aircraft	1 440

These facts and data are taken from appendix 5A, 'The SIPRI Top 100 arms-producing companies, 2009', by Susan T. Jackson, and appendix 5B, 'Major arms industry acquisitions, 2010', by Vincent Boulanin.

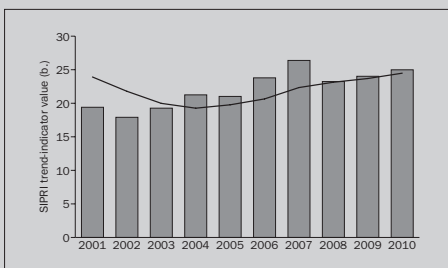


6. INTERNATIONAL ARMS TRANSFERS

PAUL HOLTOM, MARK BROMLEY, PIETER D. WEZEMAN AND
SIEMON T. WEZEMAN

THE SUPPLIERS AND RECIPIENTS OF MAJOR CONVENTIONAL WEAPONS

The trend in transfers of major conventional weapons, 2001–10



Bar graph: annual totals; line graph: five-year moving average (plotted at the last year of each five-year period).

The five largest suppliers of major conventional weapons, 2006–10

Supplier	Share of global arms exports (%)	Main recipients (share of supplier's transfers)
USA	30	South Korea (14%) Australia (9%) UAE (8%)
Russia	23	India (33%) China (23%) Algeria (13%)
Germany	11	Greece (15%) South Africa (11%) Turkey (10%)
France	7	Singapore (23%) UAE (16%) Greece (12%)
UK	4	USA (23%) Saudi Arabia (19%) India (10%)

The volume of international transfers of major conventional weapons in 2006–10 was 24 per cent higher than in 2001–2005, continuing the upward trend.

The United States and Russia were the largest exporters of major conventional weapons in 2006–10, accounting for 53 per cent of the volume of exports. Countries in Asia were their largest recipients. Economic and foreign policy considerations continued to play a central role in their respective decisions on arms exports. The US Administration has made proposals to reform its export controls to prevent arms and technology from reaching adversaries and to better facilitate transfers to allies. Russia's decision in 2010 to cancel the delivery of S-300 air defence systems to Iran is significant for its reputation as a 'reliable' supplier.

The major recipient region in 2006–10 was Asia and Oceania (accounting for 43 per cent of imports of major conventional weapons), followed by Europe (21 per cent) and the Middle East (17 per cent). India was the largest recipient of major conventional weapons in 2006–10, pushing China into second place. South Korea (6 per cent), Pakistan (5 per cent) and Greece (4 per cent) were the other largest recipients.

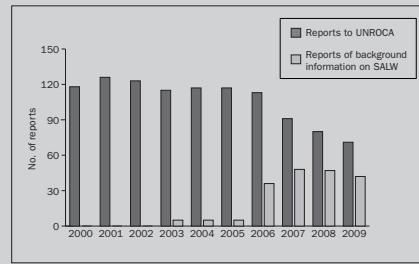
Although India and Pakistan have both imported large quantities of weapons to counter external security



threats, internal security challenges are currently the most pressing issue for Pakistan and also a source of much concern in India. India is the target of intense supplier competition for billion-dollar deals, in particular for combat aircraft and submarines. Pakistan relies on US military aid and Chinese soft loans for most of its acquisitions. Both countries are likely to remain major recipients in the coming years.

Member states of the European Union are obliged to apply criteria relating to conflict prevention when making decisions on export licence applications. A framework has been elaborated for EU members to harmonize interpretation of these criteria, along with those applying to human rights and economic development. However, during 2006–10 divisions among EU member states on the interpretation of criteria relating to conflict prevention have been particularly evident with regard to Israel, Georgia and Russia. Differences between EU members relate in large part to the long-standing arms trade and security ties with certain states, as well as national security and economic interests more generally.

Reports to UNROCA, 2000–2009



TRANSPARENCY IN ARMS TRANSFERS

Official and publicly accessible data on arms transfers is important for assessing states’ arms export and procurement policies. However, publishing data on arms sales and acquisitions is a sensitive issue for nearly all states.

The United Nations Register of Conventional Arms (UNROCA) is the key international mechanism of official transparency on arms transfers. The recent downward trend in states’ participation in UNROCA continued during 2010. Only 72 states submitted reports on their arms transfers during 2009, including 43 submissions of information on transfers of small arms and light weapons (SALW).

Since the early 1990s an increasing number of governments have published national reports on arms exports. As of January 2011, 34 states had published at least one national report on arms exports since 1990, and 30 have done so since 2008.

These facts and data are taken from chapter 6, appendix 6A, ‘The suppliers and recipients of major conventional weapons’, by the SIPRI Arms Transfers Programme, and appendix 6C, ‘Transparency in arms transfers’, by Mark Bromley and Paul Holtom, and are based in part on the SIPRI Arms Transfers Database, <<http://www.sipri.org/databases/armstransfers/>>.



7. WORLD NUCLEAR FORCES

SHANNON N. KILE, VITALY FEDCHENKO, BHARATH GOPALASWAMY AND
HANS M. KRISTENSEN

WORLD NUCLEAR FORCES, 2011

Country	Deployed warheads	Other warheads	Total
USA	2 150	6 350	8 500
Russia	2 427	8 570	11 000
UK	160	65	225
France	290	10	300
China	..	200	240
India	..	80–100	80–100
Pakistan	..	90–110	90–110
Israel	..	80	80
Total	5 027	15 500	20 530

All estimates are approximate and are as of January 2011.

GLOBAL STOCKS AND PRODUCTION OF FISSILE MATERIALS, 2010

As of 2010, global stocks of highly enriched uranium (HEU) totalled approximately 1270 tonnes (not including 208 tonnes to be blended down). Global military stocks of separated plutonium totalled approximately 237 tonnes and civilian stocks totalled 248 tonnes.

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 mainly HEU for weapons. All states with a civilian nuclear industry have some capability to produce fissile materials.

These facts and data are taken from chapter 7 and appendix 7A, 'Global stocks and production of fissile materials, 2010', by Alexander Glaser and Zia Mian, International Panel on Fissile Materials.

In January 2011 eight states—the United States, Russia, the United Kingdom, France, China, India, Pakistan and Israel—possessed more than 20 500 nuclear weapons, including operational weapons, spares, those in both active and inactive storage and intact weapons scheduled for dismantlement. Of this total figure, more than 5000 nuclear weapons are deployed and ready for use, including nearly 2000 that are kept in a state of high operational alert.

The five legally recognized nuclear weapon states, as defined by the 1968 Non-Proliferation Treaty (NPT)—China, France, Russia, the UK and the USA—are either deploying new nuclear weapon systems or have announced their intention to do so; none appears to be prepared to give up its nuclear arsenals in the foreseeable future.

India and Pakistan, which along with Israel are de facto nuclear weapon states outside the NPT, continue to develop new ballistic and cruise missile systems capable of delivering nuclear weapons. They are also expanding their capacities to produce fissile material for military purposes. Israel appears to be waiting to assess how the situation with Iran's nuclear programme develops.

North Korea is believed to have produced enough plutonium to build a small number of nuclear warheads, but there is no public information to verify that it has operational nuclear weapons.



8. NUCLEAR ARMS CONTROL AND NON-PROLIFERATION

SHANNON N. KILE

The year 2010 saw advances in bilateral and multilateral initiatives to promote nuclear disarmament and non-proliferation. On 8 April 2010 Russia and the United States signed the Treaty on Measures for the Further Reduction and Limitation of Strategic Offensive Arms (New START), mandating further reductions in their deployed strategic nuclear forces. The treaty preserves the main elements of the expired 1991 START's comprehensive verification regime, the principal means by which Russia and the USA monitored each other's strategic nuclear forces. In the wake of New START's entry into force on 5 February 2011, there appeared to be few near-term prospects for negotiating deeper reductions of Russian-US nuclear forces.

In May the eighth five-yearly Non-Proliferation Treaty (NPT) Review Conference was widely hailed as a success when the participating states parties adopted by consensus a final document. The document contained recommendations for advancing the treaty's principles and objectives, including steps towards establishing a weapon of mass destruction-free zone in the Middle East. However, the discussions during the conference revealed continuing deep divisions among the states parties—especially between the nuclear weapon 'haves' and 'have-nots'—over the basic aims

and goals of the NPT. These divisions cast doubt on the prospects for making progress in implementing even the modest steps endorsed in the final document.

Also during 2010 the USA hosted a Nuclear Security Summit meeting that brought together heads of state and government to consider how to reduce the risk of nuclear terrorism and to increase the security of nuclear materials and facilities. While the meeting did not lead to new joint initiatives, a number of participating states announced steps to adopt or implement a number of existing conventions, agreements and measures for enhancing nuclear security and combating illicit trafficking in nuclear materials.

In 2010 little progress was made towards resolving the long-running controversies over the nuclear programmes of Iran and North Korea, which have been the focus of international concerns. These concerns were heightened when North Korea revealed that it had constructed a previously undeclared uranium enrichment plant. In Iran, the IAEA remained unable to resolve questions about nuclear activities with possible military dimensions, while Iran experienced technical problems with its uranium enrichment programme.



9. REDUCING SECURITY THREATS FROM CHEMICAL AND BIOLOGICAL MATERIALS

JOHN HART AND PETER CLEVESTIG

At the international, national and regional levels in 2010 states continued to develop strategies to prevent and remediate the effects of the possible misuse of toxic chemical and biological materials for hostile purposes.

The parties to the 1972 Biological and Toxin Weapons Convention (BTWC) held the final meetings of the 2007–10 inter-sessional process and prepared for the Seventh Conference of the States Parties, which will be held in December 2011. Scientific and technological developments, such as the increasing overlap between the chemical and biological sciences, are a major challenge to the BTWC and one that will be highly relevant in coming years.

The new Director-General of the Organisation for the Prohibition of Chemical Weapons (OPCW) established an advisory panel to review the implementation of the 1993 Chemical Weapons Convention (CWC), with a focus on how the convention's activities should be structured after the destruction of chemical weapon stockpiles ends, sometime after 2012. Iran and Russia questioned whether the United Kingdom and the United States had fully complied with CWC provisions for the declaration and OPCW-verified destruction of chemical munitions recovered in Iraq in 2003.

The parties to the CWC must achieve a clearer understanding of the role of

the convention in support of international peace and security once chemical weapon stockpiles are essentially destroyed. Failure to do so risks undermining the perceived daily operational-level value of the regime. Determining what constitutes non-compliance with a convention obligation is a recurring theme that states must continue to actively and constructively address.

During the BTWC Meeting of Experts, the UN Office for Disarmament Affairs described developments in the Secretary-General's mechanism for investigating allegations of use of a biological weapon: 41 countries have nominated a total of 237 experts and 42 associated laboratories, as encouraged by a 2006 UN General Assembly resolution.

Reports emerged in May 2010 of severe crop damage caused by an unusual leaf blight affecting poppies in Afghanistan. This led to an estimated 48 per cent decrease in opium yields from 2009. There was speculation that the blight was deliberately induced. Such allegations highlighted the difficulty of distinguishing between fundamental and technical violations of international law and the possible role of a form of politicized legal dispute that aims to cast aspersions on the behaviour of other states.



10. CONVENTIONAL ARMS CONTROL AND MILITARY CONFIDENCE BUILDING

ZDZISLAW LACHOWSKI

Renewed interest in and dialogue on conventional arms control and confidence- and security-building measures (CSBMs) continued in 2010. The European arms control dialogue progressed on two tracks: the 1990 Treaty on Conventional Armed Forces in Europe (CFE Treaty) regime and that of the Vienna Document on CSBMs, both of which were last adapted in 1999. This 'reset', embodied in revitalized efforts to update both regimes, also included numerous proposals regarding conventional arms control and confidence-building endeavours that will be part of the overall concept for future Organization for Security and Co-operation in Europe (OSCE) work in this area and that will persist well beyond 2010.

Although the CFE Treaty remained in abeyance because of Russia's disagreement with its equity and adequacy, the states parties explored options to resolve the deadlock. NATO's June 2010 proposal to develop a new framework to strengthen conventional arms control and transparency in Europe paved the way for constructive dialogue, with Russia recognizing that its security interests are being taken seriously.

The incremental method of tackling the Vienna CSBM Document appears workable, and CSBMs are regaining their value in military-security

dialogue. The experience of recent years has forced the OSCE participating states to make a major effort to adapt this useful instrument of openness, transparency and reassurance to meet the existing and emerging risks and challenges. The second review conference of the Treaty on Open Skies reaffirmed its pertinence as a confidence-building instrument.

However, arms control in Europe is not autonomous, and much depends on the strategic interests of the main actors on the Euro-Atlantic scene. The anodyne outcome of the OSCE summit meeting in Astana, Kazakhstan, slowed the momentum towards attaining ambitious goals in this field.

Globally, many states now share an interest in an arms trade treaty (ATT), although it is less apparent how to agree on the text of such a treaty. States have not been able to reach consensus on the scope and other parameters of such a treaty, including the kinds of arms to be covered; the standards to apply in making weapon import and export decisions; and the issues of how to share, monitor and verify information. The meeting of the ATT preparatory committee in July 2010 in New York made progress, but numerous outstanding issues remain to be solved in 2011 and 2012.



11. STRATEGIC TRADE CONTROLS: COUNTERING THE PROLIFERATION OF WEAPONS OF MASS DESTRUCTION

SIBYLLE BAUER, AARON DUNNE AND IVANA MIČIĆ

MULTILATERAL ARMS EMBARGOES, 2010

There were 29 mandatory multilateral arms embargoes in force in 2010, directed at a total of 16 targets, including governments, non-governmental forces and a transnational network. The United Nations imposed 12 of these embargoes, the European Union (EU) imposed 16 and the Economic Community of West African States (ECOWAS) imposed 1.

The UN Security Council imposed no new arms embargo in 2010, but it did widen its arms embargo on Iran. One UN arms embargo, on Sierra Leone, was lifted.

Ten of the 16 EU embargoes were straightforward implementations of UN arms embargoes. In addition, two EU arms embargoes differed from UN embargoes in their scope or coverage and four did not have UN counterparts.

During 2010, the EU imposed one new embargo, implementing the UN embargo on Eritrea imposed in December 2009, and lifted its embargo on Sierra Leone, which had been an implementation of a UN embargo. ECOWAS's single embargo was the only other embargo imposed by a multilateral organization during 2010.

Significant violations of the UN embargoes on Côte d'Ivoire, Iran, North Korea and Somalia were reported in 2010.

The international debate and associated activity regarding the proliferation of weapons of mass destruction (WMD) have moved on from the traditional focus on controlling exports to encompass a wider range of activities, including the control of transit, trans-shipment, financing and brokering. This reflects the evolving nature of procurement for WMD programmes and the need to adopt new legal concepts and enforcement tools to counter the threat that a state or non-state actor will obtain or develop WMD.

Accordingly, to implement United Nations Security Council resolutions and wider trade control norms, countries have started to enhance and expand domestic, regional and international capacity-building efforts and technical assistance. This applies in particular to Resolution 1540, which imposes binding obligations on all states to establish domestic controls to prevent the proliferation of WMD and their means of delivery. During 2010 the UN concluded a series of regional and sub-regional seminars to raise awareness and assist implementation.

The EU responded to Resolution 1540's requirements by adopting a revised regulation on dual-use items in 2009 which expands controls beyond exports to transit and brokering. In 2010 the EU began to broaden the



geographic and thematic scope of its non-proliferation cooperation.

Complementing the enhanced international cooperation are coercive measures designed to change the behaviours of states and non-state actors that are widely considered to pose threats to international security. These include UN sanctions that seek to counter proliferation finance and interdict the movements of proliferation-related items. In the case of proliferation finance, the Financial Action Task Force (FATF) has proved itself to be a relatively effective vehicle for exploring the issue and developing guidance on implementing counter-measures.

Multilateral arms embargoes in force during 2010

United Nations arms embargoes

Al-Qaeda, the Taliban and associated individuals and entities
Democratic Republic of the Congo (NGF)
Côte d'Ivoire
Eritrea
Iran
Iraq (NGF)
North Korea
Lebanon (NGF)
Liberia (NGF)
Sierra Leone (NGF)
Somalia
Sudan (Darfur)

European Union arms embargoes

Al-Qaeda, the Taliban and associated individuals and entities*
China
Democratic Republic of the Congo (NGF)*
Côte d'Ivoire*
Eritrea*
Guinea
Iran
Iraq (NGF)*
North Korea*
Lebanon (NGF)*
Liberia (NGF)*
Myanmar
Sierra Leone (NGF)*
Somalia (NGF)*
Sudan
Zimbabwe

ECOWAS arms embargoes

Guinea

NGF = non-governmental forces.

* = These 10 EU embargoes are implementations of UN embargoes. The other EU embargoes either differ from equivalent UN embargoes or have no UN counterpart.

These facts and data are taken from appendix 11A, 'Multilateral arms embargoes, 2010', by Pieter D. Wezeman and Noel Kelly.



ANNEXES: ARMS CONTROL AND DISARMAMENT AGREEMENTS, INTERNATIONAL SECURITY COOPERATION BODIES, CHRONOLOGY

NENNE BODELL

Annex A, 'Arms control and disarmament agreements', contains summaries of multi- and bilateral treaties, conventions, protocols and agreements relating to arms control and disarmament, and lists of their signatories and states parties.

Annex B, 'International security cooperation bodies', describes the main international and intergovernmental organizations, treaty-implementing bodies and export control regimes whose aims include the promotion of security, stability, peace or arms control and lists their members or participants.

Annex C, 'Chronology 2010', lists the significant events in 2010 related to armaments, disarmament and international security.

Arms control and disarmament agreements in force, 1 January 2011

- | | | |
|------|---|--|
| 1925 | Protocol for the Prohibition of the Use in War of Asphyxiating, Poisonous or Other Gases, and of Bacteriological Methods of Warfare (1925 Geneva Protocol) | |
| 1948 | Convention on the Prevention and Punishment of the Crime of Genocide (Genocide Convention) | |
| 1949 | Geneva Convention (IV) Relative to the Protection of Civilian Persons in Time of War | |
| 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 Protocols I and II Additional to the 1949 Geneva Conventions and Relating to the Protection of Victims of International and Non-International Armed Conflicts
- 1980 Convention on the Physical Protection of Nuclear Material
- 1981 Convention on Prohibitions or Restrictions on the Use of Certain Conventional Weapons which may be Deemed to be Excessively Injurious or to have Indiscriminate Effects (CCW Convention, or 'Inhumane Weapons' Convention)
- 1985 South Pacific Nuclear Free Zone Treaty (Treaty of Rarotonga)
- 1987 Treaty on the Elimination of Intermediate-Range and Shorter-Range Missiles (INF Treaty)
- 1990 Treaty on Conventional Armed Forces in Europe (CFE Treaty)
- 1992 Treaty on Open Skies
- 1993 Convention on the Prohibition of the Development, Production, Stockpiling and Use of Chemical Weapons and on their Destruction (Chemical Weapons Convention, CWC)
- 1995 Treaty on the Southeast Asia Nuclear Weapon-Free Zone (Treaty of Bangkok)
- 1996 African Nuclear-Weapon-Free Zone Treaty (Treaty of Pelindaba)
- 1996 Agreement on Sub-Regional Arms Control (Florence Agreement)
- 1997 Inter-American Convention Against the Illicit Manufacturing of and Trafficking in Firearms, Ammunition, Explosives, and Other Related Materials
- 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
- 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)
- 2008 Convention on Cluster Munitions
- 2010 Treaty on Measures for the Further Reduction and Limitation of Strategic Offensive Arms (New START, Prague Treaty)
- Agreements not yet in force,
1 January 2011**
- 1996 Comprehensive Nuclear-Test-Ban Treaty (CTBT)
- 1999 Agreement on Adaptation of the CFE Treaty
- 2010 Central African Convention for the Control of Small Arms and Light Weapons, Their Ammunition and All Parts and Components That Can Be Used for Their Manufacture, Repair and Assembly (Kinshasa Convention)



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<http://www.sipri.org/databases/pko/>

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.

<http://www.sipri.org/databases/milex/>

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.

<http://www.sipri.org/databases/armstransfers/>

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Provides information on all multilateral arms embargoes implemented since 1988.

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