

I. Global developments in military expenditure, 2020

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World military expenditure is estimated to have been US\$1981 billion in 2020, the highest level since 1988—the earliest year for which SIPRI has a consistent estimate for total global military expenditure.¹ Global military spending was 2.6 per cent higher in real terms than in 2019 and 9.3 per cent higher than in 2011 (see table 8.1, below).² Military spending thus rose for the sixth straight year, following three years of decreases in 2012–14 and nearly unchanged spending in 2011. The global military burden—world military expenditure as a share of world gross domestic product (GDP)—rose by 0.2 percentage points in 2020, to 2.4 per cent. This was the biggest increase in military burden since the 2009 global financial and economic crisis. Military spending per capita also increased in 2020, up to \$254 from \$247 in 2019, as the growth in military spending continued to surpass world population growth (1.1 per cent).³ This was the highest level since SIPRI began estimating per capita spending in 1995.

In all four regions for which SIPRI can provide an estimate, military expenditure increased in 2020 (see figure 8.1; for a breakdown and details on regional developments, see section II). The rate of increase was highest in Africa, at 5.1 per cent, taking the estimated regional total to \$43.2 billion. This was followed by Europe, with an increase of 4.0 per cent to \$378 billion, the Americas, with growth of 3.9 per cent to \$853 billion, and Asia and Oceania, with a rise of 2.5 per cent to \$528 billion. For the Middle East, no regional estimate can be made, due to missing data from two known large spenders in the region (Qatar and the United Arab Emirates) and two countries affected by conflict (Syria and Yemen).⁴ Spending fell in 7 of the 11 countries in the region for which data is available. The combined military spending of the 11 countries decreased by 6.5 per cent between 2019 and 2020, to \$143 billion.

¹ Of the 168 countries for which SIPRI attempted to estimate military expenditure in 2020, relevant data was found for 151. See box 8.1 for SIPRI's definition of military expenditure and the notes in table 8.1 for more detail on estimates in world and regional totals. The estimate of total world military expenditure includes a rough estimate of total spending in the Middle East.

² All figures for spending in 2020 are quoted in current 2020 US dollars. Except where otherwise stated, figures for increases or decreases in military spending are expressed in constant 2019 US dollars, often described as changes in 'real terms' or adjusted for inflation. All SIPRI's military expenditure data is freely available in the SIPRI Military Expenditure Database, <<http://www.sipri.org/databases/milex>>. The sources and methods used to produce the data discussed here are summarized in boxes 8.2–8.3 and are presented in full on the SIPRI website, <<https://www.sipri.org/databases/milex/sources-and-methods>>.

³ United Nations, Department of Economic and Social Affairs, Population Division, 'World population prospects 2019', Aug. 2019.

⁴ The estimate of total world military expenditure includes a rough estimate of total spending in the Middle East.

Box 8.1. The SIPRI definition of military expenditure

The main purpose of the data on military expenditure is to provide an identifiable measure of the scale of financial resources absorbed by the military.

Although the lack of sufficiently detailed data makes it difficult to apply a common definition of military expenditure consistently to all countries, SIPRI has adopted a definition as a guideline. Where possible, SIPRI military expenditure data includes all current and capital expenditure on (a) the armed forces, including peacekeeping forces; (b) defence ministries and other government agencies engaged in defence projects; (c) paramilitary forces, when judged to be trained and equipped for military operations; and (d) military space activities. This should include expenditure on personnel, including salaries of military and civil personnel, pensions of military personnel, and social services for personnel; operations and maintenance; procurement; military research and development; and military aid (in the military expenditure of the donor country). Civil defence and current expenditure on previous military activities, such as veterans' benefits, demobilization, conversion, weapon destruction and military involvement in non-military activities (e.g. policing) are not included.

In practice, it is not possible to apply this definition for all countries, and in many cases SIPRI is confined to using the national data provided. Priority is then given to the choice of a uniform definition for each country in order to achieve consistency over time, rather than to adjusting the figures for single years according to a common definition. In the light of these difficulties, military expenditure data is most appropriately used for comparisons over time and may be less suitable for close comparison between individual countries.

This section continues by providing a preliminary assessment of the impact of the Covid-19 pandemic on military expenditure in 2020, followed by a description of the global trends in military expenditure over the period 2011–20. The section then identifies the 15 countries with the highest military spending in 2020, focusing specifically on the two largest spenders: the United States and China. Regional and subregional trends and the spending of other individual countries are discussed in section II.

The impact of the Covid-19 pandemic

The general impact of the pandemic on military expenditure cannot yet be accurately measured and will only become evident in future years. Most military spending figures for 2020 are based on pre-pandemic budgets or an initial revision. However, more updated data is available for the largest military spenders. Based on an analysis of these figures, it is possible to conclude with some certainty that Covid-19 did not have a significant impact on global military spending in 2020.

The Covid-19 pandemic has highlighted an important issue regarding the use and interpretation of military expenditure data for the most recent year, or in some cases, years: the difference between budgeted and actual spending (see box 8.3). While the difference is usually minor, it is likely to be more pronounced for 2020 due to the effect of the pandemic. Likewise, the difference between projected (estimated) and final economic data will be greater than usual.

Box 8.2. Sources and methods for SIPRI military expenditure

The SIPRI military expenditure figures are presented on a calendar-year basis, calculated on the assumption of an even rate of expenditure throughout the financial year. The only exception is the United States, for which data is reported on a financial-year basis.

Military expenditure information in 2020 may include activities related to the Covid-19 pandemic performed by the armed forces that would usually not be counted as military spending. However, due to a lack of disaggregated information on these expenditure items, such spending cannot be subtracted from the total military spending figure.

Sources of information

SIPRI data reflects the official data reported by national governments. Such data is obtained from official publications such as budget documents, public finance statistics, reports of national audit agencies and government responses to questionnaires sent out by SIPRI. Such data is also available in reports published by the United Nations, the International Monetary Fund (IMF) and the North Atlantic Treaty Organization (NATO) to which states submit data about their national military spending. In a few cases the original government documents are not available to SIPRI, for example because they are not published, but the content of these documents may be reported in newspapers.

As a general rule, SIPRI takes national data to be accurate until there is convincing information to the contrary. Estimates are made primarily when the coverage of official data does not correspond to the SIPRI definition or when no consistent time series is available that covers the entire period covered by the data.

Military spending and military capability

Military spending measures the current level of resources devoted to renewing, replacing, expanding and maintaining military capability. Military spending does not reflect the stock of capabilities represented by factors such as weapons, training or knowledge. National military spending data is converted using market exchange rates. This means that the cost of a basic military capability can vary. For instance, the salaries of soldiers vary from country to country—largely depending on general wage levels—even when they have received a similar length of training of a similar quality.

Efforts to estimate military expenditure using methods that reflect the purchasing power of military spending rather than using market exchange rates for conversion into US dollars (the common currency used by SIPRI) suffer from major data deficits as well as conceptual problems.^a For these reasons, SIPRI does not use purchasing power parity rates to calculate military expenditure figures in US dollars.

Caution must thus be exercised in drawing a relation between military expenditure and military power or capability. However, SIPRI military expenditure data can be directly used for comparisons of the national allocation of financial resources, for instance comparing it with spending on health services or education.

^a See e.g. Ward, M., 'International comparisons of military expenditures: Issues and challenges of using purchasing power parities', *SIPRI Yearbook 2006*.

The data published and analysed here thus represents an initial assessment of the spending developments in a year heavily affected by the Covid-19 pandemic. Comprehensive information on the resources dedicated to the military in 2020 will become available over the course of 2021. Revised or actual spending information will be available for around 65 per cent of the countries in the SIPRI Military Expenditure Database, including major military spenders, in time for inclusion in *SIPRI Yearbook 2022*.

Box 8.3. The accuracy of financial data for recent years

Data on military expenditure is generally available in three forms: the initial budget, a revised budget and actual expenditure. The initial budget is adopted prior to the start of the new financial year. It indicates the resources that a government plans to allocate to each governmental sector. A revised budget is released during the course of the financial year, showing changes in the government's priorities and financial position. The budget can be revised several times during the course of the year. Accounts of actual expenditure are published after the end of the financial year, to detail how much money has actually been spent.

In the SIPRI Military Expenditure Database, data for the most recent year is most often available in the form of an initial or revised budget. Only a handful of countries will have published an actual expenditure figure for the previous year by mid February each year (when the SIPRI Military Expenditure Database is closed for further changes and updates). Thus, data for the most recent year should always be analysed with caution as further spending revisions are likely to occur. Such revisions would only be reflected in the following edition of the SIPRI Yearbook and the SIPRI Military Expenditure Database.⁴

Similarly, data provided by the International Monetary Fund (IMF) for the most recent year is explicitly identified as a projection. Actual economic data is only provided for years prior to the most recent year. This generates another type of uncertainty in figures for military spending: the calculated figures for military expenditure in dollar terms and as a share of gross domestic product (GDP) are provisional.

⁴ Tian, N., 'A cautionary tale of military expenditure transparency during the great lockdown', WritePeace Blog, SIPRI, 23 June 2020.

While the final data for 2020 will show a greater difference than usual with the data published in this edition of the SIPRI Yearbook, four general points can already be made about the types of impact that the Covid-19 pandemic is likely to have on military spending in 2020.

First, numerous countries (e.g. Angola, Brazil, Chile, South Korea, Kuwait and Russia) are known to have reduced or diverted military spending in response to the Covid-19 pandemic. There will be pressure—especially from civil society and other groups that have historically questioned the need for increased military spending—for more countries to divert military spending in 2021 and beyond into post-pandemic economic recovery spending.⁵ This is likely to be resisted by many within national and transnational defence establishments.⁶ This debate is already taking place in the USA, Central and Western Europe, and the North Atlantic Treaty Organization (NATO).⁷

Second, one country—Hungary—has been identified as taking the opposite course by increasing its military spending in 2020 as part of a financial

⁵ E.g. Sanders, B., 'A 10% cut to the US military budget would help support struggling Americans', *The Guardian*, 30 June 2020; and Smithberger, M., 'It's a pandemic. Military spending hikes should be off the table', *Foreign Policy in Focus*, 16 Sep. 2020.

⁶ E.g. Marcos, P., 'Toward a new "lost decade"? Covid-19 and defense spending in Europe', Center for Strategic and International Studies (CSIS) Briefs, Oct. 2020; and Barigazzi, J., 'Low defense spending puts strategic autonomy at risk, EU review says', *Politico*, 20 Nov. 2020.

⁷ Cook, L., 'NATO chief urges joint spending as budget debate rolls on', *AP News*, 17 Feb. 2021.

stimulus package in response to the pandemic. Similar arguments linking higher military spending and economic recovery are likely to be made in other countries by lobby groups, defence ministries and defence establishments.⁸

Third, the military burden in a majority of states increased in 2020 as GDP fell. This trend will have manifested itself in two ways: either military spending rose while GDP fell; or military spending fell at a slower rate than GDP. Irrespective of the precise mechanism, the consequence is that the burden of the military on national economies was much greater in 2020 than in recent years.

Fourth, most countries have used military assets, especially personnel, to help with the outbreak of Covid-19 and to contain its spread (e.g. China, South Africa and Sri Lanka).⁹ It is often difficult to quantify these costs, and any additional costs to the military are likely to be marginal.

Trends in military expenditure, 2011–20

The 2.6 per cent increase in global military spending in 2020 continues the trend of annual increases in spending since 2015. Over the period 2011–20, spending rose by 9.3 per cent but with two different trends across the 10-year period. Between 2012 and 2014 spending was on a decreasing trend, falling 2.2 per cent. Thereafter, spending rose considerably, up 13 per cent in real terms.

The USA and China together spent over \$1 trillion in 2020 and have accounted for more than half of the world's military spending in recent years. A change in spending by either the USA or China therefore has a substantial effect on the trend in global military expenditure. Other major spenders—such as India, Russia, the United Kingdom and Saudi Arabia, which together accounted for 13 per cent of the global total in 2020—have also affected changes in world military spending, albeit to a lesser extent.

Cuts in US spending over the period 2011–14 contributed significantly to the fall in global military spending. The fall in world spending between 2011 and 2014 was roughly one-third of the drop in US spending. This decrease in world spending would have been far greater if the US fall had not been offset by increases by other major spenders such as China, India, Russia and Saudi Arabia. Likewise, the slowdown in the rate of decrease in US spending by 2015 coupled with substantial increases in spending by China, India, Russia

⁸ Chuter, A., 'UK to boost defense budget by \$21.9 billion. Here's who benefits—and loses out', *Defense News*, 19 Nov. 2020; and Brustlein, C. (ed.), *Collective Collapse or Resilience? European Defense Priorities in the Pandemic Era*, Focus stratégique no. 103 (Institut Français des Relations Internationales (IFRI): Paris, Feb. 2021), p. 53.

⁹ Xinhua, 'Over 10,000 military medics working at front line in COVID-19 fight', China.org.cn, 2 Mar. 2020; 'Extra military deployment for 73 000 for coronavirus campaign', defenceWeb, 22 Apr. 2020; and Srinivasan, M., 'COVID-19: Sri Lanka military is helping the country fight the pandemic', *The Hindu*, 15 Apr. 2020.

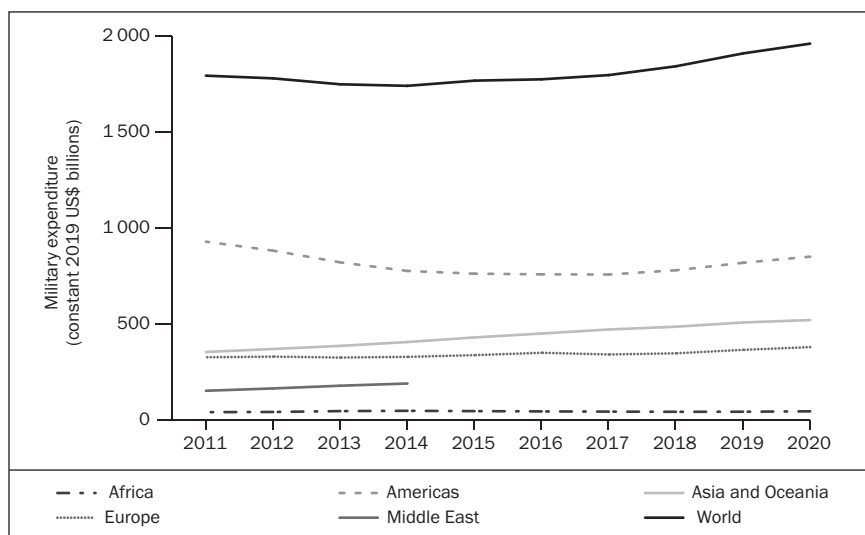


Figure 8.1. Military expenditure, by region, 2011–20

Note: Missing data means that no regional estimate can be made for the Middle East for 2015–20.

Source: SIPRI Military Expenditure Database, Apr. 2021.

and Saudi Arabia reversed the falling trend in global military spending in the second half of the decade. The return to increases in military spending by the USA from 2018 pushed global spending to the highest levels since 1988, the earliest year for which SIPRI has a consistent estimate for total world military expenditure.

Between 2011 and 2020, regional spending decreased only in the Americas (–8.4 per cent), while the highest increase was in Asia and Oceania (47 per cent), followed by Europe (16 per cent), Africa (11 per cent) and for the countries in the Middle East for which data was available (12 per cent). Among the 13 subregions, spending fell over the decade only in two: sub-Saharan Africa (–13 per cent) and North America (–9.6 per cent). The five largest subregional increases were in Central Europe (74 per cent), East Asia (53 per cent), Central Asia (47 per cent), North Africa (42 per cent), and Central America and the Caribbean (40 per cent).

The decline in military spending in sub-Saharan Africa since 2011 was the result of spending decreases by three of the five countries with the largest military expenditure in the subregion at the time: Angola, South Sudan and Sudan. In North America (i.e. Canada and the USA), the decrease was the result solely of spending changes by the USA. After reaching a spending peak in 2010, the USA cut military spending for seven consecutive years between 2011 and 2017. Despite a resumption in spending increases since 2018, US military spending in 2020 remained 10 per cent lower than in 2011.

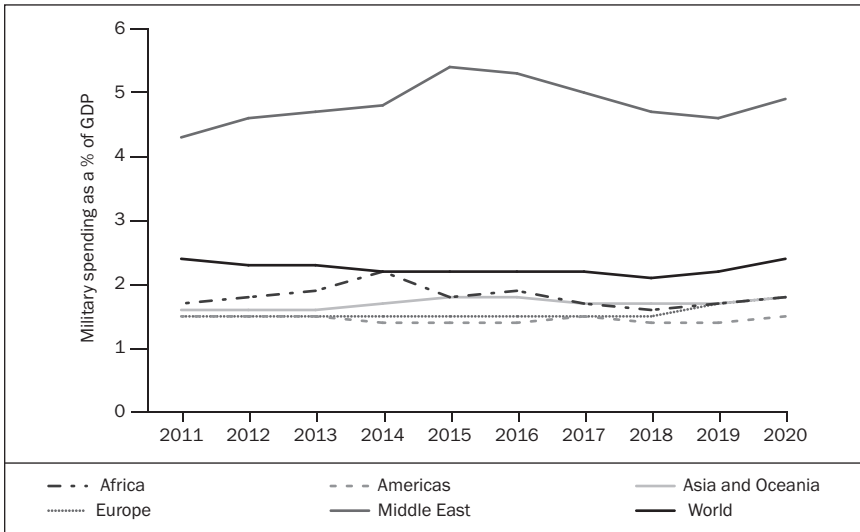


Figure 8.2. Military burden, by region, 2011–20

Note: The military burden is military expenditure as a share of gross domestic product (GDP). The military burden of a region is the average military burden of the countries in the region for which data is available.

Source: SIPRI Military Expenditure Database, Apr. 2021.

In contrast, the growth in spending between 2011 and 2020 in Central Europe was the result of higher spending by all five of the largest spenders in the region: Poland, Romania, Czechia, Hungary and Slovakia. In large part, this was due to higher threat perception in relation to Russia, arms modernization programmes, and pressure from the USA and NATO for these countries to reach NATO's military spending guideline of 2 per cent of GDP.¹⁰ In East Asia, Central Asia and North Africa spending increased in all countries in the subregion.¹¹ In Central America and the Caribbean the increase was dominated by increases in Mexico (by far the largest spender in the subregion), affected by the ongoing war on drugs.¹²

At 2.4 per cent, the world military burden in 2020 was 0.2 percentage points higher than in 2019 but equal to the level of 2011 (see figure 8.2). The world military burden followed a shallow U-shaped trend over the period 2011–20. Initially at 2.4 per cent of GDP, the military burden fell to 2.1 per

¹⁰ Tian, N., Lopes da Silva, D. and Wezeman, P. D., 'Spending on military equipment by European members of the North Atlantic Treaty Organization', *SIPRI Yearbook 2020*, pp. 255–57; and *Defenseworld.net*, 'Poland details \$49.8 billion military modernization plan 2026', 4 Mar. 2019.

¹¹ No data was available for North Korea in East Asia; Turkmenistan and Uzbekistan in Central Asia; or Libya in North Africa. An estimate of Libya's spending is included in the subregional and regional totals.

¹² Tian, N. et al., 'Regional developments in military expenditure, 2019', *SIPRI Yearbook 2020*, pp. 238–39.

Table 8.2. The 15 countries with the highest military expenditure in 2020

Expenditure figures and GDP are in US\$, at current prices and exchange rates. Changes are in real terms, based on constant (2019) US dollars.

Rank		Country	Military expenditure, 2020 (\$ b.)	Change (%)		Military expenditure as a share of GDP (%) ^b		Share of world military expenditure, 2020 (%)
2020	2019 ^a			2019–20	2011–20	2020	2011	
1	1	United States	778	4.4	–10	3.7	4.8	39
2	2	China	[252]	1.9	76	[1.7]	[1.7]	[13]
3	3	India	72.9	2.1	34	2.9	2.7	3.7
4	4	Russia	61.7	2.5	26	4.3	3.4	3.1
5	6	United Kingdom	59.2	2.9	–4.2	2.2	2.5	3.0
<i>Subtotal top 5</i>			1 224	..	..	..	..	62
6	5	Saudi Arabia	[57.5]	–10	2.3	[8.4]	7.2	[2.9]
7	8	Germany	52.8	5.2	28	1.4	1.2	2.7
8	7	France	52.7	2.9	9.8	2.1	1.9	2.7
9	9	Japan	49.1	1.2	2.4	1.0	1.0	2.5
10	10	South Korea	45.7	4.9	41	2.8	2.5	2.3
<i>Subtotal top 10</i>			1 482	..	..	..	..	75
11	11	Italy	28.9	7.5	–3.3	1.6	1.5	1.5
12	12	Australia	27.5	5.9	33	2.1	1.8	1.4
13	14	Canada	22.8	2.9	26	1.4	1.2	1.1
14	16	Israel	21.7	2.7	32	5.6	5.8	1.1
15	13	Brazil	19.7	–3.1	2.1	1.4	1.4	1.0
<i>Subtotal top 15</i>			1 603	..	..	..	..	81
World			1 981	2.6	9.3	2.4	2.4	100

.. = data not available or not applicable; [] = estimated figure; GDP = gross domestic product.

^a Rankings for 2019 are based on updated military expenditure figures for 2019 in the current edition of the SIPRI Military Expenditure Database. They may therefore differ from the rankings for 2019 given in *SIPRI Yearbook 2020* and in other SIPRI publications in 2020.

^b These figures are based on GDP estimates from International Monetary Fund, World Economic Outlook Database, Oct. 2020; and International Monetary Fund (IMF), International Financial Statistics Database, Oct. 2020.

Source: SIPRI Military Expenditure Database, Apr. 2021.

cent in 2018, the lowest point since the end of the cold war, before increasing again in 2019 and 2020.

In 2020 the average military burden increased in all five regions. States in the Americas had the lowest military burden, at 1.5 per cent of GDP. For states in Africa, Asia and Oceania, and Europe, the average was slightly higher, at 1.8 per cent of GDP. By far the highest average, 4.9 per cent, was for the Middle East based on countries for which data is available. The jump in the global and regional military burdens in 2020 was the effect of the divergence in the rates of change of military spending and GDP.

The largest military spenders in 2020

Military spending by the top 15 countries reached \$1603 billion in 2020, accounting for 81 per cent of global expenditure. There were some changes in the composition and rank order of the top 15 between 2019 and 2020 (see table 8.2).¹³ Most notably, Israel entered the top 15 in place of Turkey, and the UK moved above Saudi Arabia—whose military spending fell by 10 per cent—to become the fifth largest spender in 2020.

The USA (accounting for 39 per cent of world military spending in 2020) and China (13 per cent) remained the two largest spenders. The gap between the military spending of China and that of the USA increased for the third consecutive year. It was also the second straight year that the increase in US military spending (of 4.4 per cent) was higher than the increase in Chinese spending (of 1.9 per cent). The biggest fall in ranking was by Brazil, where spending dropped by 3.1 per cent in 2020, the second consecutive decrease, and it moved from 13th place to 15th.

All but three countries in the top 15 had higher military expenditure in 2020 than in 2011. The exceptions were the USA (–10 per cent), the UK (–4.2 per cent) and Italy (–3.3 per cent). China's increase (76 per cent) was by far the largest among the top 15. This was followed by South Korea (41 per cent), India (34 per cent), Australia (33 per cent) and Israel (32 per cent). Japan increased its spending in a gradual but minor manner, up 2.4 per cent over the decade. Brazil (2.1 per cent) and Saudi Arabia (2.3 per cent) also recorded minor overall increases, but the spending of both countries had large annual fluctuations.

The military burdens of all but one of the top 15 military spenders increased in 2020—the exception being China. The Covid-19-related decline in GDP resulted in some sharp climbs in military burden irrespective of whether military spending increased or decreased. Most notably, Saudi Arabia's military burden increased by 0.6 percentage points despite the 10 per cent decrease in spending. There were also notable increases in the military burdens of Russia (0.5 percentage points), Israel (0.4 percentage points) and the USA (0.3 percentage points).

Among the top 15 military spenders in 2020, Saudi Arabia had the highest military burden, 8.4 per cent. Those of Israel (5.6 per cent), Russia (4.3 per cent), the USA (3.7 per cent), India (2.9 per cent) and South Korea (2.8 per cent) were also higher than the average global military burden of 2.4 per cent. Japan had the lowest military burden: it devoted only 1.0 per cent of its GDP to military expenditure.

¹³ The United Arab Emirates (UAE) would probably rank as one of the 15 largest spenders, most likely within the ranks 11–15, but a lack of data since 2014 means that no reasonable estimate of its military spending can be made and thus it has been omitted from the top 15 ranking.

Table 8.3. Components of US military expenditure, financial years 2016–20

Figures are in US\$ b. at current prices unless otherwise stated. Years are US financial years, which start on 1 Oct. of the previous year.

	2016	2017	2018	2019	2020 ^a
<i>Department of Defense</i>	565	569	601	654	690
Military personnel	148	145	146	156	162
Operations and maintenance	243	245	257	272	284
Procurement	103	104	113	125	135
Research, development, testing and evaluation	65	68	77	89	98
Other (construction, housing etc.)	6.7	6.8	8.6	12	11
<i>Department of Energy</i>	28	29	31	32	34
Atomic energy defence-related activities	19	20	21	23	25
Other defence-related activities	8.6	9.3	9.5	9.3	9.4
National Intelligence Program, military-related	[40]	[41]	[45]	[45]	[47]
Department of State, international security assistance ^b	6.7	7.1	6.8	6.8	6.7
Transfers to fund construction of border wall	..	..	..	-3.6	..
Total	640	647	682	734	778
Military expenditure as a share of GDP (%)	3.4	3.3	3.3	3.4	3.7

.. = data not available or not applicable; [] = estimated figure; GDP = gross domestic product.

^a Figures for financial year 2020 are estimates.

^b This category captures spending on peacekeeping operations, international military education and training, and foreign military financing.

Sources: SIPRI Military Expenditure Database, Apr. 2021; US Office of Budget and Management (OMB), *Historical Tables* (OMB: Washington, DC, 2020), table 3.2, 'Outlays by function and sub-function: 1962–2025'; Federation of American Scientists (FAS), Intelligence Resource Program, 'Intelligence budget data'; and US Department of State, *Congressional Budget Justification: Department of State, Foreign Operations and Related Programs Fiscal Year 2021* (Department of State: Washington, DC, 10 Feb. 2020).

The United States

US military expenditure in 2020 amounted to an estimated \$778 billion, 4.4 per cent more than in 2019 but 10 per cent less than in 2011. The USA remained by far the largest military spender, as has been the case every year for which SIPRI has military expenditure data. The 2020 financial year marked the third consecutive year of growth in US military spending, following continuous real-terms declines between 2010—when US spending peaked—and 2017.¹⁴

The US military burden also increased between 2019 and 2020, from 3.4 per cent of GDP to 3.7 per cent. This was due in part to the economic fallout of the Covid-19 pandemic and the resulting decline in US economic output. The military burden in 2020 was still 1.2 percentage points lower than in 2010, the year in which US military expenditure peaked following a troop surge in Iraq and Afghanistan.

¹⁴ The SIPRI military expenditure figures are generally presented on a calendar-year basis, calculated on the assumption of an even rate of expenditure throughout the financial year. The only exception is the USA, for which data is reported on a financial-year basis. The US financial year runs for 12 months from 1 Oct. of the year preceding the named year.

The groundwork for the recent increase in US military spending was laid towards the end of the presidency of Barack Obama.¹⁵ It was not until the 2017–21 administration of his successor, President Donald J. Trump, that these plans took shape. During the 2016 presidential campaign, Trump promised to rebuild what he saw as the ‘depleted’ US military.¹⁶ Within a few months of taking office, Trump added \$15 billion to the 2017 budget of the US Department of Defense (DOD), which had originally been passed under President Obama.¹⁷ In the two subsequent years, US military expenditure increased by 3.0 per cent and 5.7 per cent, respectively, in real terms. This trend continued in 2020.

Many budget items have driven this recent episode of growth in US military spending, but a few stand out: research and development (R&D), the nuclear arsenal, modernization of conventional capabilities, operations and maintenance, and military personnel.

R&D received notable investment in the hopes of modernizing key capabilities. Funds directed towards R&D increased by 44 per cent between 2017 and 2020 (see table 8.3). This is in line with the 2018 National Defense Strategy, which notes that ‘[the USA] cannot expect success fighting tomorrow’s conflicts with yesterday’s weapons or equipment’.¹⁸

The USA has simultaneously embarked on an extensive upgrade of its nuclear arsenal.¹⁹ The US Congressional Budget Office projects the annual cost of maintaining and modernizing the country’s nuclear arsenal to be roughly \$50 billion until 2028.²⁰ In total, this programme is estimated to cost more than \$1.2 trillion.²¹

The DOD also plans to modernize its conventional capabilities. With the aim of expanding the US military force structure, procurement spending was raised by 31 per cent during the Trump presidency. Despite this, several large-scale acquisition targets—such as the 350-ship naval fleet called for by President Trump—were not met.²²

Operations and maintenance remained the largest category within the DOD budget, accounting for 41 per cent of the total. Despite a partial

¹⁵ Zakheim, D. S., ‘The great reversal: Obama’s military buildup’, *National Interest*, 9 Feb. 2016.

¹⁶ Vitali, A., ‘Trump calls for increased defense spending, more military might’, NBC News, 7 Sep. 2016.

¹⁷ Herb, J., ‘Trump gets a \$15 billion defense boost’, CNN, 1 May 2017.

¹⁸ US Department of Defense (DOD), *Summary of the 2018 National Defense Strategy of the United States of America: Sharpening the American Military’s Competitive Edge* (DOD: Arlington, VA, 2018), p. 6.

¹⁹ On the modernization plans see chapter 10, section I, in this volume.

²⁰ Bennett, M. et al., ‘Projected costs of US nuclear forces, 2019 to 2028’, US Congress, Congressional Budget Office (CBO), Jan. 2019.

²¹ ‘US nuclear arsenal to cost \$1.2 trillion over next 30 years: CBO’, Reuters, 31 Oct. 2017; and Bennett, M. et al., *Approaches for Managing the Costs of US Nuclear Forces, 2017 to 2046* (US Congress, Congressional Budget Office: Washington, DC, Oct. 2017).

²² Larter, D. B., ‘Trump called for a 350-ship fleet, but his budget falls short of even Obama-era goals’, *Defense News*, 25 Feb. 2020.

Table 8.4. Components of China's military expenditure, 2016–20

Figures are in b. yuan at current prices unless otherwise stated.

	2016	2017	2018	2019	2020
<i>Official Chinese figures</i>					
National defence (central and local)	977	1 044	1 128	1 213	1 292
<i>Additional items included in SIPRI's estimate of China's total military expenditure</i>					
People's Armed Police (central and local)	105	113	123	124	131
China Coast Guard	[6.9]	[8.1]	[9.2]	[11.1]	[11.8]
Payments to demobilized and retired soldiers	98.4	118	124	140	149
Additional military RDT&E spending ^a	[132]	[139]	[153]	[173]	[157]
Additional military construction spending ^a	0.2	0.2	0.1	0.1	0.1
Arms imports ^b	[1.7]	[1.3]	[0.9]	[0.5]	–
Total (yuan b.)	1 320	1 424	1 538	1 660	1 742
Total (US\$ b. at current prices)	199	210	233	240	252
Military expenditure as a share of GDP (%)	1.8	1.7	1.7	1.7	1.7

– = nil or a negligible value; [] = estimated figure; GDP = gross domestic product; RDT&E = research, development, testing and evaluation.

^a Some spending on military RDT&E and military construction is also included in the main national defence budget.

^b By 2020 all arms imports are estimated to be paid for by the equipment expenditure reported in the official defence budget.

Sources: SIPRI Military Expenditure Database, Apr. 2021; and Chinese Ministry of Finance, Budget Division.

reduction in overseas military deployments, spending in this category actually increased. This can be partly attributed to fuel costs and higher maintenance costs linked to longer lifetimes of equipment.²³ Operations and maintenance also includes spending on benefits for service members, which were improved in 2020.

Military salaries are determined by a fixed formula. They rose between 2017 and 2020 at the same time as the total number of US military personnel increased from 2.1 million to 2.2 million.²⁴

Looking ahead, the incoming administration of Joe Biden is unlikely to propose any major cuts to the military budget, citing potential threats from challengers such as Russia and China.²⁵ However, in the future there may be pressure from members of the US Congress to reduce military spending levels in order to free up resources to fund the post-pandemic recovery and reduce the fiscal deficit.²⁶ That said, Biden plans to re-focus spending away

²³ Harrison, T. and Daniels, S. P., *Analysis of the FY 2020 Defense Budget and Its Implications for 2021 and Beyond* (Center for Strategic and International Studies (CSIS): Washington, DC, Feb. 2020).

²⁴ US Office of the Undersecretary of Defense (Comptroller), *National Defense Budget Estimates for FY 2021* (Department of Defense: Arlington, VA, Apr. 2020); and Shane, L., 'Biggest military pay raise in years takes effect Jan. 1', *Military Times*, 26 Dec. 2019.

²⁵ Beynon, S., 'Biden says US must maintain small force in Middle East, has no plans for major defense cuts', *Stars and Stripes*, 10 Sep. 2020.

²⁶ O'Brien, C., 'On defense spending, a Democratic brawl is brewing', *Politico*, 28 Oct. 2020.

from legacy systems towards defence innovation and modernization.²⁷ In public statements, Biden has prioritized investment in unmanned capabilities, cyberwarfare tools and information technology (IT) infrastructure.²⁸

China

In 2020 China's military expenditure is estimated to have totalled \$252 billion (1742 billion yuan), representing a real-terms increase of 1.9 per cent compared with 2019 and of 76 per cent compared with 2011 (see table 8.4). Among the major economies and military spenders, only China's GDP was projected to grow in 2020, by 1.9 per cent.²⁹ Moreover, China was one of the few countries whose military burden did not increase in 2020. Its military spending has increased for 26 consecutive years, despite going through at least three financial or economic crises (in 1997, 2009 and 2020). This is the longest streak of uninterrupted increases by any country in the SIPRI Military Expenditure Database.

The Chinese economy managed to rebound fairly quickly from pandemic-related restrictions. The government had begun to implement strict containment measures by mid January 2020 and by mid February had started to reopen the economy.³⁰ China's economy resumed growth in the second quarter of 2020 (by 3.2 per cent year on year), while the rest of the world was still scrambling with lockdown measures and public health responses.³¹

As a result of the Covid-19 pandemic, China delayed the release of its 2020 budget plans by two months, to May 2020. Its long-term ambition for military development, modernization and expansion remains an important factor behind the continued increase in its military spending.³² The 2020 budget plans also highlighted perceived threats to its national security as a reason to allocate more resources to its military. This includes what the government broadly terms 'hegemonism' and 'power politics', which is generally interpreted as referring to tensions with the USA.³³ The Chinese

²⁷ Daniels, S. P., 'Defense budget priorities for the Biden administration', Defense360, Center for Strategic and International Studies (CSIS), Feb. 2021.

²⁸ Gould, J., 'Biden not planning any defense cuts, but they may come anyway', *Defense News*, 11 Sep. 2020.

²⁹ International Monetary Fund (IMF), International Financial Statistics Database, Oct. 2020, <<http://data.imf.org/IFS>>.

³⁰ World Health Organization (WHO), 'Coronavirus disease 2019 (COVID-19)', Situation Report no. 94, 23 Apr. 2020; Murphy, F., 'Inside China's response to COVID', *Nature*, 3 Dec. 2020; International Monetary Fund (IMF), 'Policy responses to COVID-19: China, People's Republic of', 4 Mar. 2021; and Mallapaty, S., 'Where did COVID come from? WHO investigation begins but faces challenges', *Nature*, 19 Nov. 2020.

³¹ 'China's Q2 GDP grows 3.2%, beats expectations', Reuters, 16 July 2020.

³² Chinese State Council, *China's National Defense in the New Era* (Foreign Languages Press: Beijing, July 2019).

³³ Chinese Ministry of National Defense, 'China's moderate and steady defense budget increase reasonable and necessary', 26 May 2020.

Government also noted a potential declaration of independence by Taiwan as a specific ‘domestic’ threat facing China.³⁴

SIPRI’s military expenditure figures for China differ from the official national defence budget. SIPRI’s estimate for 2020 is around one-third or \$65 billion (450 billion yuan) higher than the figure that the Chinese Government published in its national defence budget.³⁵ SIPRI’s estimate of Chinese military expenditure includes the costs of some military-related activities for which China budgets, fully or partially, outside the official national defence budget.

In 2020 SIPRI revised its estimates of China’s military expenditure to take account of recent changes in its military-related activities and budgetary practices.³⁶ At \$252 billion, the new estimate of Chinese spending in 2020 is about 8 per cent lower than the old SIPRI estimate. The new estimate is comprised of seven components. Official information is available for four: national defence, the People’s Armed Police, payments to demobilized and retired soldiers, and additional military construction spending. Together, these four categories accounted for 91 per cent of total spending in 2020. Estimates must be made for the remaining three components, representing 9 per cent of the total: the China Coast Guard, additional funding for military research, development, testing and evaluation (RDT&E), and arms imports paid for outside the national defence budget.³⁷

³⁴ ‘China: Reunification “inevitable” as Taiwan’s Tsai starts second term in office’, Deutsche Welle, 20 May 2020; and Chinese Ministry of National Defense (note 33).

³⁵ Chinese Ministry of National Defense, ‘China further lowers defense budget growth to 6.6 pct’, 22 May 2020.

³⁶ Tian, N. and Su, F., *A New Estimate of China’s Military Expenditure* (SIPRI: Stockholm, Jan. 2021).

³⁷ Tian and Su (note 36), pp. 6–13.

Table 8.1. Military expenditure and the military burden, by region, 2011–20

Figures for 2011–20 are in US\$ b. at constant (2019) prices and exchange rates. Figures for 2020 in the right-most column, marked *, are in current US\$ b. Figures do not always add up to totals because of the conventions of rounding.

	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2020*
World total	1793	1779	1748	1740	1767	1774	1796	1842	1909	1960	1981
<i>Africa</i>	(38.6)	(39.7)	44.2	45.6	44.0	(42.6)	(41.5)	(40.5)	(40.9)	(43.0)	(43.2)
North Africa	(17.4)	(18.9)	22.2	23.0	23.3	(23.2)	(22.6)	(22.1)	(23.1)	(24.6)	(24.7)
Sub-Saharan Africa	(21.2)	(20.8)	(21.9)	22.7	20.7	19.4	18.9	18.4	17.8	18.4	18.5
<i>Americas</i>	927	881	820	775	761	757	756	779	817	849	853
Central America and the Caribbean	6.6	7.0	7.4	7.7	7.4	8.2	7.7	8.4	9.2	9.2	8.6
North America	873	825	761	716	702	700	697	717	757	789	801
South America	47.7	49.0	50.9	51.5	50.9	48.6	51.4	52.7	51.8	50.7	43.5
<i>Asia and Oceania</i>	352	368	384	404	428	449	470	484	506	519	528
Central Asia	1.3	1.6	1.8	1.8	1.8	1.6	1.5	1.7	2.1	2.0	1.9
East Asia	229	244	257	272	288	300	313	328	343	351	359
Oceania	22.8	22.1	21.9	23.7	25.9	28.3	28.4	28.0	29.2	30.8	30.7
South Asia	65.8	65.9	65.8	69.4	70.5	76.7	82.6	85.8	88.6	89.7	90.1
South East Asia	33.5	34.7	38.2	37.9	41.6	42.2	43.8	40.8	43.4	45.6	45.5
<i>Europe</i>	325	328	323	327	336	348	339	346	363	378	378
Central Europe	19.0	18.7	18.5	19.7	22.3	22.6	24.4	27.5	31.1	33.0	33.6
Eastern Europe	58.6	67.5	70.6	76.2	82.4	87.0	71.9	70.5	74.3	76.8	71.7
Western Europe	247	242	234	231	231	239	243	248	258	268	273
<i>Middle East</i>	150	162	176	188	..	..	..	..	..	..	..

	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2020*
<i>World military spending per capita^a</i>	248	245	242	239	229	226	233	240	247	254	
<i>Military burden^b</i>											
Africa	1.7	1.8	1.9	2.2	1.8	1.9	1.7	1.6	1.7	1.8	
Americas	1.5	1.5	1.5	1.4	1.4	1.4	1.5	1.4	1.4	1.5	
Asia and Oceania	1.6	1.6	1.6	1.7	1.8	1.8	1.7	1.7	1.7	1.8	
Europe	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.7	1.8	
Middle East	4.3	4.6	4.7	4.8	5.4	5.3	5.0	4.7	4.6	4.9	
World total^c	2.4	2.3	2.3	2.2	2.2	2.2	2.2	2.1	2.2	2.4	

.. = estimate not provided due to unusually high levels of uncertainty and missing data; () = total based on country data accounting for less than 90% of the regional total.

Notes: The totals for the world and regions are estimates based on data from the SIPRI Military Expenditure Database. When military expenditure data for a country is missing for a few years, estimates are made, most often on the assumption that the rate of change in that country's military expenditure is the same as that for the region to which it belongs. When no estimates can be made, countries are excluded from the totals. The countries excluded from all totals here are Cuba, Djibouti, Eritrea, North Korea, Somalia, Syria, Turkmenistan and Uzbekistan. Totals for regions cover the same groups of countries for all years. Rough estimates for the Middle East are included in the world totals for 2015–20. The SIPRI military expenditure figures are presented on a calendar-year basis, calculated on the assumption of an even rate of expenditure throughout the financial year. Further detail on sources and methods can be found in box 8.2 and on the SIPRI website.

^a World military spending per capita calculated in current US\$.

^b The military burden of a region is the average military burden for countries in the region for which data is available.

^c World military spending calculated as a % of world gross domestic product, both measured in current US\$.

Sources: SIPRI Military Expenditure Database, Apr. 2021; International Monetary Fund, World Economic Outlook Database, Oct. 2020; International Monetary Fund (IMF), International Financial Statistics Database, Sep. 2020; and United Nations, Department of Economic and Social Affairs, Population Division, 'World population prospects 2019', Aug. 2019.