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June 2021

COMPLICIT: 2020 GLOBAL NUCLEAR WEAPONS SPENDING

International Campaign to Abolish Nuclear Weapons | REPORT



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icanw.org

Cover image:

An unarmed Minuteman III intercontinental ballistic missile launches during an operational test at Vandenberg Air Force Base, Calif. (U.S. Air Force photo by Tech. Sgt. Jim Araos)

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Executive Summary

In 2020, during the worst global pandemic in a century, nine nuclear-armed states spent \$72.6 billion on their nuclear weapons, more than \$137,000 per minute, an inflation adjusted increase of \$1.4 billion from last year.

WHY?

The exchange of money and influence, from countries to companies to lobbyists and think tanks, sustains and maintains a global arsenal of catastrophically destructive weapons. Each person and organisation in this cycle is complicit in threatening life as we know it and wasting resources desperately needed to address real threats to human health and safety.

The \$72.6 billion spent on nuclear weapons was split between governmental departments and private companies. Companies in France, the United Kingdom and the United States received \$27.7 billion from nuclear-weapon-related contracts in 2020, of which \$14.8 billion was new.

Those companies then funded think tanks that research and write about nuclear weapons policies. At least twelve major think tanks that research and write about nuclear weapons in India, France, the United Kingdom, and the United States received collectively between \$5 million and \$10 million from companies that produce nuclear weapons. The CEOs of companies that produce nuclear weapons sit on their advisory boards and are listed as “partners” on their websites.

And to make sure the enormous budgets are approved to pay for these contracts, those same companies hire lobbyists. In 2020, nuclear weapons producers spent \$117 million in lobbying on defence. For every \$1 spent lobbying, an average of \$236 in nuclear weapon contract money came back.

Nuclear-armed states spent an obscene amount of money on illegal weapons of mass destruction in 2020, while the majority of the world’s countries support a global nuclear weapons ban. But the story doesn’t stop there. Companies, lobbyists and think tanks are complicit and deserve to be held accountable for their role in building and shaping a world with more than 13,000 life-ending weapons. We need to call on them to cut it out.

KEY FIGURES

Country Spending On Nuclear Weapons In 2020

 The United States	\$37.4 billion 🕒 \$70,881 / minute
 China	\$10.1 billion 🕒 \$19,149 / minute
 Russia	\$8 billion 🕒 \$15,222 / minute
 The United Kingdom	\$6.2 billion 🕒 \$11,769 / minute
 France	\$5.7 billion 🕒 \$10,786 / minute
 India	\$2.48 billion 🕒 \$4,567 / minute
 Israel	\$1.1 billion 🕒 \$2,059 / minute
 Pakistan	\$1 billion 🕒 \$1,968 / minute
 North Korea	\$667 million 🕒 \$1,265 / minute
 2020 Total	\$72.6 billion 🕒 \$137,666 / minute
2019 Total	\$71.2 billion* 🕒 \$135,424 / minute

*Adjusted for inflation

Company defence contract awards and defence lobby spending in 2020

Aerojet Rocketdyne	Awarded: \$132 million Spent lobbying: \$2.3 million
Airbus	Awarded: \$170 million Spent lobbying: \$6.1 million
BAE Systems	Awarded: \$10.8 billion (\$72.5 million for nuclear weapons) Spent lobbying: \$5.6 million
Bechtel	Awarded: \$2.9 billion Spent lobbying: \$990,000
Boeing	Awarded: \$50 billion (\$105 million for nuclear weapons) Spent lobbying: \$15.6 million
Constructions Industrielles de la Méditerranée (CNIM)	Awarded: \$39.1 million Spent lobbying: \$17,226
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Leidos	Awarded: \$10.8 billion Spent lobbying: \$2.4 million
Leonardo	Awarded: \$728.8 million Spent lobbying: \$86,644

Lockheed Martin	Awarded: \$124.5 billion (\$2.1 billion for nuclear weapons) Spent lobbying: \$15 million
Northrop Grumman	Awarded: 29.1 billion (\$13.7 billion for nuclear weapons) Spent lobbying: \$13.3 million
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Serco	Awarded: \$896 million Spent lobbying: \$420,000
Textron	Awarded: \$1.8 billion (\$3.2 million for nuclear weapons) Spent lobbying: \$5.1 million
Total	Awarded: \$332 billion (\$27.7 billion for nuclear weapons) Spent lobbying: \$117 million

Think tank reported income from nuclear weapon producers

Atlantic Council	\$835,000 - \$1,724,998
Brookings Institution	\$275,000 - \$549,998
Carnegie Endowment for International Peace	\$50,000 - 199,998
Center for New American Security	\$1,085,000 - \$1,874,991
Center for Strategic and International Studies	\$1,530,000 - \$2,794,997
Fondation pour la recherche stratégique (FRS)	amount not specified
French Institute of International Relations	amount not specified
Hudson Institute	\$170,000 - \$350,000
International Institute of Strategic Studies	\$800,640 - \$1,146,744
Observer Research Foundation	\$71,539
Royal United Services Institute	\$610,210 - \$1,445,581
Stimson Center	\$50,500

Total	\$5 - 10 million
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Introduction

For most people, 2020 was not a normal year. In the worst pandemic this century, life was substantially altered by isolation and quarantines, economic and mental depression and, for far too many, the loss of loved ones to COVID-19. But for the countries, companies and think tanks funding, building, and writing about nuclear weapons it was business as usual. While hospital beds filled up with patients, doctors and nurses worked over hours and basic medical supplies ran scarce, nine countries found they had more than \$72 billion on hand for their weapons of mass destruction, \$1.4 billion more than last year.

Meanwhile, in 2020, the first treaty banning nuclear weapons, the Treaty on the Prohibition of Nuclear Weapons (TPNW) reached 50 states parties, triggering its entry into force in early 2021.¹ While these nine countries continued to waste billions on weapons of mass destruction, the rest of the world was busy making them illegal.

The leaders of these nine countries are not the only ones to blame for throwing away \$72.6 billion during a global pandemic. More than twenty companies producing nuclear weapons profited from the nuclear weapons business in 2020 through existing or new contracts. \$27.7 billion went to eleven companies for new or modified nuclear-weapons-related contracts.

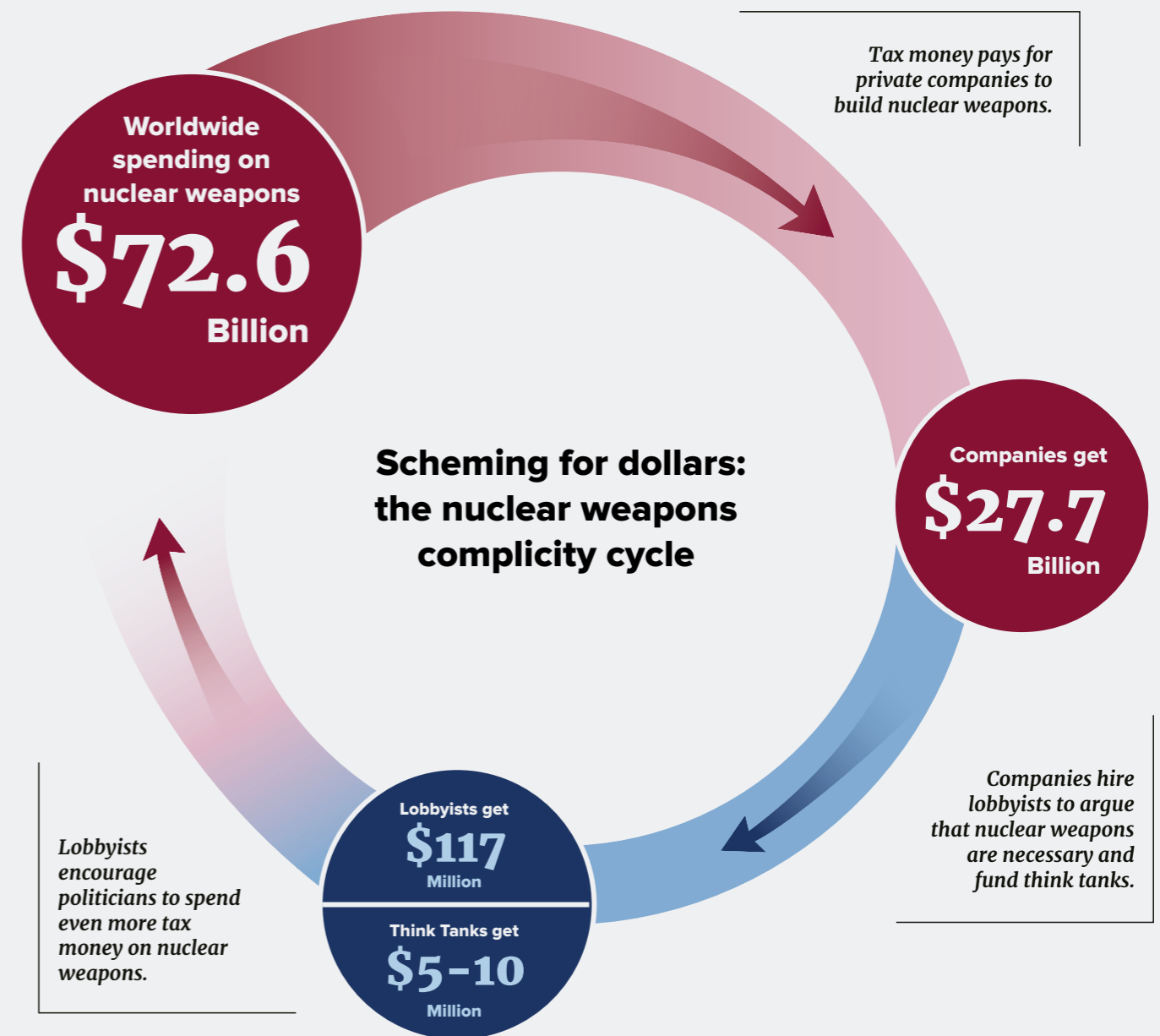
Instead of taking an all-hands approach to helping millions of COVID-19 patients survive or donating profits to medical charities, these companies spent their money to persuade policy makers to sustain the nuclear weapons industry, and to line their own pockets for years to come.

First, they gave upwards of \$10 million, collectively, in one year to most major think tanks writing about nuclear weapons, some of whom then published reports recommending building new nuclear weapon systems. For example, the Atlantic Council, which received upwards of \$1.7 million in 2019, published an issue brief which recommended the United States proceed to develop new “low-yield” nuclear capabilities to deter Russia.²

And more directly, the companies producing nuclear weapons spent over \$100 million lobbying policy makers to authorise massive defence spending, including for nuclear weapons. For every \$1 spent lobbying, an average of \$236 in nuclear-weapon-contract money came back. They even lobbied to authorise funding for defence in COVID-19 relief bills: much of Boeing’s defence lobbying was bundled with lobbying around the CARES act (the Coronavirus Aid, Relief, and Economic Security Act) in the United States.

The cycle of spending from the United States to Northrop Grumman is just one example. In 2020, the United States spent \$37.4 billion on nuclear weapons. Of that, the United States gave \$13.7 billion in contracts to Northrop Grumman to build a completely new nuclear weapon system. Northrop Grumman then spent \$13.3 million lobbying U.S. policy makers to spend more money on defence, including nuclear weapons. It also spent upwards of \$2 million funding nine major think tanks that research and write about nuclear weapons. These policy research reports against nuclear disarmament or in support of weapons systems coupled with lobbying visits could very well persuade policy makers to authorise more U.S. spending on nuclear weapons for the next year resulting in more contracts for Northrop Grumman and so on. Until the cycle is known, it will never be broken. Until it is broken, the threat posed by the very existence of nuclear weapons remains.

NUCLEAR WEAPONS SPENDING CYCLE | 2020



This report unveils the dirty secret of the nuclear weapons industry: the billions wasted on illegal weapons of mass destruction during a global pandemic and the vested interests that keep coming back for more.











Countries

INTRODUCTION

The International Campaign to Abolish Nuclear Weapons estimates that the nine nuclear-armed countries spent \$72.6 billion on their 13,000+ nuclear weapons in 2020, equaling \$137,666 every minute of 2020 on nuclear weapons, and an \$1.4 billion increase from 2019.³ Instead of throwing away billions on weapons of mass destruction during a global pandemic, all nuclear-armed states must join the TPNW and eliminate their stockpiles immediately.



Source: U.S. Air Force. By: SSGT Andy Dunaway. ©Public Domain.

	The United States	\$37.4 billion ⌚ \$70,881 / minute
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	2020 Total	\$72.6 billion ⌚ \$137,666 / minute
	2019 Total	\$71.2 billion⁴ ⌚ \$135,424 / minute

All figures adjusted for inflation



China \$10.1 billion

China has 350 nuclear weapons and can launch them from land-based missiles, aircraft, and submarines.⁵

There is no reliable public information about Chinese nuclear spending. Therefore, ICAN used a percentage of total military spending to calculate China's nuclear expenditure. ICAN estimated China spends four per cent of its total military spending on nuclear weapons based on similar estimates in a 2020 Reaching Critical Will report and in a 2011 Global Zero estimate.^{6,7} The Stockholm International Peace Research Institute estimated that in 2020 China spent \$252.3 billion in current 2020 dollars on military expenditures.⁸ Four per cent of \$252.3 billion is \$10.1 billion, our estimate for Chinese nuclear spending in 2020. Based on this methodology, and adjusted for inflation, in 2019 China spent \$10.5 billion on nuclear weapons.



China spent \$19,149 every minute of 2020 on nuclear weapons.



France \$5.7 billion

France has under 300 nuclear weapons, according to French President Macron.⁹ The Federation of American Scientists estimates that it has 290 nuclear weapons and can launch them from aircraft and submarines.¹⁰

The 2020 French defence bill allocated €4.7 billion for nuclear deterrence in 2020.¹¹ The law does not break down the costs within this line item, but does state that it includes annual costs for nuclear warheads, modernisation and renewal of nuclear-capable cruise missiles, submarine-launched missiles and submarines. Notably not included in the deterrence budget are costs associated with the Rafale aircraft, which can be used to launch nuclear weapons. Given that these costs are not publicly available, our estimate assumes that the deterrence budget covers the bulk of French nuclear spending and does not include these additional costs.

€4.7 billion converted to USD is about \$5.7 billion.¹² France spent roughly 11 per cent of its total military budget on nuclear weapons in 2020.¹³ France spent \$10,786 on nuclear weapons every minute in 2020. Based on this methodology, and adjusted for inflation, in 2019 France spent \$4.9 billion on nuclear weapons.¹⁴

According to military programming law voted on in 2018, the total amount that France will spend on its nuclear deterrence from 2021-2025 is €27.85 billion.¹⁵



France spent \$10,786 on nuclear weapons every minute in 2020.



India spent \$4,564 every minute of 2020 on nuclear weapons.



India \$2.4 billion

India is estimated to have 160 nuclear weapons, can launch nuclear weapons from land-based missiles, aircraft, and submarines.¹⁶

While little is known about Indian nuclear weapon spending, an October 2016 Stimson Center report looked at parliamentary oversight documents and created a methodology to calculate annual spending on nuclear weapons.¹⁷ The report notes that a 2016 Indian parliamentary report stated that India spent 46% of the Defence Research and Development Organisation (DRDO)'s budget on its nuclear-capable delivery systems. Given that about half of the U.S. nuclear budget goes to nuclear delivery systems, the Stimson Center report assumed that India's total nuclear spending would be about twice what it spent on nuclear-capable delivery systems.

ICAN's research thus followed the Stimson Center's methodology by taking 46% of the 2020-2021 DRDO budget (19,327 crore Indian rupees) to get 8,890.4 crore Indian rupees and doubling it to reach 17,780.8 crore Indian rupees. A crore is 10 million, so 17,780.8 crore is 177.808 billion Indian rupees. Converted into USD, this total is \$2.48 billion, our estimate for Indian nuclear spending in 2020.¹⁹

This is roughly 3 per cent of the \$72.9 billion India spent on its military in 2020.

India spent \$4,567 every minute of 2020 on nuclear weapons. Based on this methodology, and adjusted for inflation, India spent \$2.3 billion in 2019 on nuclear weapons.



Source: Ministry of Defence, Government of India. ©Government of India.



Israel spent \$2,059 every minute of 2020 on nuclear weapons.



Israel \$1.1 billion

Israel is estimated to have 90 nuclear weapons and is believed to be able to launch them from land-based missiles, submarines, and aircraft.²⁰

There is no reliable public information about Israeli nuclear spending, given that it publicly denies possessing nuclear weapons. Therefore, ICAN used an average percentage of what nuclear-armed countries spend on nuclear weapons out of total military spending. The Stockholm International Peace Research Institute estimated that in 2020 Israel spent \$21.704 billion on its military.²¹ Five per cent of \$21.704 billion is \$1.1 billion, our estimate for Israeli nuclear spending in 2020.

This means Israel spent \$2,059 every minute on nuclear weapons in 2020. Based on this methodology, and adjusted for inflation, Israel spent \$1 billion in 2019 on nuclear weapons.



North Korea spent \$1,265 on nuclear weapons every minute in 2020.

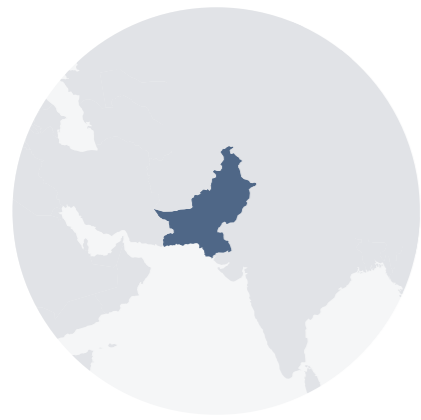


North Korea \$667 million

North Korea is estimated to have 40 nuclear weapons.²² It is developing nuclear-capable missiles which can be launched from the ground and from submarines.

There is very little public information about North Korean nuclear spending or its military spending overall. South Korea annually estimates North Korean gross national income and it placed North Korea's 2019 GNI at 35.6 trillion Korean won (\$31.6 billion).²³ North Korean military spending is very uncertain but in 2009 a South Korean think tank estimated North Korea spent \$8.7 billion on its military, which represented about one-third (35%) of GNI at that time.²⁴ Assuming that North Korea continues to spend 35% of its GNI on its military, North Korea would have spent about 12.5 trillion Korean won (\$11.1 billion) on its military in 2019. Global Zero estimated that in 2011 North Korea spent about 6% of its military budget on its nuclear programme.²⁵ Assuming that North Korea still spends 6% of its annual military spending on nuclear weapons, North Korea would have spent about 747 billion Korean won on its nuclear program in 2019. 747 billion Korean won is \$667 million, which is our estimate for 2020 North Korean nuclear spending.²⁶

This means North Korea spent \$1,265 every minute on nuclear weapons in 2020. Based on this methodology, and adjusted for inflation, North Korea also spent about \$0.6 billion on nuclear weapons in 2019.



Pakistan \$1 billion

Pakistan is estimated to have 165 nuclear weapons that it can launch from land-based missiles and aircraft and it is developing the ability to launch them from submarines.²⁷

Analysts in the past decade have estimated that Pakistan spends about ten per cent of its total military spending on its nuclear arsenal, confirmed in a 2016 parliamentary report revealing that Pakistan spent 9.8 per cent of its official military budget on nuclear weapons that year.^{28,29}

Ten per cent of Pakistan's 2020 military spending (\$10.374 billion) is \$1 billion, our estimate for Pakistani nuclear spending in 2020.³⁰

This means Pakistan spent \$1,968 spent every minute on nuclear weapons in 2020. Based on this methodology, and adjusted for inflation, Pakistan spent \$1 billion in 2019 on nuclear weapons.



Pakistan spent \$1,968 every minute of 2020 on nuclear weapons.



Russia \$8 billion

Russia has 6,257 nuclear weapons which it can launch from land-based missiles, submarines, and airplanes.³¹

A 2018 SIPRI report found that Russian nuclear weapons system spending cost about 13% of total defence expenditures in recent years (2010 and 2016).³² SIPRI estimated Russian military spending at \$61.7 billion in 2020, 13% of which is \$8 billion, our estimate for Russian nuclear spending in 2020.³³

This means Russia spent \$15,222 every minute on nuclear weapons in 2020. Based on this methodology, and adjusted for inflation, in 2019 Russia spent \$8.6 billion on nuclear weapons.



Russia spent \$15,222 every minute of 2020 on nuclear weapons.



The United Kingdom \$6.2 billion

The United Kingdom has 225 nuclear weapons which it can launch from submarines.³⁴ It cooperates closely with the United States to produce its Trident II D-5 nuclear-capable missiles. The United Kingdom does not release official detailed costs for its nuclear weapons programme, although analysts have produced estimates based on what data is available. A 2016 Campaign for Nuclear Disarmament report calculated that the overall cost to replace the UK nuclear submarine programme will be £205 billion (\$284).³⁵ A Nuclear Information Service report calculated the average cost per year of the overall program would be £3.4 billion (\$4.7 billion).³⁶

In a 2018 National Audit Office report, the costs of the defence nuclear enterprise from 2019-2020 were projected as £4.869 billion (\$6.7 billion), which includes £2.022 billion (\$2.8 billion) for submarines, £1.307 billion (\$1.8 billion) for the missiles and warheads, £785 million (\$1.09 billion) for propulsion systems and another £755 million (\$1.05 billion) in support programs and other costs.^{37,38} The £2.022 billion (\$2.8 billion) in reported submarine costs include the nuclear-capable Dreadnought-class submarines, the Astute-class, the Marine Underwater Future Capability (MUFC)-class submarines and "other submarines." Since ICAN does not include non-nuclear-capable delivery system costs in this report's estimates, the £2.022 billion (\$2.8 billion) reported for submarines was revised to only include the costs for the nuclear-capable Dreadnought-class.³⁹ The annual cost for the Dreadnought programme was reported as £1.613 billion (\$2.2 billion) in the 2020 annual Ministry of Defence Major Project Portfolio data.⁴⁰ With this revision, the total estimated cost of the UK nuclear program for 2019-2020 comes to £4.460 billion, or \$6.2 billion.⁴¹

\$6.2 billion is about 10.5 per cent of 2020 UK defence spending, estimated at \$59.2 billion.⁴² This means the United Kingdom spent \$11,769 every minute on nuclear weapons in 2020.

Based on this methodology, and accounting for inflation, the United Kingdom spent about \$6.4 billion in 2019 on nuclear weapons.⁴³



UK spent \$11,769 every minute of 2020 on nuclear weapons.



USA spent \$70,881 every minute of 2020 on nuclear weapons.



The United States \$37.4 billion

The United States has 5,550 nuclear weapons which it can launch from land-based missiles, submarines, and airplanes.⁴⁴

The Department of Energy's National Nuclear Security Administration (NNSA) and the Department of Defense divide responsibilities for the nation's nuclear weapons. The NNSA is responsible for the research, development, production, testing and dismantlement of the nuclear warheads, while the Department of Defense manages the development of warhead delivery systems, such as missiles, aircraft, and submarines. The Department of Defense also manages the deployment of nuclear weapons once they are fully produced.

This figure combines U.S. Department of Defense and NNSA funding for nuclear weapons in 2020.⁴⁵ NNSA spent \$12.5 billion in 2020 on weapons activities.⁴⁶ The Defense Department requested \$24.9 billion for nuclear weapons systems for 2020, including nuclear force sustainment and operation, replacement programs and nuclear command and control.⁴⁷

Adding \$12.5 billion to \$24.9 billion results in a total of \$37.4 billion spent on nuclear weapons in the United States in 2020. This is roughly 5 per cent of total U.S. military spending in 2020.⁴⁸

The United States spent \$70,881 every minute of 2020 on nuclear weapons. In 2019, the United States spent \$35.8 billion on nuclear weapons, adjusted for inflation.



Source: U.S. Air Force. By: John Turner. ©Public Domain.



One of the missiles in launch position, backlit. Source: SF-88 Nike Hercules Missile Site. By: Bhautik Joshi. Licensed under CC BY-ND 2.0.

Companies

INTRODUCTION

Nuclear-armed countries give out billions in contracts each year to the companies that build nuclear weapons, and those companies then spend millions of taxpayer dollars lobbying political decision makers on defence issues, including nuclear weapons, to ensure their continued financial gain.

In 2020, the twenty-one companies producing nuclear weapons received \$332 billion in general defence contracts. Eleven companies (BAE Systems, Boeing, Draper Laboratory, General Dynamics, Honeywell International, Huntington Ingalls Industries, L3 Harris Technologies, Lockheed Martin, Northrop Grumman, Raytheon Technologies Corporation, and Textron) received nuclear-weapons-related contracts worth \$27.7 billion. \$12.8 billion was to modify existing nuclear weapon contracts and \$14.8 billion was for new nuclear weapons contracts. The biggest single new contract award was \$13 billion to Northrop Grumman for the new Ground Based Strategic Deterrent; the smallest new contract award was also to Northrop Grumman: \$2.2 million for work on the Minuteman missiles. The other ten nuclear weapon companies (Aerojet Rocketdyne, Airbus, Bechtel, CNIM, Fluor, Jacobs Engineering, Leidos, Leonardo, Safran and Serco) received new general defence contracts and are still fulfilling multi-year nuclear-weapon contracts granted in previous years.

In 2020, we found that nuclear-weapon-producing companies spent \$117 million lobbying government officials. Due to differences in national transparency requirements and data availability, the full scope of company involvement, lobby expenditures and CEO take-home pay may be even more.

Lobby firms like American Continental Group have General Dynamics, Honeywell International, Lockheed Martin, Raytheon, and Textron as clients. Those companies together are all involved in producing key components for the U.S. Minuteman III nuclear weapon system. Etherton and Associates, Inc represents BAE Systems, Boeing, Lockheed Martin, Northrop Grumman, and Raytheon, which are all connected to the Trident system upgrades. Other lobby firms also get paid by multiple nuclear weapon producers to lobby on defence budgets, environmental regulations, and, in 2020, on COVID relief.

They receive a hefty return on investment. On average, for every \$1 spent lobbying, \$239 in nuclear-weapon-contract money came in. Boeing, which spent \$12.4 million lobbying on defence issues in the United States in 2020, received \$59 million for a new contract to work on nuclear missiles. Nuclear weapon companies are the key financial beneficiaries of national nuclear weapon spending and, through their extensive lobbying, have undue influence in sustaining political support for weapons of mass destruction.

Untangling the web of nuclear weapon complicity is important to clarify the many vested interests actively working against policies that would eliminate weapons of mass destruction. Nuclear-weapon-producing companies like Lockheed Martin and Northrop Grumman are already being challenged by shareholders because violating international law on nuclear weapons is bad for their long-term business prospects. Additional pressure from other investors, as well as public condemnation of their part on the nuclear weapons cycle is necessary to force change.

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Source: The U.S. National Archives. ©Public Domain.

Aerojet Rocketdyne

In 2021, Lockheed Martin plans on completing its acquisition of Aerojet Rocketdyne. Though Raytheon Technologies is opposed to the merger, Aerojet's shareholders approved the deal.⁵⁰

NUCLEAR WEAPONS WORK

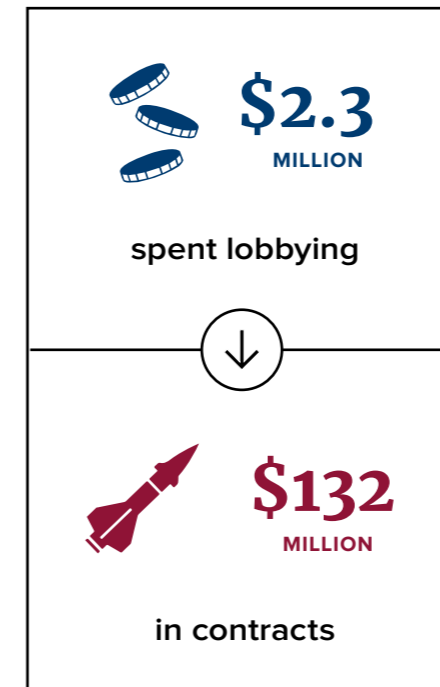
Aerojet Rocketdyne Holdings Inc is involved in the design, development and production of land and sea-based nuclear ballistic missile systems for the U.S. and UK arsenals. Aerojet Rocketdyne has powered every U.S. intercontinental ballistic missile (ICBM) ever fielded, including Trident II D5 missiles and the Minuteman III ICBM.⁵¹

CONTRACTS

In 2020 they were awarded \$132 million in contracts and modifications. None of the new contract awards were related to nuclear weapons, but they maintain existing nuclear-weapon-related contracts.

LOBBYING

Aerojet Rocketdyne spent \$2.3 million on defence lobbying (or hiring lobbyists) in the United States. \$1.45 million was spent by the company itself.⁵² The remaining \$880,000 was spread across the following firms: Defense Consulting Group, LLC (\$80,000); Ervin Hill Strategy (\$240,000); Fife Strategies, LLC (\$160,000); JLV Strategies LLC (\$120,000), and; The Nickles Group, LLC (\$280,000).



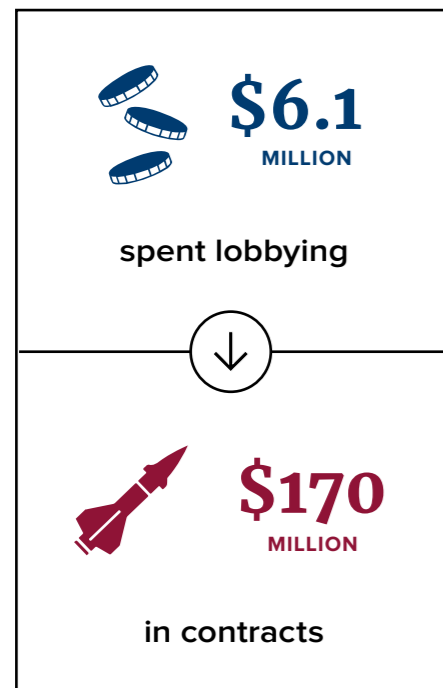
\$57

Earned in contracts for every dollar Aerojet Rocketdyne spent lobbying.



\$9,639,866

Earned by Eileen P. Drake, CEO & President.⁴⁹



Airbus

Airbus is a Dutch company most widely known for their airplanes, but it is also involved in the helicopter, defence, security, and space sectors.

NUCLEAR WEAPONS WORK

Airbus produces both submarine-and air-launched ballistic missiles for the French nuclear arsenal.⁵⁴ It is involved through ArianeGroup, a joint venture with the French company Safran in submarine-launched missiles. As part of MBDA, it is involved in producing air-launched missiles.⁵⁶

CONTRACTS

Airbus showed a significant increase in the number of defence contracts it received in 2020. These are contracts with several governments, including France, Germany, the United Kingdom, and the United States.⁵⁷ None of the new contracts were directly connected with nuclear weapon programmes. However, at least part of the € 33.5 billion backlog marked by the company's Defence and Space segment can be attributed to the €8 billion earmarked for future nuclear weapon systems in the 2020 French budget.⁵⁸ In the United States, Airbus received two new defence-related contracts, and one contract modification with a total value of over \$170 million. In the United Kingdom, Airbus received payments from the UK Ministry of Defence valued over £47 billion.

MBDA arranged €3.3 billion in total contracts in 2020, with contracts from the United Kingdom, France, Italy, and the German Navy, among others. MBDA is jointly owned by Airbus (37.5%), BAE Systems (37.5%), and Leonardo (25%).⁵⁹ MBDA has previously negotiated contracts for missiles used in the French nuclear arsenal and did not receive new nuclear-weapon-specific contract awards in 2020. ArianeGroup has only one new contract on record for 2020, with the European Space Agency for €33 million.⁶⁰

LOBBYING

Airbus spent \$3.4 million lobbying (or hiring lobbyists) on defence and budgetary issues in the United States in 2020.⁶¹

Airbus hired the following companies to lobby on their behalf in the United States: Airbus Americas Inc (\$2,140,000); BGR Government Affairs (\$190,000); Cassidy & Associates, Inc. (\$190,000); Federal Solutions, LLC (\$160,000); Fierce Government Relations (\$170,000); Hogan Lovells US LLP (\$230,000); Mr. Richard F. Hohlt (\$105,000); Squire Patton Boggs (\$130,000), and; The Glover Park Group LLC (\$80,000).

Airbus is also connected to lobbying expenditures of €2 million in France. The ArianeGroup hired lobbyists who spent €16,304 and MBDA spent €250,000 on their own lobbying and hired others who are estimated to have spent approximately €36,426 on lobbying on their behalf.

In France, the following firms were hired: CIE EUR Intelligence Strategique CEIS (\$933,750); France Industrie (\$3,007); Compagnie Européenne D'intelligence Stratégique (CEIS) (\$27,065); Le Cercle De L'Arbalette (\$15,563); Groupe Industrie Materiel Defense Terres (\$2,110), and; GICAN (GPT Indust Construc Activit Naval) (\$1,305). Ariane Group hired Compagnie Européenne D'intelligence Stratégique (CEIS) (\$13,532). MBDA hired Compagnie Européenne D'intelligence Stratégique (CEIS) (\$13,532); Le Cercle De L'Arbalette (\$15,563); Groupe Industrie Materiel Defense Terres (\$703), and; GICAN (GPT Indust Construc Activit Naval) (\$435). As French lobbyists are not required to disclose per-client figures, these figures are estimated based on the number of clients, and total reported amounts.



\$28

Earned in contracts for every dollar Airbus spent lobbying.

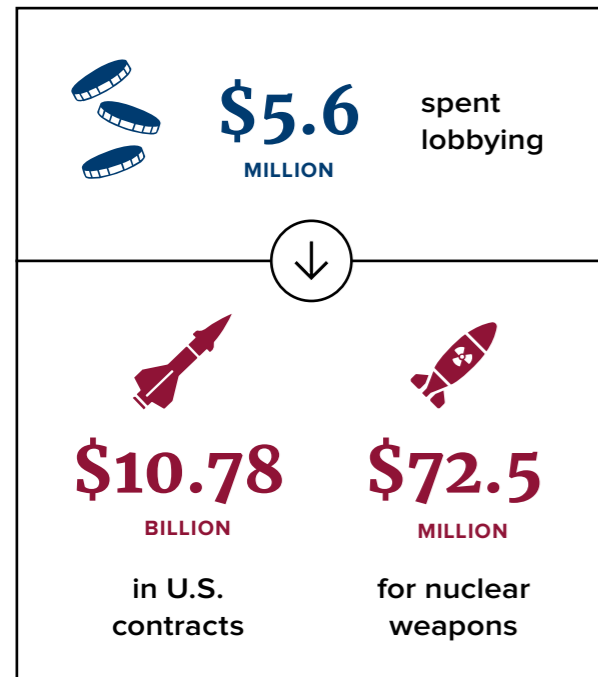


\$2,409,490

Earned by Guillaume Faury, Chief Executive Officer Airbus.⁵³



Source: U.S. Air Force. By: Michael Peterson. ©Public Domain.



BAE System

NUCLEAR WEAPONS WORK

BAE Systems is involved in the French, UK and U.S. nuclear weapon arsenals. It is involved in the French arsenal as part of the MBDA joint venture.⁶³ Through contracts with U.S. Strategic Command, the U.S. Air Force and the U.S. Navy, BAE Systems supports two legs of the U.S. nuclear triad : the sea-based ballistic missiles, ground-based ballistic missiles, and various air delivery systems.⁶⁴ BAE also holds contracts with the U.S. government for its work on both the U.S. and UK Trident II D5 strategic weapon systems, and is a prime contractor for the UK Dreadnought nuclear-capable submarine systems.

CONTRACTS

In 2020, 95% of the £20.8 billion (\$29 billion) in BAE Systems sales were defence related.⁶⁵ 180 contracts were with the United States, 35 of which were new. None of the new contracts were related to nuclear weapons, however BAE was granted approximately \$72 million in nuclear-weapon related contract modifications. As part of existing contracts, the UK Ministry of Defence paid BAE Systems Marine LTD £1 million (\$1.5 million) for defence nuclear organisation and defence equipment and support.

MBDA, of which BAE owns 37.5%, arranged €3.3 billion (\$2.74 billion) in total contracts in 2020, with contracts from the United Kingdom, France, Italy, and the German Navy, among others.⁶⁶ MBDA has previously negotiated contracts for missiles used in the French nuclear arsenal, and did not receive new nuclear-weapon-specific contract awards in 2020.

LOBBYING

BAE Systems spent \$5.4 million on defence and budget lobbying in the United States, of which \$4.5 million was spent by in-house lobbyists.⁶⁷ In the United States, BAE systems hired: Bedrock Strategies, LLC (\$150,000); Cassidy & Associates, Inc. (\$320,000); Covington & Burling LLP (\$200,000); Forbes-Tate (\$60,000); Holly Strategies Incorporated (\$160,000), and; PRASAM (\$20,000).

In the United Kingdom, there are no requirements to file lobby expenditures, but BAE Systems was involved in 48 meetings with different UK ministries, of which 17 were with the Ministry of Defence and one was with the prime minister.⁶⁸ They also hired Policy Connect Ltd to lobby on their behalf, though the organisation describes itself as a “cross-party think tank.”⁶⁹

BAE Systems itself did not disclose any lobbying in France, however the joint venture MBDA spent \$207,500 on their own lobbying. They hired Compagnie Européenne D'intelligence Stratégique (CEIS); Le Cercle De L'Arbalette; Groupe Industrie Materiel Defense Terres, and GICAN (GPT Indust Construc Activit Naval), who are estimated to have spent approximately \$30,234 lobbying on their behalf. French lobbyists are not required to disclose per-client figures, so these figures are estimated based on the number of clients and total reported amounts.



Source: EGOV – BAe Systems Hawk T2's. By: Steve Lynes. Licensed under CC BY-ND 2.0.



\$1,934

Earned in contracts for every dollar BAE spent lobbying.



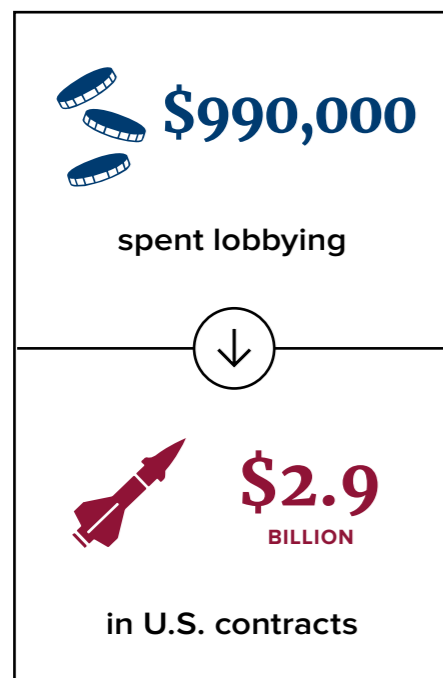
\$13

Earned in nuclear weapon contracts for every dollar BAE spent lobbying.



\$8,406,720

Earned by Dr. Charles Woodburn, Chief Executive Officer.⁶²



Bechtel

NUCLEAR WEAPONS

Bechtel is involved in managing and supporting activities at several facilities in the U.S. nuclear weapon complex through a number of joint ventures. It is also part of the team that will develop the new U.S. ICBM, the Ground Based Strategic Deterrent, as a subcontractor for Northrop Grumman.

CONTRACTS

Bechtel currently has three major outstanding contracts with the U.S. government for \$18.1 billion, running through 2023.⁷⁰ It was not awarded any new contracts in 2020, but did receive contract modifications valued at over \$2 billion, none of which were connected to their work on nuclear weapon systems.

The Lawrence Livermore National Security, LLC is responsible for operating the Lawrence Livermore National Laboratory. Bechtel is one of the partners in this joint venture. It was not awarded new contracts in 2020 but has an outstanding contract until 2025 with a potential total value of \$58.3 billion.⁷¹

Bechtel leads the Consolidated Nuclear Security, LLC joint venture, which is responsible for operations at the Pantex Plant (the only place in the United States where nuclear weapons are assembled or disassembled) and the Y-12 National Security Complex (where the United State enriches uranium for the nuclear weapon stockpile).^{72,73} Consolidated Nuclear Security has a current contract until 2023 with a potential value of more than \$30.5 billion.

LOBBYING

Bechtel spent \$990,000 on defence and budget lobbying in the United States in 2020. Of this, \$730,000 was direct spending and \$260,000 was through the hired lobbyists BGR Government Affairs and Owen Evans Ingols.⁷⁴



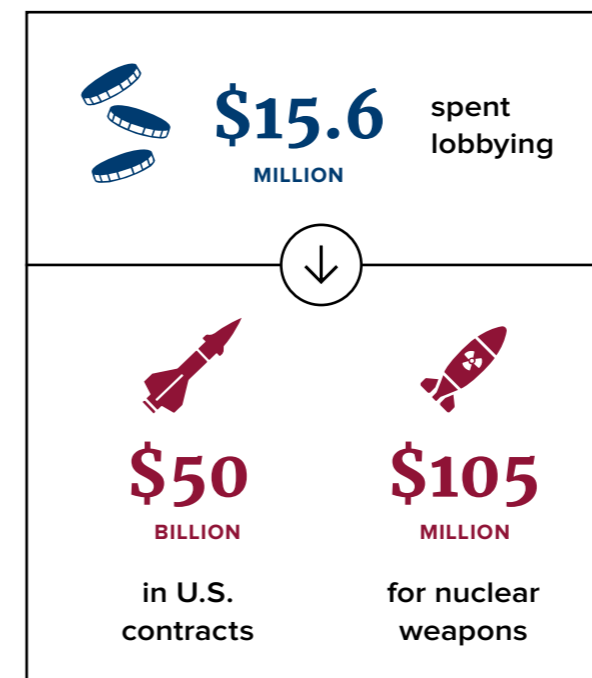
\$2,942

Earned in contracts for every dollar Bechtel spent lobbying



???

Brendan Bechtel, Chairman & CEO earned an undisclosed amount



Boeing

NUCLEAR WEAPONS WORK

Boeing is involved in the production of Minuteman III ICBMs for the United States, the Trident II (D5) missiles for both the United States and United Kingdom and is developing the new guided tail-kit for the B61-12 gravity bombs for the United States. Boeing also has contracts related to the Long-Range Standoff missiles for the United States.

CONTRACTS

The U.S. government awarded or modified 174 contracts with Boeing in 2020, for an estimated value of more than \$50 billion. Of these, four contracts were related to nuclear weapons work. One new contract was awarded on behalf of the United States and the United Kingdom for the Trident II navigation subsystem, valued at \$59 million.⁷⁶ The other outstanding contracts with Boeing were also modified: two for work related to ICBMs (modifications valued at \$21.6 million) and a \$24.6 million modification for work on the B61-12 (the bomb the US deploys in five European countries).^{77,78}

In the United Kingdom, Boeing received over £460 million (\$639 million) in payments from the Ministry of Defence in 2020, none of which is clearly associated with nuclear weapon production.

LOBBYING

Boeing spent \$12.6 million lobbying on defence and budget issues in the United States in 2020. It also spent another \$2.97 million hiring lobbyists in the United States.⁷⁹ Much of its defence lobbying was bundled with lobbying around the CARES act, (the Coronavirus Aid, Relief, and Economic Security Act) in the United States. Boeing was also involved in lobbying the French government, spending just under \$8,300. While UK lobbying amounts are not required reporting, Boeing held at least ten meetings with various UK ministries, of which at least two were with the Ministry of Defence.



\$3,207

Earned in contracts for every dollar Boeing spent lobbying



\$4

Earned in nuclear weapon contracts for every dollar Boeing spent lobbying



\$21,074,052

Earned by David L. Calhoun, President and Chief Executive Officer.⁷⁵

Lobby firms hired in the United States included: Ballard Partners (\$300,000); CGCN Group, LLC (formerly known as Clark Geduldig Cranford & Nielsen, LLC) (\$240,000); Cornerstone Government Affairs, Inc. (\$320,000); Empire Consulting Group (\$30,000); Etherton and Associates, Inc. (\$120,000); Gephardt Group Government Affairs (\$280,000); Lamont

Consulting Services, LLC (\$120,000); Lugar Hellmann Group (\$200,000); Mehlman Castagnetti Rosen & Thomas, Inc. (\$200,000); Monument Advocacy (\$200,000); Roberti Global (fka Roberti White, LLC) (\$270,000); S-3 Group (\$270,000); Shank Public Policy, LLC (\$120,000); Stapleton & Associates, LLC (\$120,000); and The Simmons & Russell Group, LLC (\$180,000).



Boeing LGM-30G Minuteman III. Source: U.S. Air Force. Released to Public.

Constructions Industrielles de la Méditerranée (CNIM)

CNIM is undergoing major financial challenges. It is negotiating the sale of subdivisions, undergoing corporate restructuring,⁸⁰ and has applied to Euronext to suspend the listing of its shares on Euronext Paris.⁸¹

NUCLEAR WEAPONS WORK

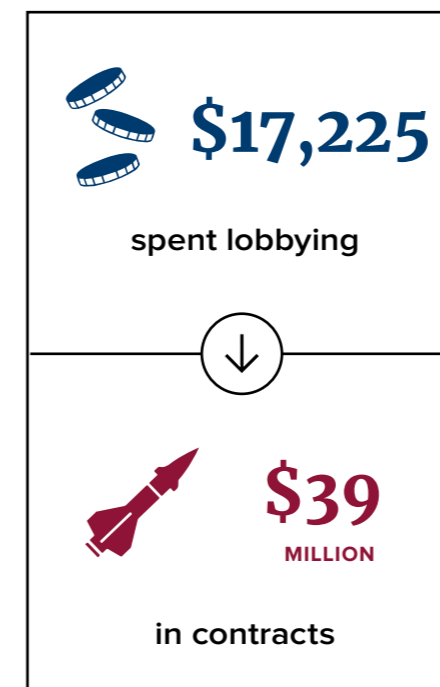
CNIM is the sole supplier of missile launch systems for France's nuclear submarines. CNIM has also been involved in large-scale experiments of the Laser Mégajoule, designed as a substitute for full-scale nuclear testing as well.⁸² While Naval Group is the main contractor for French nuclear-armed submarine work, the M51 missile integration has been subcontracted to CNIM.⁸³

CONTRACTS

CNIM reported orders of €47.1 million (\$39.09 million) in the first six months of 2020, with a high level of orders for the "Deterrence", "Nuclear large scale Scientific Instruments" and "Industrial Solutions" business.⁸⁴

LOBBYING

In 2020, CNIM is associated with \$17,225 in French lobby spending. Two main lobbying groups were hired, Compagnie Européenne D'intelligence Stratégique (CEIS) and Groupe Industrie Materiel Defense Terres. As French lobbyists are not required to disclose per-client figures, these figures are estimated based on the number of clients, and total reported amounts.



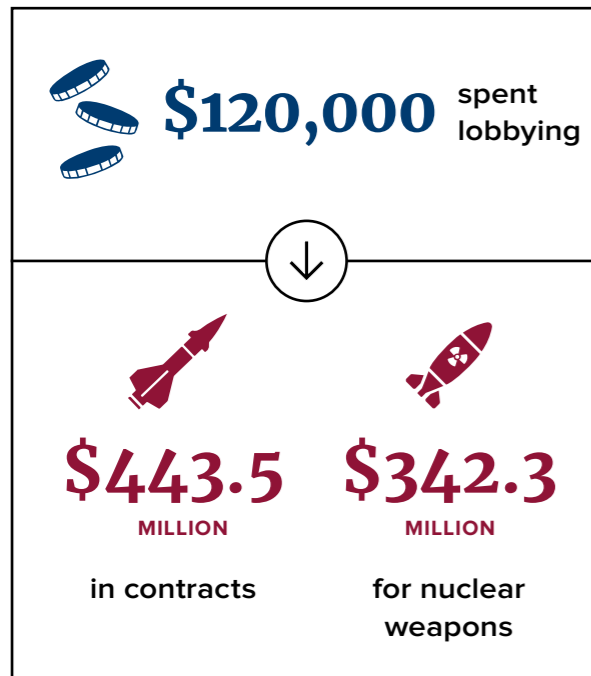
\$1,884

Earned in contracts for every dollar CNIM spent lobbying



???

Louis-Roch Burgard, Chief Executive Officer earned an undisclosed amount



Draper (Charles Stark Draper Laboratory)

NUCLEAR WEAPONS WORK

Charles Stark Draper Laboratory (“Draper”) has been involved in the ICBM development of the United States since the 1950s. It is currently working for the United States to design a new boost guidance system for the submarine-launched Trident II (D5) missile.⁸⁵

CONTRACTS

Draper contracts with the U.S. government under “Charles Stark Draper Laboratory”. In 2020, Draper negotiated 31 new or modified contracts with the U.S. government, valued at \$443.5 million. 77% of these contracts were related to nuclear weapons, all of them modifications of previous agreements (valued at \$342 million).

LOBBYING

Draper did not report on any lobbying of its own. Instead, it spent \$120,000 hiring the firm Van Scoyoc for defence lobbying.⁸⁶

Van Scoyoc also lobbies for General Dynamics, Texas A&M University System, University of Notre Dame, Lockheed Martin and Northrop Grumman, all entities connected to U.S. nuclear weapon programmes.⁸⁷



\$3,696

Earned in contracts for every dollar Draper spent lobbying



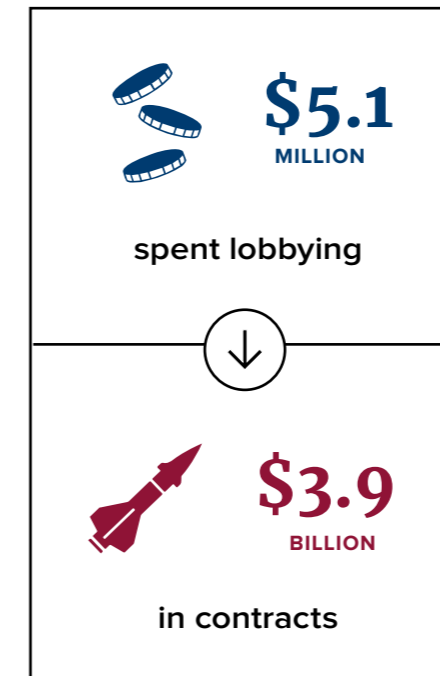
\$2,853

Earned in nuclear weapon contracts for every dollar Draper spent lobbying



???

David R. Shedd, Chairman of the Board earned an undisclosed amount



Fluor

NUCLEAR WEAPONS WORK

Fluor is the lead partner in Savannah River Nuclear Solutions (SRNS), a joint venture with Honeywell and Newport News Nuclear (part of Huntington Ingalls Industries). SRNS manages and operates the Savannah River Site. Savannah River is the only site in the U.S. nuclear weapon complex with capability to extract, recycle, purify, and reload tritium, which must be periodically replaced in nuclear weapons. It is also one of the sites in which the United States plans to produce new plutonium triggers for new nuclear weapons.⁸⁹

CONTRACTS

Fluor arranged \$3.9 billion in contracts and contract modifications in 2020, two of which were new, and none of which were related to nuclear weapons, although Fluor is still under contract with the United States for the Savannah River facility.

LOBBYING

In 2020, Fluor spent \$3.5 million in direct lobbying, and hired ten lobbying firms for a total of \$1.6 million: Akin Gump Strauss Hauer & Feld (\$200,000); Cassidy & Associates, Inc. (\$160,000); Compass Consulting Group, LLC (\$80,000); FGH Holdings, LLC (previously reported as The Glover Park Group LLC) (\$310,000); Mehlman Castagnetti Rosen & Thomas, Inc. (\$80,000); Neale Creek, LLC (\$80,000); Nelson, Mullins, Riley & Scarborough (\$200,000); Ogilvy Government Relations (\$200,000); Steptoe & Johnson LLP (\$220,000); and Thorn Run Partners (\$80,000).⁹⁰



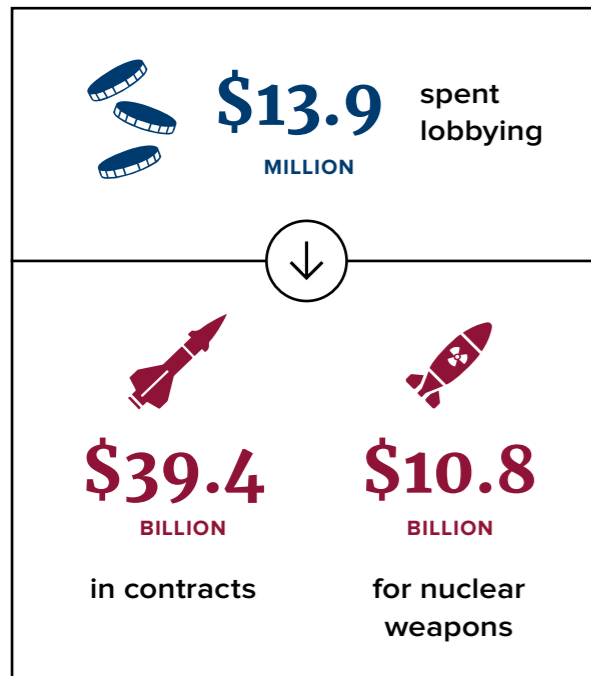
\$ 762

Earned in contracts for every dollar Fluor spent lobbying.



\$11,236,632

Earned by Carlos Hernandez, ex Chief Executive Officer.⁸⁸



General Dynamics

NUCLEAR WEAPONS WORK

General Dynamics is part of the Northrop Grumman team slated to produce the new U.S. ground based ICBM system, the Ground Based Strategic Deterrent.⁹² It is also involved in production and maintenance of the Trident II (D5) system for both the United States and United Kingdom.⁹³

CONTRACTS

In 2020, General Dynamics arranged 46 new contracts valued at \$16.5 billion. It was also involved in contract modifications valued at \$22.9 billion. Of these, two new contracts and five contract modifications were related to the Trident system, which was about 27% of the overall value of all contract awards and modifications (\$10.8 billion).

General Dynamics received over £7 million (\$9.73 million) in payments from the UK Ministry of Defence, though none directly attributable to nuclear weapons programmes.

LOBBYING

General Dynamics spent over \$13 million dollars in lobbying in 2020. Of this, it reported spending \$10.7 million on lobbying itself, with the other \$3.2 million spent hiring external lobby firms.⁹⁴ It hired: Alignment Government Strategies (\$120,000); American Continental Group (\$220,000); American Defense International, Inc. (\$200,000); Baker Donelson Bearman Caldwell & Berkowitz /The Daschle Group (\$60,000); C. Baker Consulting, Incorporated (\$120,000); Cornerstone Government Affairs, Inc. (\$400,000); CTF Global LLC (formerly filing as The Grossman Group, LLC) (\$60,000); Ervin Hill Strategy (\$270,000); FifeStrategies, LLC (\$280,000); Hannegan Landau Poersch & Rosenbaum Advocacy, LLC (\$200,000); Harbinger Strategies, LLC (\$200,000); Innovative Federal Strategies, LLC (\$160,000); Meltsner Strategies, LLC (\$120,000); Nelson, Mullins, Riley & Scarborough (\$150,000); PRASAM (\$200,000); Subject Matter (fka Elmendorf Ryan) (\$200,000); Turner Pollard Strategies, LLC (\$27,500), and; Van Scoyoc Associates (\$180,000). General Dynamics also held four meetings with UK ministries, including one with the Ministry of Defence in 2020.



\$2,839

Earned in contracts for every dollar General Dynamics spent lobbying



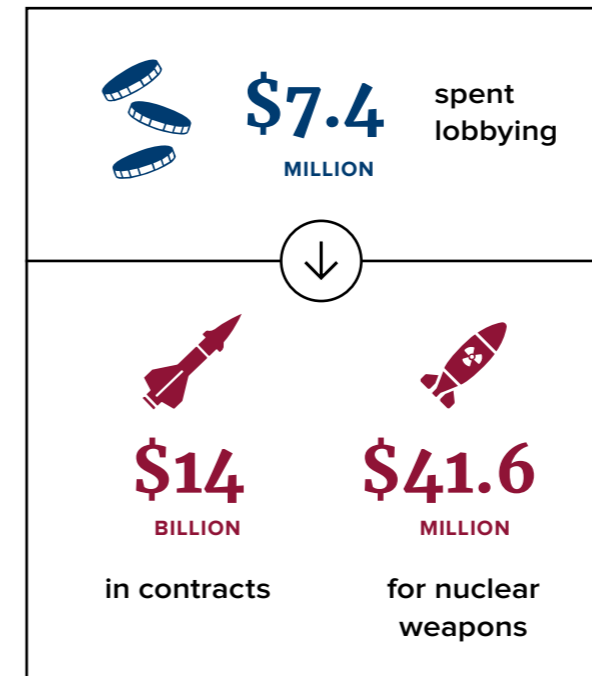
\$779

Earned in nuclear weapon contracts for every dollar General Dynamics spent lobbying



\$19,328,499

Earned by Phebe N. Novakovic, Chairman and Chief Executive Officer.⁹¹



Honeywell International

NUCLEAR WEAPONS WORK

Honeywell International is connected to several U.S. nuclear weapon systems and facilities. It produces key guidance instrumentation for the Minuteman III ICBMs and is subcontracted by Northrop Grumman to work on guidance and missile electronics in the new Ground Based Strategic Deterrent.⁹⁶

Honeywell International's subsidiary company, Honeywell Federal Manufacturing & Technologies manages and operates the National Security Campus (NSC) (formerly Kansas City Plant), the National Nuclear Security Administration (NNSA) facility responsible for producing an estimated 85% of the non-nuclear components for U.S. nuclear weapons.⁹⁷

Honeywell is also part of joint ventures responsible for management and operations at the Nevada National Security Site, Sandia National Laboratory, and Savannah River.^{98,99} These facilities are all deeply connected to the production of new nuclear warheads or their components.

CONTRACTS

Honeywell International negotiated \$14 billion in new and modified contracts in 2020. Of these, one was a new nuclear-weapon-related contract for work on the Minuteman III missile system, valued at \$41.6 million. The nuclear-weapon-related contracts negotiated in 2020 by Honeywell reflect 0.3% of their overall U.S. government contracting. Honeywell also received more than £1.2 million (\$1.67 million) in payments from the UK Ministry of Defence in 2020, primarily for non-project equipment support.

LOBBYING

Honeywell spent \$5.9 million on its own lobbying and hired six lobbying firms for a total of \$1.2 million: Akin Gump Strauss Hauer & Feld (\$310,000); American Continental Group (\$230,000); Cornerstone Government Affairs, Inc. (\$40,000); Elevate Government Affairs, LLC (\$150,000); The Duberstein Group Inc. (\$349,000), and; The Hobbs Group, LLC (\$160,000).¹⁰⁰ Honeywell was also connected with €150,000 (\$124,500) of lobbying in France, through the firm Taddeo. One meeting with a UK ministry was reported, to discuss personal protective equipment (PPE).



\$1,906

Earned in contracts for every dollar Honeywell spent lobbying.



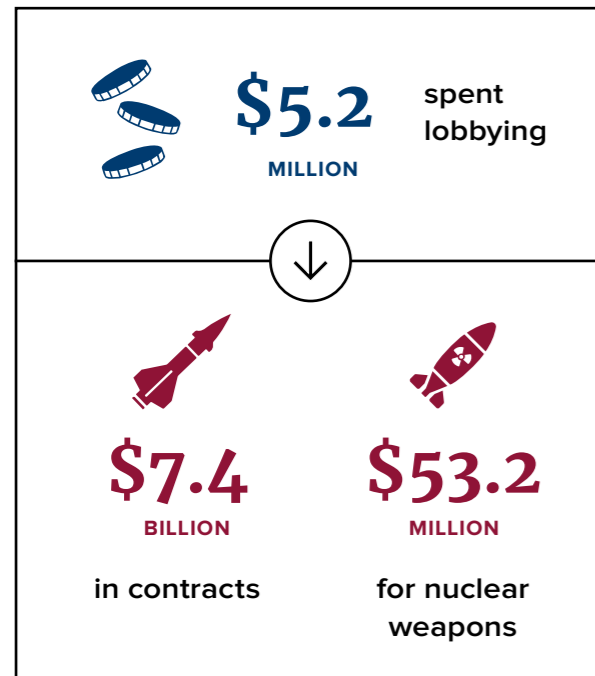
\$6

Earned in nuclear weapon contracts for every dollar Honeywell spent lobbying.



\$18,086,238

Earned by Darius Adamczyk, Chairman and CEO.⁹⁵



Huntington Ingalls Industries

NUCLEAR WEAPONS WORK

Huntington Ingalls Industries is part of the management and operations of U.S. facilities involved in the production, development and stockpiling of U.S. nuclear weapons, notably Los Alamos National Laboratory, Nevada Nuclear Security Site, and the Savannah River Site. It is also a subcontractor to General Dynamics in the production of new nuclear-armed submarines for the United States and United Kingdom.

CONTRACTS

In 2020, Huntington Ingalls Industries generated \$9.4 billion in sales and service revenue overall.¹⁰² It was connected with at least 40 contracts or contract modifications with the U.S. government, valued at \$7.4 billion. Of that, two key contracts are related to nuclear weapons, one for submarines (\$53 million) and one for facilities decommissioning (\$3 billion).

HII is a subcontractor to General Dynamics for the next generation of nuclear-armed submarines in the United States, the Columbia Class. HII was awarded a \$2.2 billion contract modification for key modules for the submarines, which will also be partially funded by the United Kingdom.^{103,104}

HII received a \$3 billion contract as the lead partner in the joint venture “Nationwide Remediation Partners” for “deactivation, decommissioning and removal services at excess DOE facilities.”¹⁰⁵ This is a separate contract to the existing joint venture agreements for other site operations and management.

LOBBYING

HII spent \$4.5 million on its own lobbying mostly towards U.S. Department of Energy appropriations (the Department of Energy is responsible for U.S. nuclear weapons stockpile oversight).¹⁰⁶ HII also hired the following lobby firms: Dahlberg Strategic (\$84,000); Federal City Strategies (\$120,000); Mr. Patrick Tucker (\$80,000); The Harris Firm (\$200,000), and; the GROUP DC, LLC (\$200,000).



\$1,423

Earned in contracts for every dollar Huntington Ingalls Industries spent lobbying.



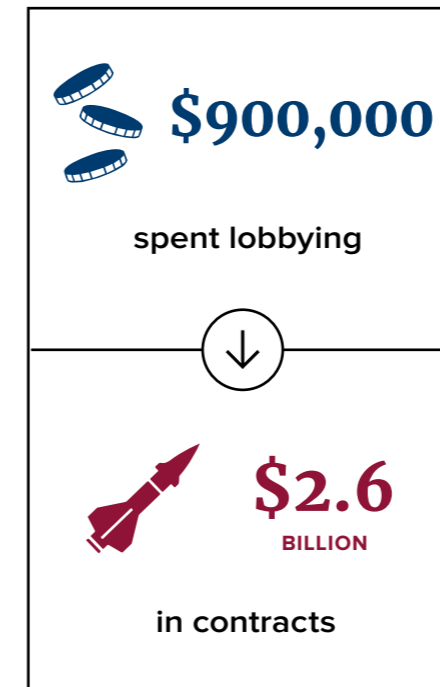
\$10

Earned in nuclear weapon contracts for every dollar Huntington Ingalls Industries spent lobbying.



\$4,399,962

Earned by Mike Petters, President and Chief Executive Officer.¹⁰¹



Jacobs Engineering

NUCLEAR WEAPONS WORK

Jacobs Engineering is involved in two main facilities producing new nuclear weapons: the United Kingdom’s Atomic Weapons Establishment and the U.S. Nevada National Security Site.

CONTRACTS

The United Kingdom has decided to nationalise its Atomic Weapons Establishment at the end of June 2021, effecting an early termination of the 25-year, £25.4 billion (\$35.31 billion) contract of which Jacobs held a 24.5% stake.¹⁰⁸

In the United States, Jacobs generated other contracts and contract modifications valued at \$2.6 billion, none of which were related to nuclear weapons. In the United Kingdom, Jacobs received more than £33 million in defence infrastructure payments, and £339,104 (\$471,355) in other payments from the Ministry of Defence.

LOBBYING

Jacobs spent \$690,000 on its own lobbying in 2020, and hired PRASAM (\$30,000) and Brownstein Hyatt Farber Schreck, LLP (\$180,000).¹⁰⁹ Three meetings with UK ministries were reported, none of which was with the Ministry of Defence.¹¹⁰



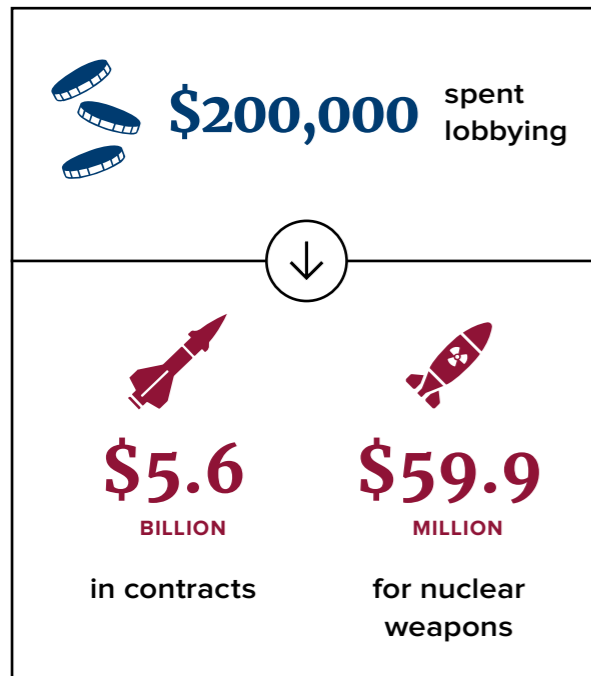
\$2,913

Earned in contracts for every dollar Jacobs Engineering spent lobbying



\$11,500,085

Earned by Steve Demetriou, Chair of the Board & Chief Executive Officer.¹⁰⁷



L3 Harris Technologies

NUCLEAR WEAPONS

L3 Harris is part of the team put together by Northrop Grumman to build the new Ground Based Strategic Deterrent. L3 Harris will be designing training systems.¹¹² The L3 Harris subsidiary, Interstate Electronics Corporation, also has a contract for flight test instrumentation support and services related to the Trident II (D5) nuclear missile.¹¹³

CONTRACTS

In 2020, L3 Harris or its subsidiaries, arranged 832 different contracts or modifications with the U.S. government (worth \$5.6 billion). Of these, 47 are new contracts with a potential value of \$4.5 billion. L3 Harris and the U.S. government modified three contracts related to nuclear weapons, valued at \$59.9 million. L3 Harris Technologies received one payment of £26,589 (\$36,959) from the UK Ministry of Defence for subcontracted work.

LOBBYING

In the United States, L3 Harris Technologies only hired The Doerrer Group LLC for \$200,000 and didn't report any funds were spent lobbying directly.¹¹⁴ In the United Kingdom, four meetings with various ministries were reported, one of which was with the Ministry of Defence.¹¹⁵



\$27,693

Earned in contracts for every dollar L3 Harris spent lobbying.



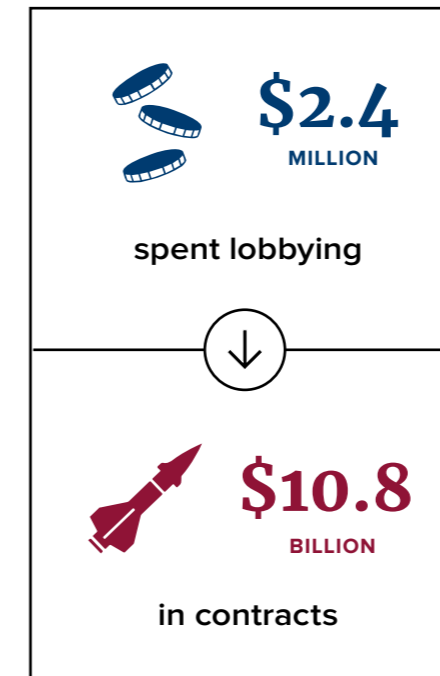
\$300

Earned in nuclear weapon contracts for every dollar L3 Harris spent lobbying.



\$2,850,000

Earned by William M. "Bill" Brown, Chair and Chief Executive Officer.¹¹¹



Leidos

NUCLEAR WEAPONS WORK

The Pantex Plant and the Y-12 National Security Complex are operated under a single contract.

Activities at Pantex include nuclear weapon modernisation, development, testing and manufacture of high explosive components for nuclear weapons. It is also the only facility where U.S. nuclear weapons are assembled. Y-12 remains the only source of enriched uranium nuclear weapons components. Both facilities are operated by Consolidated Nuclear Security, LLC, in which Leidos takes part.¹¹⁷

CONTRACTS

During 2020, Leidos arranged 21 new contracts valued at \$10.4 billion and 11 contract modifications. None of these were connected to the outstanding contracts for the nuclear weapon facilities, which were put in place in 2014 and are set to expire in 2024 and valued at \$27 billion.¹¹⁸

Payments from the UK Ministry of Defence to Leidos were for defence equipment, food and clothing and totalled over £385.5 million (\$535.85 million).

LOBBYING:

In the United States, Leidos hired American Defense International, Inc. (\$70,000); Innovative Federal Strategies, LLC (\$120,000); Alpine Group Partners, LLC. (\$160,000); Capitol Resources, LLC (\$150,000); Potomac Capitol Associates, Inc. (\$40,000), and; Troutman Sanders Public Affairs Group, LLC (\$120,000) for a total of \$660,000 and spent \$1.77 million on its own lobbying efforts.



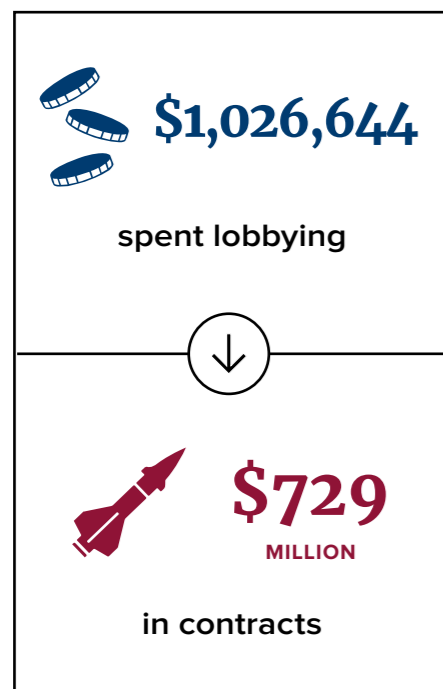
\$4,456

Earned in contracts for every dollar Leidos spent lobbying



\$2,197,296

Earned by Roger Krone, Chairman and Chief Executive Officer.¹¹⁶



Leonardo

NUCLEAR WEAPONS

Leonardo is one of the partners in the MBDA joint venture, contracted by the French government to build air-to-ground nuclear missiles for the French arsenal.¹¹⁹ MBDA also holds a contract to develop the new hypersonic missiles for France, the ASN4G.¹²⁰

CONTRACTS

In the United States, Leonardo modified 78 contracts for \$43.9 million, none of which were related to nuclear weapon work. In the United Kingdom, Leonardo received £211.9 million in payments from the Ministry of Defence, none of which was connected to the Trident programme.

MBDA arranged \$2.7 billion in total contracts in 2020, with contracts from the United Kingdom, France, Italy, and the German Navy, among others. MBDA is jointly owned by Airbus (37.5%), BAE Systems (37.5%), and Leonardo (25%).¹²¹ MBDA has previously negotiated contracts for missiles used in the French nuclear arsenal and did not receive new nuclear weapon specific contract awards in 2020.

LOBBYING

In the United States, Leonardo reported spending \$860,000 on their own lobbying activities and hired five lobbying firms for a total of \$530,000: Ballard Partners (\$200,000); FifeStrategies, LLC (\$80,000); PRASAM (\$10,000); Stapleton & Associates, LLC (\$120,000), and; O'Brien, Gentry & Scott, LLC (\$120,000).¹²²

In the United Kingdom, Leonardo was involved with 18 meetings with ministries, five of which were with the Ministry of Defence.¹²³

In France, Leonardo did not report any lobbying of their own, but MBDA was connected to an estimated €286,426 in lobbying expenses.¹²⁴ MBDA hired Compagnie Européenne D'intelligence Stratégique (CEIS) (\$13,532); Le Cercle De L'Arbalete (\$15,563); Groupe Industrie Materiel Defense Terres (\$703), and; GICAN (GPT Indust Construc Activit Naval) (\$435). As French lobbyists are not required to disclose per-client figures, these figures are estimated based on the number of clients, and total reported amounts.



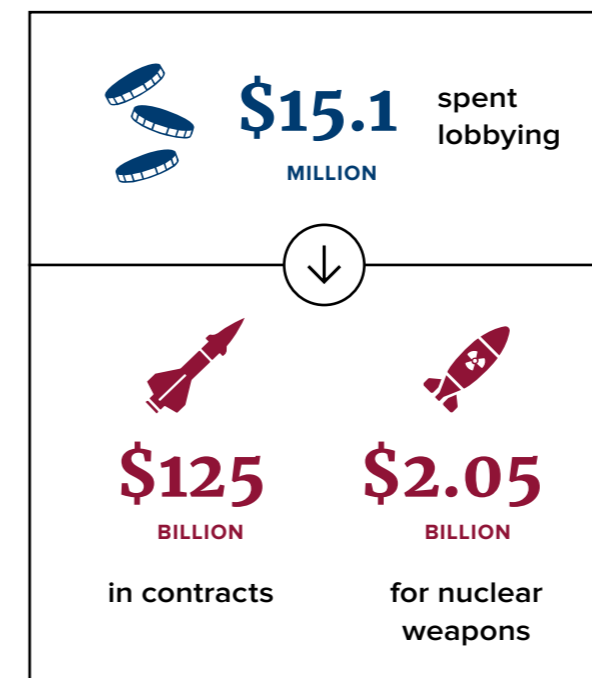
\$43

Earned in contracts for every dollar Leonardo spent lobbying



???

Alessandro Profumo, Chief Executive Officer, 2020 compensation figures were unavailable



Lockheed Martin

NUCLEAR WEAPONS WORK

Lockheed Martin holds numerous contracts related to the U.S. Minuteman III ICBM system, including sustainment contracts to keep the nuclear-armed missiles fully operational until at least June 2030.¹²⁶

Lockheed Martin also works on the Trident system for the United States and United Kingdom, and in many instances the United States acts as the arranger for the contract, but then bills the United Kingdom for the work Lockheed does.¹²⁷ There are also contracts around the Trident system that have been agreed even though the governments involved "cannot establish in advance or accurately forecast the following: The exact nature and extent of the work covered by this contact; The precise method of performing the work; and The cost of performing the work."¹²⁸

The United Kingdom has decided to nationalise its Atomic Weapons Establishment at the end of June 2021, effecting an early termination of the 25-year, £25.4 billion (\$35.31 billion) contract of which Lockheed Martin held a 51% stake.¹²⁹

CONTRACTS

In 2020, Lockheed Martin arranged 281 contracts or modifications with the U.S. government, valued at \$124.6 billion. Of these, 13 were related to nuclear weapons. Four nuclear weapon contracts and modifications, valued at \$2 billion were agreed. Three of the new contracts are related to the Trident system, valued at \$628 million, of which the United Kingdom will be paying \$17.6 million (3%).

In the United Kingdom, Lockheed received £81.7 million (\$113.6 million) in payments from the Ministry of Defence, none directly tied to the nuclear weapons programme.

LOBBYING

In the United States, Lockheed Martin is connected to \$15.1 million in reported lobbying expenses. Of this, \$12.8 million was spent on their own activities, the rest went to hiring external lobbying firms. Lockheed



\$8,246

Earned in contracts for every dollar Lockheed Martin spent lobbying.



\$136

Earned in nuclear weapon contracts for every dollar Lockheed Martin spent lobbying.



\$23,360,369

Earned by James D. Taiclet, Chairman, President & CEO.¹²⁵

hired American Continental Group (\$80,000); Baker Donelson Bearman Caldwell & Berkowitz /The Daschle Group (\$120,000); Etherton and Associates, Inc. (\$120,000); Hannegan Landau Poersch & Rosenbaum Advocacy, LLC (\$200,000); Holly Strategies Incorporated (\$80,000); Van Scoyoc Associates (\$150,000); theGROUP DC, LLC (\$200,000); Capital Concepts (\$12,000); Capitol Counsel LLC (\$120,000); Carmen Group Incorporated (\$170,000); Flagship Government Relations, Inc. (\$160,000); Meeks, Butera & Israel PLLC (\$50,000); Melody Clark Consulting,

LLC. (\$30,000); Mr. Mark Rey (\$54,000); Mr. Marshall Brachman (\$100,810); Plurus Strategies, LLC (\$80,000); Public Strategies Washington, Inc. (\$160,000); The McKeon Group, Inc. (\$140,000), and; Venable LLP (\$220,000) to lobby on its behalf.¹³⁰

Lockheed Martin held a reported 11 meetings with UK ministries, of which three were with the Ministry of Defence.¹³¹



Arrow anti-ballistic missile launch. Source: United States Missile Defense Agency - US NAVY. ©Public Domain.

Northrop Grumman

NUCLEAR WEAPONS WORK

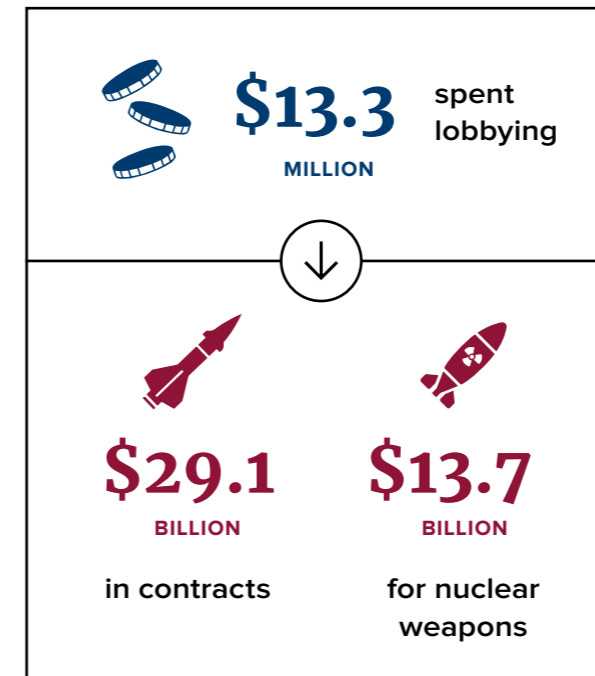
Northrop Grumman is involved in all aspects of the U.S. nuclear weapons arsenal- from facilities producing warheads to producing key components for specially designed delivery systems. It has outstanding contracts for key components for the B-61 gravity bombs,¹³³ Minuteman III ICBMs, the Pantex Plant and the Y-12 National Security Complex (as part of Consolidated Nuclear Security LLC),¹³⁴ Sandia National Lab,¹³⁵ making propulsion systems¹³⁶ and the common missile compartment for Trident missiles (also for the UK),¹³⁷ and the largest award in recent history, \$13 billion for the Ground Based Strategic Deterrent.¹³⁸

CONTRACTS

Northrop Grumman negotiated 487 contracts or contract modifications with the U.S. government in 2020, worth an estimated \$29 billion. Of these, ten were related to nuclear weapons. Four new nuclear weapon contracts were valued at \$13.46 billion and six contract modifications were valued at \$192 million. 46% of the contracts Northrop Grumman negotiated in 2020 were new contracts related to nuclear weapons, primarily for the Ground Based Strategic Deterrent which is valued at over \$13 billion (though estimates suggest the programme is likely to exceed \$85 billion over the next 30 years).^{139,140} In the United Kingdom, Northrop Grumman received payments of £8.2 million (\$11.4 million) from the Ministry of Defence, none of which were directly tied to the nuclear weapons programme.

LOBBYING

In the United States, Northrop Grumman spent \$13.2 million lobbying, of which \$1.5 million was spent hiring Covington & Burling LLP (\$400,000); Ervin Hill Strategy (\$120,000); Etherton and Associates, Inc. (\$120,000); Innovative Federal Strategies, LLC (\$200,000); Van Scoyoc Associates (\$60,000); The Duberstein Group Inc. (\$160,000); Crossroads Strategies, LLC (\$100,000); FTI Government Affairs (\$200,000), and; Kadash & Associates, LLC (\$150,000).¹⁴¹ In the United Kingdom, Northrop Grumman is reported to have had only two meetings with ministries, both with the Ministry of Defence. It also invited the UK Minister of State to speak at the Northrop Annual Reception in 2020.¹⁴²



\$2,195

Earned in contracts for every dollar Northrop Grumman spent lobbying.



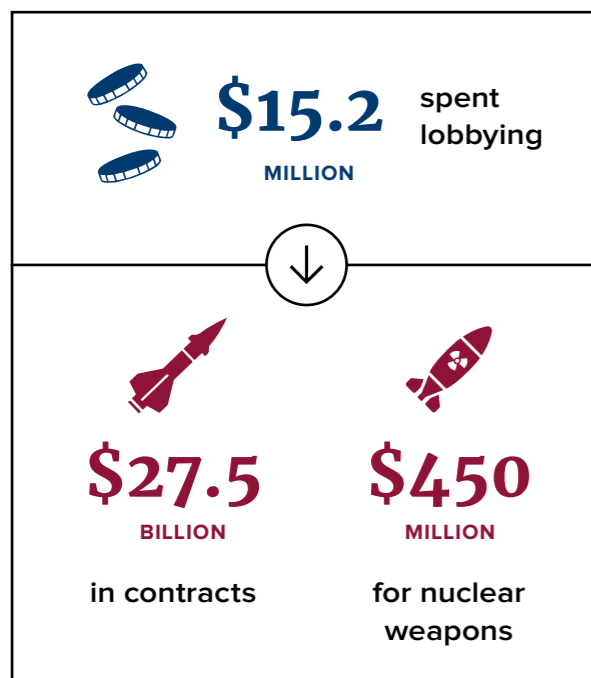
\$1,030

Earned in nuclear weapon contracts for every dollar Northrop Grumman spent lobbying.



\$20,807,144

Earned by Kathy J. Warden, Chairman, Chief Executive Officer and President.¹³²



Raytheon Technologies Corporation

Raytheon and United Technologies merged in April 2020 to create Raytheon Technologies Corporation. The new company combines the aerospace business (including subsidiary Collins Aerospace) from United Technologies and Raytheon.¹⁴⁴ This profile reflects the merger with nuclear weapon, contract and lobbying data combined for the entities.

NUCLEAR WEAPONS WORK

Raytheon Technologies is the prime contractor for the replacement of the U.S. air-launched nuclear armed cruise missiles, the Long-Range Standoff weapon. Raytheon, and subsidiaries, also hold contracts related to the Minuteman III missiles. Collins Aerospace, one of the merged former subsidiaries of United Technologies, is part of the Northrop Grumman GBSD team.¹⁴⁵

CONTRACTS

In the United Kingdom, Raytheon received £48.5 million (\$67.47 million) from the UK Ministry of Defence in 2020 for defence equipment and support, but not related to nuclear weapons.

In the United States, Raytheon negotiated \$13.6 billion in new contracts in 2020. Overall, 485 contracts and modifications were negotiated, valued at \$27.5 billion. One new contract for nuclear weapons related work, with a potential total value of \$442 million was awarded for the command, control, and communications for air-launched nuclear armed cruise missiles. One modification for nuclear command, control, and communications operational assessments support was also awarded, valued at \$7.3 million.

LOBBYING

In the United States, Raytheon Technologies spent \$12.4 million on their own lobbying activities and hired twenty lobbying firms for a total of \$2.67 million: Akin Gump Strauss Hauer & Feld (\$240,000); American Continental Group (\$60,000); American Defense International, Inc. (\$220,000); BGR Government Affairs (\$240,000); C. Baker Consulting, Incorporated

(\$120,000); Etherton and Associates, Inc. (\$80,000); FifeStrategies, LLC (\$90,000); Innovative Federal Strategies, LLC (\$160,000); Squire Patton Boggs (\$10,000); Thorn Run Partners (\$200,000); Atlantic Strategies Group (\$70,000); DLA Piper LLP (US) (\$160,000); Holland & Knight LLP (\$200,000); Invariant LLC (\$240,000); J.A. Green and Company (\$120,000); Kelley Drye & Warren LLP (\$90,000); O'Brien, Gentry & Scott, LLC (\$120,000); Rasky Partners, Inc. (\$45,000); The Vectre Corporation (\$5,000), and; Vantageknight, INC. (\$200,000).¹⁴⁷

In the United Kingdom, ten meetings were held with ministries, half of which were with the Ministry of Defence.¹⁴⁸ Raytheon Technologies also hired one lobbying firm, Terrington Management LLP, for an unknown amount.¹⁴⁹ (NB: Terrington Management LLP lists RUSI as a client on its site as well, a think tank known to produce papers on the UK nuclear arsenal.)¹⁵⁰ Raytheon was also somewhat active in France, reporting lobby expenditures on its own behalf of less than \$8,300 and hiring APCO Worldwide who spent somewhere between \$83-166,000 in 2020.¹⁵¹



A USAF B-1 Lancer taking off at Dyess AFB Air Show 2015. By: Balon Greyjoy. ©Public Domain.



\$1,802

Earned in contracts for every dollar Raytheon spent lobbying.



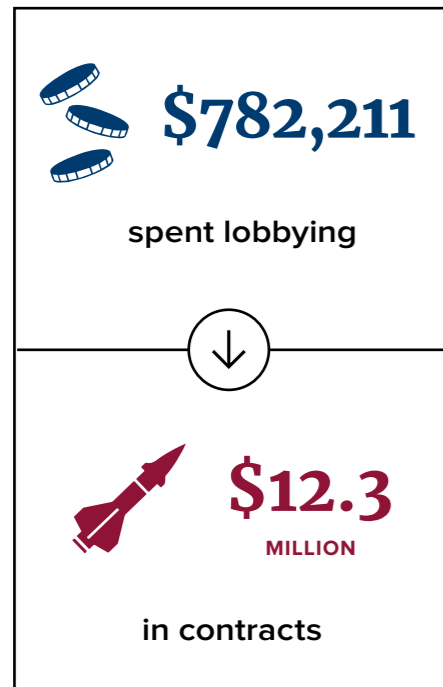
\$29

Earned in nuclear weapon contracts for every dollar Raytheon spent lobbying.



\$18,600,000

Earned by Gregory J. Hayes, Chief Executive Officer.¹⁴³



Safran

NUCLEAR WEAPONS

Safran is part of MBDA, the joint venture responsible for manufacturing the French air-launched nuclear missiles.¹⁵³ Safran is also part of ArianeGroup, building the submarine launched ballistic missile for the French arsenal.¹⁵⁴ Safran's subsidiary, Safran Ceramics is also partnered with MBDA in another joint venture called Roxel to build the boosters and additional devices for the French air launched missiles.¹⁵⁵

CONTRACTS

MBDA arranged €3.3 billion (\$2.7 billion) in total contracts in 2020, with contracts from the United Kingdom, France, Italy, and the German Navy, among others. MBDA is jointly owned by Airbus (37.5%), BAE Systems (37.5%), and Leonardo (25%).¹⁵⁶ MBDA has previously negotiated contracts for missiles used in the French nuclear arsenal and did not receive new nuclear-weapon-specific contract awards in 2020. ArianeGroup has only one new contract on record for 2020, with the European Space Agency for €33 million (\$27 million).¹⁵⁷

Although it is not connected to the UK nuclear arsenal, the UK Ministry of Defence paid Safran (and subsidiaries) more than £9.6 million (\$1.3 million) in 2020 for defence equipment and support.

In the United States, Safran was involved in 116 contract modifications, valued at \$12.2 million, none of which were related to nuclear weapons.

LOBBYING

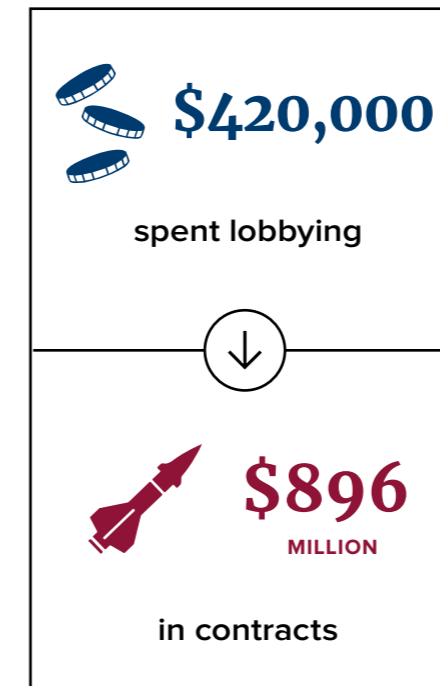
In the United States, Safran reported spending \$400,000 lobbying directly.¹⁵⁸

In the United Kingdom, Safran attended five meetings and various UK ministries, none of which were directly with the Ministry of Defence.¹⁵⁹

Safran is estimated to have spent around €307,725 (\$255,412) lobbying in France in 2020. The majority of those funds (approximately \$207,500) were spent by itself, while the remainder went towards hiring:

France Industrie (\$3,007); Compagnie Européenne D'Intelligence Stratégique (CEIS) (\$27,065); Le Cercle De L'Arbalete (\$15,563); Groupe Industrie Materiel Defense Terres (\$1,407), and GICAN (GPT Indust Construc Activit Naval) (\$870).¹⁶⁰

As French lobbyists are not required to disclose per-client figures, these figures are estimated based on the number of clients, and total reported amounts.



Serco

NUCLEAR WEAPONS WORK

Serco is part of AWE-ML, the company managing and operating the UK Atomic Weapons Establishment. This is the only nuclear weapons programme for which Serco has had contracts, and Serco's role will end in the middle of 2021.

CONTRACTS

The United Kingdom has decided to nationalise its Atomic Weapons Establishment at the end of June 2021, effecting an early termination of the 25-year, £25.4 billion (\$35.3 billion) contract of which Serco held a 24.5% stake.¹⁶²

In the United States, Serco was involved in 203 contracts or modifications, valued over \$896 million, none of which were related to nuclear weapons. In the United Kingdom, Serco received £33,803,869 (\$46.9 million) in payments from the Ministry of Defence, it is unclear which were related to AWE work.

LOBBYING

In the United States, Serco spent \$180,000 on lobbying directly in 2020, and it hired Bluestone Strategies, LLC for \$240,000 of lobbying activities.¹⁶³

Serco was involved in 24 meetings with UK ministries, including one with the prime minister, and one with the Ministry of Defence.¹⁶⁴



\$32

Earned in contracts for every dollar Safran spent lobbying.



\$1,655,664

Earned by Philippe Petitcolin, Previous CEO.¹⁵²



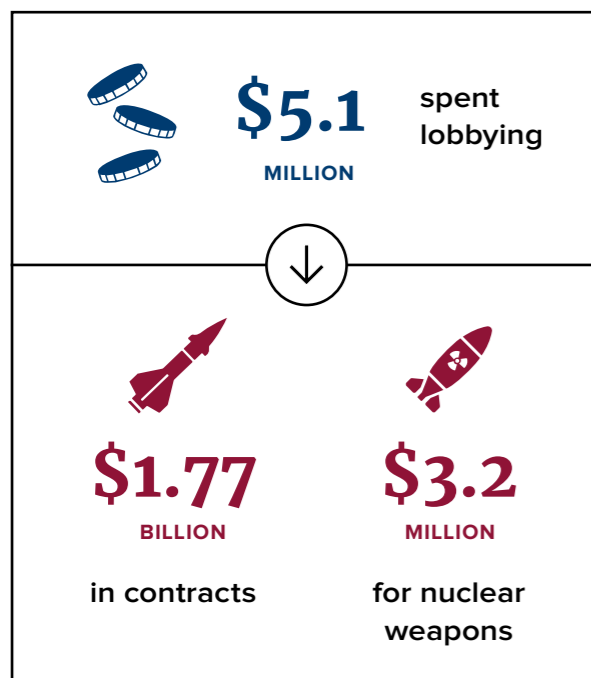
\$2,135

Earned in contracts for every dollar Serco spent lobbying.



\$6,870,224

Earned by Rupert Soames Group Chief Executive Officer.¹⁶¹



Textron

NUCLEAR WEAPONS WORK

Textron manufactures key components (Mod 5 midsection) for the U.S. Minuteman missiles.¹⁶⁶ It will also be involved in developing the missile payload integration for the new Ground Based Strategic Deterrent system.¹⁶⁷

CONTRACTS

In the United States, Textron was involved in 98 new or modified contract negotiations, of which 22 were new, with a total value of \$1.8 million. One of these was a modification of a previously awarded contract for key nuclear weapon components, valued over \$3 million.

Textron also received payments from the UK Ministry of Defence in 2020, valued at £25 million (\$34.7 million) primarily to its aviation subsidiary for defence equipment and support, including the purchase of buildings and other equipment.

LOBBYING

Textron spent \$5.1 million on lobbying in the United States in 2020, most of which on its own efforts. It hired four lobbying firms for a total of \$660,000: American Continental Group (\$240,000); American Defense International, Inc. (\$70,000); Covington & Burling LLP (\$190,000); and Sixkiller Consulting, LLC (\$160,000).



\$347

Earned in contracts for every dollar Textron spent lobbying



\$0.06

Earned in nuclear weapon contracts for every dollar Textron spent lobbying.



\$17,770,781

Earned by Scott C. Donnelly, Chairman, President and Chief Executive Officer.¹⁶⁵



An LGM-118A Peacekeeper intercontinental ballistic missile is test fired. Source: The U.S. National Archives. ©Public Domain.

Think Tanks

INTRODUCTION

Companies that produce nuclear weapons spend millions of dollars each year to support most of the top think tanks that research and write about nuclear weapons. While not all think tanks disclose their funding, according to the most recent funding reports available, the twelve think tanks featured here accepted between \$5.5 million and at least \$10.2 million from companies producing nuclear weapons. Many also have current or former CEOs or executives from these companies sitting on advisory boards or serving on their board of directors. These think tanks must stop accepting money from companies with vested interests in maintaining and building more weapons of mass destruction. In the meantime, readers of these think tank reports should question if their policy recommendations or research topics are influenced by their funders.

Atlantic Council	\$835,000 - \$1,724,998
Brookings Institution	\$275,000 - \$549,998
Carnegie Endowment for International Peace	\$50,000 - \$199,998
Center for New American Security (CNAS)	\$1,085,000 - \$1,874,991
Center for Strategic and International Studies (CSIS)	\$1,543,000 - \$2,794,997
Fondation pour la recherche stratégique (FRS)	amount not specified
French Institute of International Relations (IFRI)	amount not specified
Hudson Institute	\$170,000 - \$350,000
International Institute of Strategic Studies (IISS)	\$800,640 - \$1,146,744
Observer Research Foundation (ORF)	\$71,539
Royal United Services Institute (RUSI)	\$610,210 - \$1,445,581
Stimson Center	\$50,500

Atlantic Council | \$835,000 - \$1,724,990

The Atlantic Council is an American think tank. One of its featured issues of study is nuclear deterrence.¹⁶⁸ In 2020, the Atlantic Council published an issue brief entitled "Russia's exotic nuclear weapons and implications for the United States and NATO," which was informed by a workshop convened by the Atlantic Council and Los Alamos National Laboratory.

The report advocated for the United States to develop new "low-yield" nuclear capabilities to deter Russia.¹⁶⁹ In 2020 The Atlantic Council also published a report entitled "Towards Trilateral Arms Control: options to bringing China into the fold".

According to the Atlantic Council's 2020 Annual Report, in FY2019, the Atlantic Council received between \$835,000 - \$1,724,990 from nine companies that produce nuclear weapons: Airbus, BAE systems, Boeing, General Dynamics, Huntington Ingalls Industries, Lockheed Martin, Northrop Grumman, Raytheon Technologies, Textron and the consortium MBDA.¹⁷⁰ The Atlantic Council also received between \$75,000 - \$149,998 from a national laboratory working on nuclear weapons, Los Alamos National Laboratory, and from Texas A&M University, which manages Los Alamos National Laboratory.¹⁷¹ In correspondence with ICAN, The Atlantic Council stated that the overwhelming majority of this funding is not to support work on nuclear weapons or nuclear strategy.

In addition, the CEOs of three companies that produce nuclear weapons sit on the Advisory Board of the Atlantic Council: Guillaume Faury, CEO of Airbus; Gregory J. Hayes, CEO of Raytheon Technologies; and Marillyn A. Hewson who was Executive Chairman, President, and CEO of Lockheed Martin Corporation until June 2020.

- **Airbus**
\$250,000 - \$499,999
- **BAE Systems**
\$25,000 - \$49,999
- **Boeing**
\$25,000 - \$49,999
- **General Dynamics**
\$50,000 - \$99,999
- **Huntington Ingalls Industries**
\$10,000 - \$24,999
- **Lockheed Martin**
\$100,000 - \$249,999
- **MBDA**
\$25,000 - \$49,999
- **Northrop Grumman**
\$50,000 - \$99,999
- **Raytheon Technologies**
\$250,000 - \$499,999
- **Textron**
\$50,000 - \$99,999
- **Los Alamos National Laboratory**
\$50,000 - \$99,999*
- **Texas A&M University**
\$25,000 - \$49,999*



Source: Defense Visual Information Distribution Service. ©Public Domain.

*Not included in total

Brookings Institution | \$275,000 - \$549,998

- **Airbus**
no amount listed
- **Lockheed Martin**
\$25,000 - \$49,999
- **Northrop Grumman**
\$250,000 - \$499,999

The Brookings Institution is an American think tank, which also has a centre in Doha, Qatar. One of the projects of the foreign policy wing of the think tank is the Arms Control and Nonproliferation Initiative, which “addresses global arms control and proliferation challenges, as well as the central negotiations between the United States and Russia.”¹⁷²

According to the Brookings Institution’s 2020 Annual Report, from July 2019 - June 2020, the Brookings Institution received between \$275,000 and \$549,998 from two companies that produce nuclear weapons: Lockheed Martin and Northrop Grumman.¹⁷³ The 2020 report also acknowledges a gift from another nuclear weapon producing company, the Airbus Corporation, to help establish the Fritz Stern Chair on Germany and Trans-Atlantic Relations but does not specify the amount.

Carnegie Endowment for International Peace | \$50,000 - 199,998

The Carnegie Endowment for International Peace is an American think tank which also has centres in Beijing, Beirut, Brussels, Moscow, and New Delhi. One of Carnegie’s programs is the Nuclear Policy Program, which “spans deterrence, disarmament, nonproliferation, nuclear security, and nuclear energy.”¹⁷⁴ The program organises a biennial International Nuclear Policy Conference.¹⁷⁵

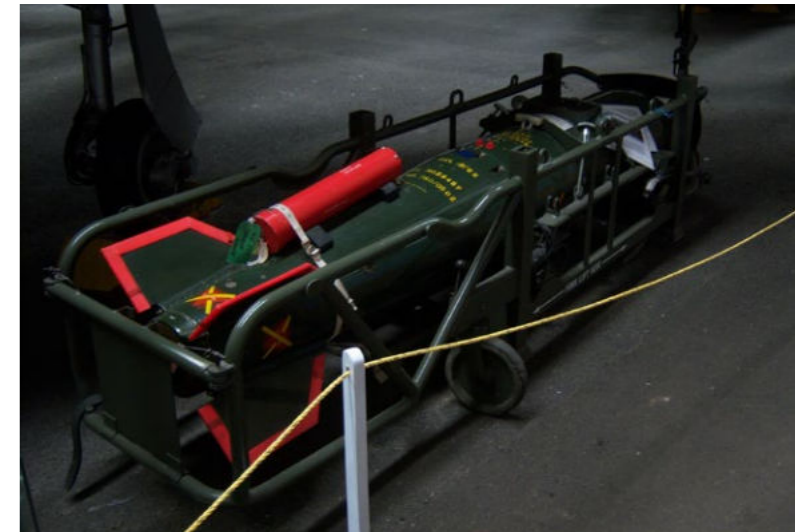
According to the Carnegie Endowment’s 2020 Annual Report, from July 2019 - June 2020, the Carnegie Endowment received between \$50,000 and \$199,998 from two companies that produce nuclear weapons: Boeing and Northrop Grumman for its South Asia and Asia programs.¹⁷⁶

- **Boeing**
\$25,000 - \$99,999
- **Lockheed Martin**
\$25,000 - \$99,999

Center for New American Security (CNAS) | \$1,085,000 - \$1,874,991

The Center for New American Security is an American think tank. It does not have a specific program on nuclear weapons, but does regularly produce podcasts, articles and reports on the subject, including on nuclear weapon diplomacy with Iran and on North Korea’s nuclear program.¹⁷⁷

- **BAE Systems**
\$50,000 - \$99,999
- **Boeing**
\$25,000 - \$49,999
- **Huntington Ingalls Industries**
\$100,000 - \$249,999
- **L3 Harris Technologies**
\$50,000 - \$99,999
- **Leidos**
\$100,000 - \$249,999
- **Leonardo**
\$100,000 - \$249,999
- **Lockheed Martin**
\$100,000 - \$249,999
- **Northrop Grumman**
\$500,000 and above
- **Raytheon**
\$50,000 - \$99,999
- **Textron**
\$10,000 - \$24,999



Tactical nuclear weapon NELSAM. ©Public Domain.

According to the CNAS website, from October 2019 - September 2020 CNAS received between \$1,085,000 and at least \$1,874,991 from ten companies that produce nuclear weapons: BAE Systems, Boeing, Huntington Ingalls Industries, L3 Harris Technologies, Leidos, Leonardo, Lockheed Martin, Northrop Grumman, Raytheon Technologies and Textron.¹⁷⁸

In addition, executives at four companies that produce nuclear weapons sit on the CNAS Board of Advisors: Roger Krone, Chairman and Chief Executive Officer of Leidos; William J. Lynn III, Chief Executive Officer of Leonardo DRS and Leonardo North America; Timothy J. McBride, Global Government Relations of Raytheon Technologies; and Mike Petters, President and CEO of Huntington Ingalls Industries.¹⁷⁹ On CNAS’ Board of Directors sits Richard J. Danzig, Senior Advisor at Johns Hopkins Applied Physics Laboratory, which conducts nuclear weapons research for the Department of Defense, and Admiral Cecil Haney, USN (Ret.), Former Commander of US STRATCOM, the military agency that oversees U.S. nuclear weapon deployments.¹⁸⁰

Center for Strategic and International Studies (CSIS) | \$1,543,000 - \$2,794,997

The Center for Strategic and International Studies (CSIS) is an American think tank. Within its International Security Program, CSIS has a Project on Nuclear Issues, a network for “next generation professionals prepared to meet the nuclear challenges of the future.”¹⁸¹ “Weapons of mass destruction proliferation” is a key topic of research within the International Security Program.¹⁸²

According to the CSIS 2018/2019 Annual Report, in FY2019 for its National Security/International Security Policy programs, CSIS received between \$1,543,000 and at least \$2,794,997 from nine companies producing nuclear weapons: BAE Systems, Betchel, Boeing, General Dynamics, Huntington Ingalls Industries, L3 Harris Technologies, Leonardo, Lockheed Martin and Northrop Grumman.¹⁸³

Two current and one former CEO of companies that produce nuclear weapons sit on the CSIS Board of Trustees: Brendan Bechtel, Chairman and CEO, Bechtel Group, Inc.; W. James McNerney Jr., Former Chairman, The Boeing Company; and Phebe N. Novakovic Chairman and CEO, General Dynamics. Timothy Keating, Executive Vice President of Government Operations, The Boeing Company, sits on the CSIS Advisory Board.

Norman Augustine, Retired Chairman and CEO, Lockheed Martin Corporation, Stephen Bechtel Jr., Chairman Emeritus, Bechtel Group, Inc, Jay L. Johnson, Former Chairman and CEO, General Dynamics and David Seaton, Former Chairman and CEO of the Fluor Corporation, are members of CSIS Roundtables, which “offers the opportunity to participate directly in the Center’s work” and “meet regularly to discuss and analyze our greatest challenges and to generate dialogue about the Center’s ongoing studies and programs.”¹⁸⁴

→	BAE Systems \$65,000 - \$99,000
→	Betchel \$100,000 - \$199,000
→	Boeing \$200,000 - \$499,999
→	General Dynamics \$100,000 - \$199,000
→	Huntington Ingalls Industries \$100,000 - \$199,000
→	L3 Harris Technologies \$65,000 - \$99,000
→	Leonardo \$200,000 - \$499,999
→	Lockheed Martin \$200,000 - \$499,999
→	Northrop Grumman \$500,000 and up



Source: National Nuclear Security Administration. Federal Government of the United States. ©Public Domain.

Fondation pour la recherche stratégique (FRS)

The Fondation pour la recherche stratégique (FRS) is a French think tank. One of its areas of focus is “Deterrence/Disarmament” and it regularly publishes on nuclear weapons.¹⁸⁵

FRS does not publicly list all of its funders or the amount that they contribute, but its website does state that one of its partners is the Atomic Energy Commission which, “provides defence and security-related services in various fields, including nuclear warheads for airborne and seaborne deterrent devices, nuclear reactors and cores for submarine and aircraft carrier propulsion, and the fight against nuclear proliferation and terrorism.”¹⁸⁶

In addition, three executives at companies that produce nuclear weapons sit on the FRS board: Hervé de Bonnaventure, Defense Advisor, MBDA; William Kurtz, military adviser, Safran; and Xavier Paitard, Defense Advisor for Strategy and Public Affairs, Airbus Group.¹⁸⁷



Missile silo. Licensed under CC BY-SA 4.0

French Institute of International Relations (IFRI)

The French Institute of International Relations (IFRI) is a French think tank. One of the research areas within the Security Studies Center is Deterrence and Proliferation which “intends to stimulate public debate and to further our understanding of the complexity of the nuclear issue in all its dimensions: technical, regional, diplomatic and budgetary” and “publishes and circulates reports and analyses on: nuclear postures, strategies and capabilities; multilateral efforts to reduce arsenals and strengthen the non-proliferation regime; and on the development of strategic capabilities closely related to deterrence missions (conventional prompt strategic strikes and ballistic missile defense systems).”¹⁸⁸

IFRI does not publicly list its funders or the amount they contribute, but in its 2019 Annual Report, it does list three companies that produce nuclear weapons as corporate partners: Airbus, Naval Group and MBDA.¹⁸⁹

The report notes that private contributions, from companies, embassies and individuals, account for 70% of IFRI’s resources. New corporate members supported IFRI one or multiple research units and companies “actively participate in IFRI’s debates and events.”¹⁹⁰

IFRI together with the Fondation pour la recherche stratégique are jointly implementing the “Nuclear and Strategy Network New Generation” programme. This project was launched in 2015 (for a 3 years contract, with a budget of €500,000) and is co-financed and co-directed by the DGRIS (The Directorate General for International Relations and Strategy) and CEA/DAM (Directorate of Military Applications of the French Atomic Energy Commission). It aims to create a network of young researchers to “contribute their reflection on military nuclear issues, in particular deterrence and non-proliferation.”

Hudson Institute | \$170,000 - \$350,000

The Hudson Institute is an American think tank. A featured topic within its National Security programme is “Arms Control and Nonproliferation,” and the institute regularly publishes on nuclear weapons.¹⁹¹

According to the Hudson Institute’s 2019 Annual Report, in 2019 the Hudson Institute received between \$170,000 and \$350,000 from four companies producing nuclear weapons: Lockheed Martin, Huntington Ingalls Industries, Northrop Grumman and Raytheon Technologies.¹⁹²

→	Lockheed Martin \$50,000 - \$100,000
→	Huntington Ingalls Industries \$20,000 - \$50,000
→	Northrop Grumman \$50,000 - \$100,000
→	Raytheon \$50,000 - \$100,000

International Institute for Strategic Studies (IISS) | \$800,640 - \$1,146,744

The International Institute for Strategic Studies (IISS) is a British think tank, which also has centres in Washington, D.C., Bahrain, and Singapore. It has a Non-Proliferation and Nuclear Policy programme, which researches and publishes regularly on nuclear- and missile-security issues.¹⁹³

According to the IISS website, in FY2018, IISS received between at least £576,000 and at least £824,996 (\$800,640 - \$1,146,744) from eight companies producing nuclear weapons: Airbus, BAE Systems, Boeing, Leonardo, Lockheed Martin, Northrop Grumman, Raytheon Technologies, Textron and the consortium MBDA.¹⁹⁴ IISS also received between £1,000-24,999 (\$1,387- \$34,681) from Los Alamos National Laboratory, which provides design and engineering for U.S. nuclear warheads.¹⁹⁵

Thomas Enders, the former CEO of Airbus, a company that produces nuclear weapons, sits on IISS advisory council.¹⁹⁶

→	Airbus £100,000 and over
→	BAE systems £100,000 and over
→	Boeing £100,000 and over
→	Leonardo £25,000 - £99,999
→	Lockheed Martin £100,000 and over
→	MBDA £25,000 - £49,999

→	Northrop Grumman £25,000 - £99,999
→	Raytheon Technologies £100,000 and over
→	Textron £1,000 - £24,999

Observer Research Foundation (ORF) \$71,539

The Observer Research Foundation (ORF) is an Indian think tank. Within its Strategic Studies programme is the Nuclear and Space Studies Initiative and the think tank regularly publishes about nuclear weapons.¹⁹⁷ According to the ORF website, in 2020 it received 52,82,250.00 INR (\$71,532.86) from one company producing nuclear weapons, Lockheed Martin India Pvt Ltd.^{198,199}

→	Lockheed Martin \$71,539
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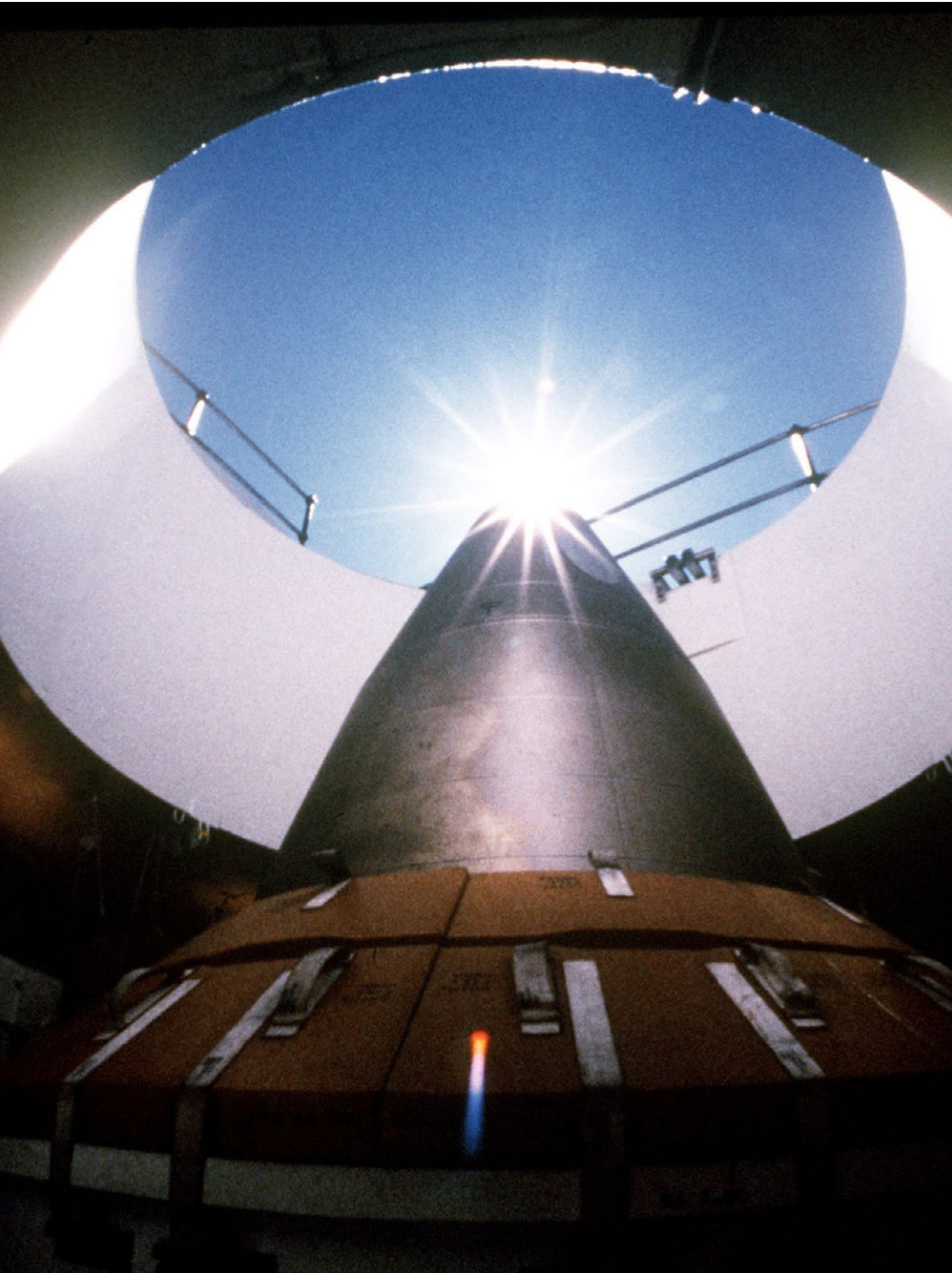
Royal United Services Institute (RUSI) \$610,210 - \$1,445,581

The Royal United Services Institute (RUSI) is a British think tank. RUSI has a Proliferation and Nuclear Policy programme, which provides analysis and research on contemporary nuclear weapons issues.²⁰⁰ RUSI’s website states that from 2018-19, the organisation as a whole received between £439,000

and £1,039,986 (\$610,210 - \$1,445,581) from ten companies involved in the production and maintenance of nuclear weapons: Airbus, BAE Systems, Bechtel, General Dynamics, Jacobs Engineering, Leonardo, Lockheed Martin, Northrop Grumman, Raytheon, Serco and two consortia AWE PLC and MBDA.^{201,202}

→	Airbus £100,000 - £199,999
→	AWE PLC £10,000 - £24,999
→	BAE systems £200,000 - £499,999
→	Bechtel £10,000 - £24,999
→	General Dynamics £1,000 - £9,999
→	Jacobs Engineering £10,000 - £24,999

→	Leonardo £10,000 - £24,999
→	Lockheed Martin £50,000 - £99,999 + £10,000 - £24,999
→	MBDA £1,000 - £9,999
→	Northrop Grumman £10,000 - £24,999
→	Raytheon £25,000 - £49,999 + £1,000 - £9,999
→	Serco £1,000 - £9,999



LGM-118A Peacekeeper intercontinental ballistic missile. Source: The U.S. National Archives. ©Public Domain.

Stimson Center | \$50,500

The Stimson Center is an American think tank. The Stimson Center has Nonproliferation, U.S. Foreign Policy and Asia programs which include research and publications about nuclear weapons²⁰³ although, in correspondence with ICAN, the Stimson Center stated it did not have any projects on U.S. nuclear weapons policy or including nuclear weapons in any country's force posture.

According to the Stimson Center website, in 2019, the Stimson Center received a total of \$50,500 from five companies that produce nuclear weapons: BAE Systems, Boeing, General Dynamics, Lockheed Martin and Northrop Grumman for its East Asia and Conventional Defense programs.²⁰⁴ In addition, the Stimson Center received \$811,755.30 from the National Nuclear Security Administration, the semi-autonomous Department of Energy agency that oversees the research and production of the U.S. nuclear weapons arsenal, for its South Asia program.

Two former executives from nuclear-weapon-producing companies sit on Stimson's Board of Directors: David Welch, former vice president and partner of Bechtel and Nicole Paisecki, former vice president and general manager of the Propulsion Systems Division of Boeing Commercial Airplanes.²⁰⁵

→	BAE Systems \$5,000
→	Boeing \$5,000
→	General Dynamics \$3,000
→	Lockheed Martin \$7,500
→	Northrop Grumman \$20,000 + 10,000 NG Japan
→	National Nuclear Security Administration \$811,755.30*

*Not included in total



Navy Standard Missile. Licensed under CC BY 3.0.

Conclusion

During the worst pandemic in a century, nine countries chose to increase their spending on nuclear weapons by about \$1,400,000,000.

During a year when health care workers got applause instead of raises. A year in which it was essential to have minimum wage workers risk their lives to keep economies afloat, but not essential to pay them a living wage. A year in which millions of lives were lost and the status quo that sustained systems of power for decades started to get upturned. A year in which the first treaty making nuclear weapons illegal finally became international law. During this year, nine countries still decided nuclear weapons spending was a priority.

The fault doesn't lie with the leaders of these nine countries alone. Behind them is a massive enterprise of vested interests, eager to get a piece of the \$72.6 billion taxpayer-funded pie. The twenty-one companies profiting from nuclear weapons spent \$117 million making sure that lobbyists kept the systems they build as the solution to policy makers' problems. And they spent at least \$5-10 million funding think tanks who write and research about nuclear weapons.

For a CEO like Northrop Grumman's Kathy Warden, spending a fraction of her own salary on lobbying and think tanks is a good deal. It means that the perceived need for her company's products, including a new ICBM system, will remain high. It means her board and shareholders will appreciate how for every dollar she spent on lobbying, she brought in almost \$800 in nuclear weapon contract money, and they'll have no problem increasing her pay to almost \$20 million for the year.

Governments, encouraged by vested interests, chose to spend taxpayers' money on weapons prohibited by international law. This is why we still have nuclear weapons. It's not a strategic rationale, it's because these companies, and their CEOs want to keep nuclear weapons forever.

The nuclear weapons business is a tangled web of spending and contracts and budget decisions. But those threads are slowly starting to loosen. Now that nuclear weapons are comprehensively prohibited, they will be pulled further apart until the systems supporting nuclear weapons fall.

This outrageous and illegal waste cannot continue. Now you have the information. It's up to you to call on every elected official, company representative and researcher to get out of the destructive nuclear weapons spending cycle and back the TPNW to get rid of them once and for all.

The twenty-one companies profiting from nuclear weapons spent \$117 million making sure that lobbyists kept the systems they build as the solution to policy makers' problems.



First Lt. Paul Lee, the 321st Missile Squadron missile combat crew commander, performs a simulated key turn of the Minuteman III weapon system during a Simulated Electronic Launch-Minuteman test. Source: U.S. Air Force. By: Staff Sgt. Christopher Ruano. ©Public Domain.

Methodology

COUNTRIES

The estimates for country nuclear weapon spending (rounded to one decimal point) include nuclear warhead and nuclear-capable delivery systems operating costs and development where these expenditures are publicly available, and are based on a reasonable percentage of total military spending on nuclear weapons when more detailed budget data is not available. Calculations are made in 2020 dollars where possible and currency exchange rates are based on the date of calculation listed. 2019 estimates have been adjusted to account for inflation to 2020 dollars to enable comparisons using <https://www.usinflationcalculator.com>. Figures may not always sum due to rounding.

Due to lack of reliable and consistent global information, these estimates do not include the costs to remediate the environment contaminated by nuclear weapons or to compensate victims of nuclear weapon use and testing, although these are also important markers of the added financial and human cost of nuclear weapons.²⁰⁶

A 2011 Global Zero cost estimate which added “unpaid/deferred environmental and health costs, missile defences assigned to defend against nuclear weapons, nuclear threat reduction and incident management” found that this “full” cost of global nuclear arsenal was over 50% higher than just the cost of nuclear weapons system maintenance and development.²⁰⁷ The methodology and sources used to calculate each country’s spending on nuclear weapons in this report is detailed in each country section.



Source: U.S. Air Force. ©Public Domain.

COMPANIES

U.S. contracts data was secured from two main sources, the daily Department of Defense published contract database, which includes DOD contracts valued over \$7 million, and the GovTribe database, which includes all contracts, delivery orders, purchase orders and modifications, for all U.S. government contracts. All contacts were included, except general service delivery orders for Lockheed Martin.

In contract awards in which multiple companies were named, the total contract value has been divided equally across the number of companies. This is an estimate, to prevent double reporting, but may not accurately reflect the individual company receipts.

French contracts were assessed based on the various company and Joint Venture websites- including Airbus, BAE Systems, MBDA, ArianeGroup, Safran, and Thales, as well as the French government’s annual Notebook of International Defence Companies for 2020.

For the Trident system, the United Kingdom does not have contracts directly with the companies, and instead, contract awards are give by the United States, and the United Kingdom then reimburses the United States for costs incurred. The US Department of Defense reports on foreign contributions to contract awards on the DOD contract award releases.

French lobbyists are not required to disclose per-client figures, so these figures are estimated based on the number of clients, and total reported amounts. The figures for the defence companies themselves are the median of the reported range. Figures are reported in euros but listed here in U.S. dollars for readability. The same currency conversation rate applies throughout.

In the United Kingdom lobbyists are required to file that they are lobbying, but not the amount they’ve spent, which can be found here: <http://registrarofconsultantlobbyists.org.uk/>. UK lobby meeting information was obtained through the Transparency International UK data dashboard on lobbying activities: <https://openaccess.transparency.org.uk/>.

All U.S. lobbying reports were taken either from the U.S. Senate Lobbying Disclosures site (<https://lda.senate.gov/system/public/>), or the U.S. House of Representatives site (<https://disclosurespreview.house.gov>). Each lobbyist or defence contractor files quarterly reports and the full list of referenced reports is available upon request.

The French Transparency Register was the source of information on French lobby expenditures: <https://www.hatvp.fr/>. Estimates were required, as French lobbyists are not required to disclose per-client figures, so these figures are estimated based on the number of clients, and total reported amounts.

Where currencies are converted, they are at the following rates: \$1 = £ 1.39 and \$1 = € 0.83.

Please note, some calculations may appear off due to rounding. For expanded figures, please contact the authors.



Source: The U.S. National Archives. ©Public Domain.

THINK TANKS

This report aims to provide an overview of the most recent annual contributions of nuclear weapons producers to major think tanks which regularly write and research on nuclear weapons.

To select think tanks to include in the report, we started with the University of Pennsylvania's 2019 Global Go To Think Tank Index Report and selected the top Defence and National Security think tanks in nuclear-armed states and then chose the think tanks with established nuclear weapons programs, or that frequently write and research about nuclear weapons.²⁰⁸ From these, entirely government- or university- funded think tanks were eliminated from consideration in the report. Think tanks with little to no public information about funding sources were also not included.

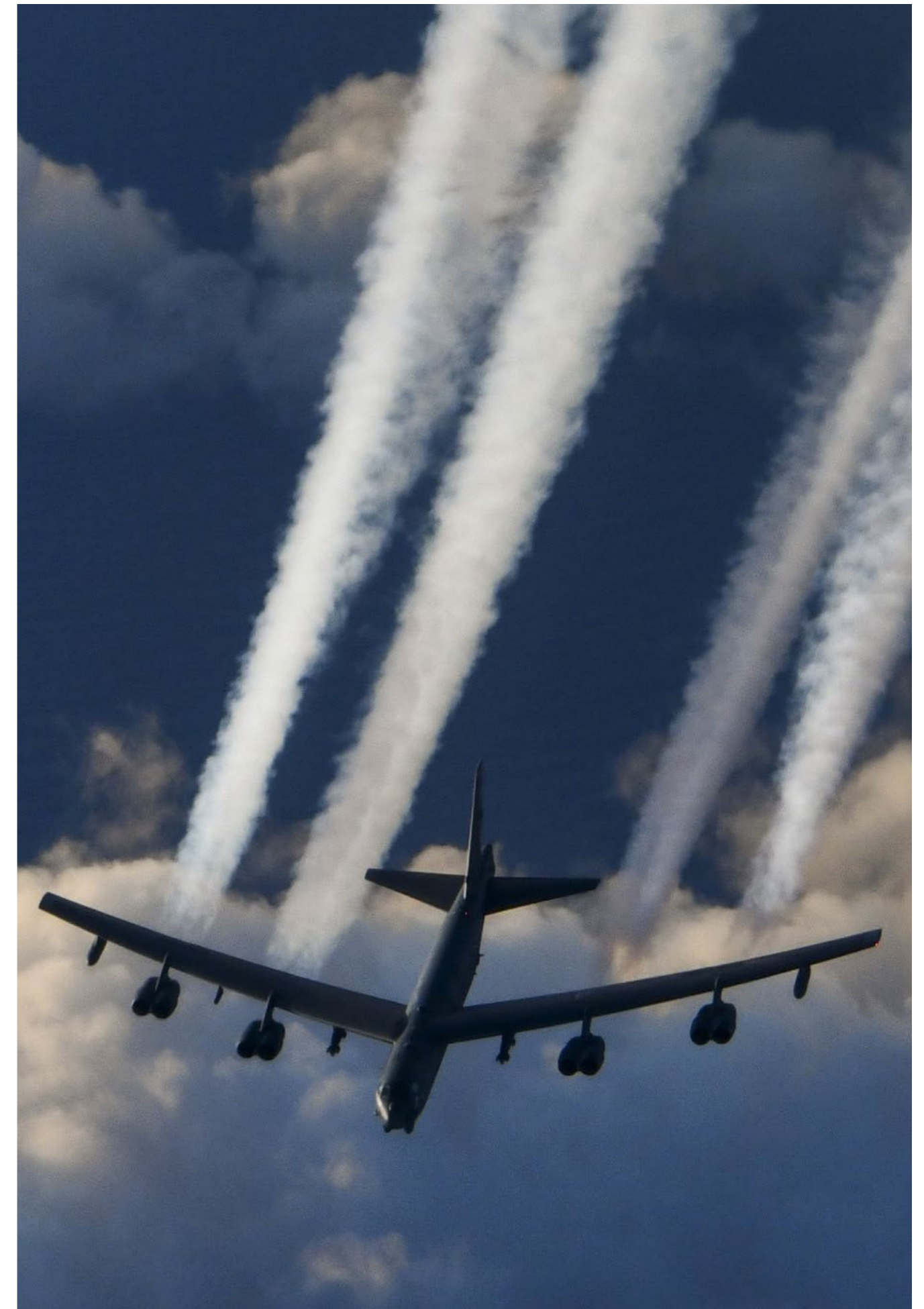
The report considers funding from nuclear-weapon-producing companies, and a few nuclear-weapon specific governmental agencies (although governmental agency funding was not included in the total spending per think tank), in a one-year period for these selected think tanks during the most recently self-reported timeframe. The funding information is all publicly available through think tank annual reports and websites. Funding information for the most recent one-year period available was selected and no information before FY 2018 was considered. General nuclear-armed government funding was not included; only when a funder was listed as a specific governmental agency or laboratory whose primary role is tied to nuclear weapons would governmental funding be considered. As an example, while funding from the U.S. Department of Energy would not be included, funding from the National Nuclear Security Administration would.

Likewise, although many of the think tanks listed also receive funds from ministries of defense in nuclear-armed states or in NATO states, that funding was also not included in the scope of this report. Many think tanks have official policies on intellectual independence from funders, including The Atlantic Council and the Carnegie Endowment, as was referenced in correspondence with ICAN. While most think tanks do not provide program-specific funding, where available it is noted. All think tanks were contacted prior to publication to provide corrections and comments.

When available, the report notes formal partnerships or membership structures between nuclear-weapon-producing companies and think tanks, given that these partnerships give companies access and participation in think tank work and may entail a financial contribution.

The report also notes when a member of a board of the think tank, including the Board of Trustees, Board of Directors or Advisory Board, held a current or former senior position at a nuclear-weapon-producing company.

The report considers funding from nuclear-weapon-producing companies, and a few nuclear-weapon specific governmental agencies.



A B-52H Stratofortress bomber. Source: Defense Visual Information Distribution Service. ©Public Domain.

About the ICAN and the Authors

The International Campaign to Abolish Nuclear Weapons (ICAN) is a global campaign working to mobilize people in all countries to inspire, persuade and pressure their governments to sign and ratify the Treaty on the Prohibition of Nuclear Weapons. ICAN is comprised of more than 600 partner organisations in over 100 countries. More information about ICAN can be found at www.icanw.org. Alicia Sanders-Zakre and Susi Snyder co-authored this report.

Alicia is the Policy and Research Coordinator of ICAN where she conducts and coordinates research on the Treaty on the Prohibition of Nuclear Weapons, the humanitarian impact of nuclear weapons and general nuclear weapons policy. Previously, she was a research assistant at the Arms Control Association and at the Brookings Institution and she has published over 100 news articles, editorials and reports on nuclear weapons, including “Enough is Enough: 2019 Global Nuclear Weapons Spending.” She can be reached with any comments or questions at alicia@icanw.org.

Susi coordinates the Don't Bank on the Bomb research and campaign. She is an expert on nuclear weapons, with over two decades experience working at the intersect between nuclear weapons and human rights. Susi was a Foreign Policy Interrupted/ Bard College 2020 fellow and one of the 2016 Nuclear Free Future Award Laureates. Previously, Susi Snyder served as the Secretary General of the Women's International League for Peace and Freedom at their Geneva secretariat. She was named Hero of Las Vegas in 2001 for her work with Indigenous populations against U.S. nuclear weapons development and nuclear waste dumping.

About the Treaty on the Prohibition of Nuclear Weapons

On 7 July 2017 – following a decade of advocacy by ICAN and its partners – an overwhelming majority of the world's nations adopted a landmark global agreement to ban nuclear weapons, known officially as the Treaty on the Prohibition of Nuclear Weapons (TPNW). The TPNW prohibits nations from developing, testing, producing, manufacturing, transferring, possessing, stockpiling, using or threatening to use nuclear weapons, or allowing nuclear weapons to be stationed on their territory.

It also prohibits them from assisting, encouraging or inducing anyone to engage in any of these activities. A nation that possesses nuclear weapons may join the treaty, so long as it agrees to destroy them in accordance with a legally binding, time-bound plan. Similarly, a nation that hosts another nation's nuclear weapons on its territory may join, so long as it agrees to remove them by a specified deadline. Nations are obliged to provide assistance to all victims of the use and testing of nuclear weapons and to take measures for the remediation of contaminated environments. The preamble acknowledges the harm suffered as a result of nuclear weapons, including the disproportionate impact on women and girls, and on indigenous peoples around the world. The TPNW reached 50 states parties in October 2020 and entered into force on 22 January 2021.

Footnotes

1. Rick Gladstone, 'Treaty to Prohibit Nuclear Weapons Passes Important Threshold,' *The New York Times*, Oct. 2020. Accessed: May 17, 2021. [Online]. Available: <https://www.nytimes.com/2020/10/25/world/americas/nuclear-weapons-prohibition-treaty.html>
2. Matthew Kroenig, Mark Massa, and Christian Trotti, 'Russia's exotic nuclear weapons and implications for the United States and NATO', *Atlantic Council*, Mar. 06, 2020. <https://www.atlanticcouncil.org/in-depth-research-reports/issue-brief/russias-exotic-nuclear-weapons-and-implications-for-the-united-states-and-nato/> (accessed May 15, 2021).
3. Per minute calculations take into account that 2020 was a leap year and there were 527,040 minutes in 2020, instead of the usual 525,600.
4. 2019 totals have been adjusted from ICAN's May 2020 "Enough is Enough" report to account for an updated methodology used to calculate UK nuclear weapon spending and to adjust for inflation.
5. Hans M. Kristensen and Matt Korda, 'Status of World Nuclear Forces', *Federation of American Scientists*, Mar. 2021. Accessed: May 15, 2021. [Online]. Available: <https://fas.org/issues/nuclear-weapons/status-world-nuclear-forces/>
6. Ray Acheson, Sharon Dolev, Janet Fenton, Hans, Kristensen, Greg Mello, Zia Mian, Pavel Podvig, MV Ramana, and Hui Zhang, 'Assuring Destruction Forever: 2020 Edition', *Reaching Critical Will*, June 2020. <https://reachingcriticalwill.org/images/documents/Publications/modernization/assuring-destruction-forever-2020v2.pdf> (accessed May 17, 2021).
7. Bruce G Blair and Matthew A Brown, 'Nuclear Weapons Cost Study', *Global Zero*, Jun. 2011. Accessed: May 15, 2021. [Online]. Available: <https://www.globalzero.org/wp-content/uploads/2020/01/GZ-Weapons-Cost-Global-Study.pdf>
8. Diego Lopes da Silva, Nan Tian and Alexandra Marksteiner, 'Trends in World Military Expenditure, 2020', *Stockholm International Peace Research Institute*, Apr. 2021. Accessed: May 15, 2021. [Online]. Available: https://www.sipri.org/sites/default/files/2021-04/fs_2104_milex_0.pdf
9. France24, 'Macron unveils nuclear doctrine, warns EU 'cannot remain spectators' in arms race.' Feb. 7, 2020. <https://www.france24.com/en/20200207-macron-unveils-nuclear-doctrine-warns-eu-cannot-remain-spectators-in-arms-race> (accessed May 17 2021)
10. Hans M. Kristensen and Matt Korda, 'Status of World Nuclear Forces', *Federation of American Scientists*, Mar. 2021. Accessed: May 15, 2021. [Online]. Available: <https://fas.org/issues/nuclear-weapons/status-world-nuclear-forces/>
11. Ministère des Armées, 'Defense Key Figures : 2020 Edition', August 2020, Accessed May 17, 2021.
12. Currency conversion conducted on 5 May 2021.
13. Diego Lopes da Silva, Nan Tian and Alexandra Marksteiner, 'Trends in World Military Expenditure, 2020', *Stockholm International Peace Research Institute*, Apr. 2021. Accessed: May 15, 2021. [Online]. Available: https://www.sipri.org/sites/default/files/2021-04/fs_2104_milex_0.pdf
14. Bruno Le Maire, Gérald Darmanin, and Benjamin Griveaux, 'Présentation du projet de loi de finances 2018', Sep. 27, 2017. https://www.economie.gouv.fr/files/files/PLF2018/DP_PLF_2018.pdf (accessed May 15, 2021).
15. Bruno Le Maire, Gérald Darmanin, and Benjamin Griveaux, 'Présentation du projet de loi de finances 2018', Sep. 27, 2017. https://www.economie.gouv.fr/files/files/PLF2018/DP_PLF_2018.pdf (accessed May 15, 2021).
16. Hans M. Kristensen and Matt Korda, 'Status of World Nuclear Forces', *Federation of American Scientists*, Mar. 2021. Accessed: May 15, 2021. [Online]. Available: <https://fas.org/issues/nuclear-weapons/status-world-nuclear-forces/>
17. Shane Mason, 'Military Budgets in India and Pakistan: Trajectories, Priorities, and Risks • Stimson Center', *Stimson Center*, Oct. 25, 2016. <https://www.stimson.org/2016/military-budgets-india-and-pakistan-trajectories-priorities-and-risks-0/> (accessed May 15, 2021).
18. Laxman Kumar Behera, 'India's Defence Budget 2020-21 | Manohar Parrikar Institute for Defence Studies and Analyses', *Manohar Parrikar Institute for Defence Studies and Analyses*, Feb. 04, 2020. <https://idsa.in/issuebrief/india-def-budget-2020-21-1kbehera-040220> (accessed May 15, 2021).
19. The currency conversion to USD was conducted on 5 May 2021.
20. Hans M. Kristensen and Matt Korda, 'Status of World Nuclear Forces', *Federation of American Scientists*, Mar. 2021. Accessed: May 15, 2021. [Online]. Available: <https://fas.org/issues/nuclear-weapons/status-world-nuclear-forces/>
21. Diego Lopes da Silva, Nan Tian and Alexandra Marksteiner, 'Trends in World Military Expenditure, 2020', *Stockholm International Peace Research Institute*, Apr. 2021. Accessed: May 15, 2021. [Online]. Available: https://www.sipri.org/sites/default/files/2021-04/fs_2104_milex_0.pdf
22. Hans M. Kristensen and Matt Korda, 'Status of World Nuclear Forces', *Federation of American Scientists*, Mar. 2021. Accessed: May 15, 2021. [Online]. Available: <https://fas.org/issues/nuclear-weapons/status-world-nuclear-forces/>

23. Bank of Korea, "North Korea GDP related statistics," Accessed April 2020. [북한GDP관련통계 | 북한경제자료 | 연구자료 | 조사 · 연구 | 한국은행 홈페이지], *한국은행*. <https://www.bok.or.kr/portal/main/contents.do?menuNo=200091> (accessed May 15, 2021).
24. Jeremy Laurence and Danbee Moon, 'North Korea spends about a third of income on military: group', *Reuters*, Jan. 18, 2011. <https://www.reuters.com/article/us-korea-north-military-idUSTRE70H1BW20110118> (accessed May 15, 2021).
25. Bruce G Blair and Matthew A Brown, 'Nuclear Weapons Cost Study', *Global Zero*, Jun. 2011. Accessed: May 15, 2021. [Online]. Available: <https://www.globalzero.org/wp-content/uploads/2020/01/GZ-Weapons-Cost-Global-Study.pdf>
26. The currency conversion to USD was conducted on 7 May 2021. 1 KRW = .00089 USD.
27. Hans M. Kristensen and Matt Korda, 'Status of World Nuclear Forces', *Federation of American Scientists*, Mar. 2021. Accessed: May 15, 2021. [Online]. Available: <https://fas.org/issues/nuclear-weapons/status-world-nuclear-forces/>
28. Zia Mian, 'Assuring destruction forever: 2015 edition: Pakistan', *Reaching Critical Will*, Apr. 2015. <https://reachingcriticalwill.org/images/documents/Publications/modernization/pakistan-2015.pdf> (accessed May 15, 2021).
29. Shane Mason, 'Military Budgets in India and Pakistan: Trajectories, Priorities, and Risks • Stimson Center', *Stimson Center*, Oct. 25, 2016. <https://www.stimson.org/2016/military-budgets-india-and-pakistan-trajectories-priorities-and-risks-0/> (accessed May 15, 2021).
30. Diego Lopes da Silva, Nan Tian and Alexandra Marksteiner, 'Trends in World Military Expenditure, 2020', *Stockholm International Peace Research Institute*, Apr. 2021. Accessed: May 15, 2021. [Online]. Available: https://www.sipri.org/sites/default/files/2021-04/fs_2104_milex_0.pdf
31. Hans M. Kristensen and Matt Korda, 'Status of World Nuclear Forces', *Federation of American Scientists*, Mar. 2021. Accessed: May 15, 2021. [Online]. Available: <https://fas.org/issues/nuclear-weapons/status-world-nuclear-forces/>
32. Julian Cooper, 'How much does Russia spend on nuclear weapons?', *Stockholm International Peace Research Institute*, Oct. 01, 2018. <https://www.sipri.org/commentary/topical-backgrounders/2018/how-much-does-russia-spend-nuclear-weapons> (accessed May 15, 2021).
33. Diego Lopes da Silva, Nan Tian and Alexandra Marksteiner, 'Trends in World Military Expenditure, 2020', *Stockholm International Peace Research Institute*, Apr. 2021. Accessed: May 15, 2021. [Online]. Available: https://www.sipri.org/sites/default/files/2021-04/fs_2104_milex_0.pdf
34. Hans M. Kristensen and Matt Korda, 'United Kingdom nuclear weapons, 2021', *Bulletin of the Atomic Scientists*, May 2021. Accessed: May 17, 2021. [Online]. Available: <https://www.tandfonline.com/doi/pdf/10.1080/00963402.2021.1912309?needAccess=true>
35. Campaign for Nuclear Disarmament, '£205 billion: the cost of Trident -'. <https://cnduk.org/resources/205-billion-cost-trident/> (accessed May 15, 2021).
36. David Cullen, 'Trouble Ahead: Risks and Rising Costs in the UK Nuclear Weapons Programme', Apr. 29, 2019. <https://www.nuclearinfo.org/wp-content/uploads/2020/09/Trouble-Ahead-low-resolution-version.pdf> (accessed May 15, 2021).
37. National Audit Office, 'The Defence Nuclear Enterprise: a landscape review - National Audit Office (NAO) Report', *National Audit Office*, May 22, 2018. <https://www.nao.org.uk/wp-content/uploads/2018/05/The-Defence-Nuclear-Enterprise-a-landscape-review.pdf> (accessed May 15, 2021).
38. The NAO report does not disaggregate the costs for missiles and warheads. It does note that the UK contributes £12 million annually to maintain the missile storage facility.
39. The Astute- and MUFC- class submarines are not nuclear-capable delivery systems, although they play a supporting role for nuclear-capable submarines. See: Cullen, Trouble Ahead.
40. Ministry of Defence, 'MoD Government Major Projects Portfolio data, 2019', *GOV.UK*, Jul. 18, 2019. <https://www.gov.uk/government/publications/mod-government-major-projects-portfolio-data-2019> (accessed May 15, 2021).
41. All currency conversions to USD were conducted on 6 May 2021 when 1 pound = 1.39 USD.
42. Diego Lopes da Silva, Nan Tian and Alexandra Marksteiner, 'Trends in World Military Expenditure, 2020', *Stockholm International Peace Research Institute*, Apr. 2021. Accessed: May 15, 2021. [Online]. Available: https://www.sipri.org/sites/default/files/2021-04/fs_2104_milex_0.pdf
43. The 2019 edition of this report incorrectly stated that the UK planned to spend £2 billion in operating costs in addition to the amount spent building its nuclear weapon programs in 2019. In fact, the £2 billion was already included in the overall nuclear cost estimate. Therefore, this year's calculation is lower than the one that appeared in the report last year, but the 2019 estimate that appears in this report has been corrected accordingly to follow the same methodology as the updated calculation.
44. Hans M. Kristensen and Matt Korda, 'Status of World Nuclear Forces', *Federation of American Scientists*, Mar. 2021. Accessed: May 15, 2021. [Online]. Available: <https://fas.org/issues/nuclear-weapons/status-world-nuclear-forces/>
45. A more expansive cost estimate for annual U.S. nuclear spending, encompassing costs not included in this report's methodology such as environmental nuclear weapon clean-up costs for example, is calculated by Physicians for Social Responsibility – Los Angeles. See the FY2021 cost estimate (updated annually) here: <https://www.psr-la.org/nuclear-costs>.
46. National Nuclear Security Administration, 'Federal Salaries and Expenses Weapons Activities Defense Nuclear Nonproliferation Naval Reactors'. Office of Chief Financial Officer, Feb. 2020. Accessed: May 15, 2021. [Online]. Available: https://www.energy.gov/sites/default/files/2020/03/f72/doe-fy2021-budget-volume-1_2.pdf

47. Kingston Reif with Alicia Sanders-Zakre, 'U.S. Nuclear Excess: Understanding the Costs, Risks, and Alternatives', Arms Control Association, Apr. 2019. Accessed: May 15, 2021. [Online]. Available: https://www.armscontrol.org/sites/default/files/files/Reports/Report_NuclearExcess2019_update0410.pdf

48. Diego Lopes da Silva, Nan Tian and Alexandra Marksteiner, 'Trends in World Military Expenditure, 2020', Stockholm International Peace Research Institute, Apr. 2021. Accessed: May 15, 2021. [Online]. Available: https://www.sipri.org/sites/default/files/2021-04/fs_2104_milex_0.pdf

49. Aerojet Rocketdyne Holdings, Inc, '2021 Proxy Statement'. Mar. 19, 2021. Accessed: May 13, 2021. [Online]. Available: <https://ir.aerocketrocketdyne.com/static-files/9a1d81ea-3edb-4172-aabc-4a3723643ceb>

50. Aerojet Rocketdyne Holdings, Inc, '2021 Proxy Statement'. Mar. 19, 2021. Accessed: May 13, 2021. [Online]. Available: <https://ir.aerocketrocketdyne.com/static-files/9a1d81ea-3edb-4172-aabc-4a3723643ceb>

51. Aerojet Rocketdyne, 'Ground Based Strategic Deterrent (GBSD) | Aerojet Rocketdyne'. <https://www.rocket.com/defense/ground-based-strategic-deterrent-gbsd> (accessed May 15, 2021).

52. United States Senate, 'Lobbying Disclosure Act (LDA) Reports'. <https://lda.senate.gov/system/public/> (accessed May 15, 2021).

53. Airbus, 'Universal Registration Document 2020'. Mar. 26, 2021. Accessed: May 13, 2021. [Online]. Available: https://www.airbus.com/content/dam/corporate-topics/financial-and-company-information/AIRBUS-URD_2020_EV_2021_03_26_MEL.pdf

54. Airbus, 'Responsibility Made by Airbus Group', Airbus, 2014. [Online]. Available: <https://www.airbus.com/content/dam/corporate-topics/financial-and-company-information/airbus-group-crs-2014.pdf>

55. Florence Parly, Ministre des Armées, 'Extrait Du Bleu Budgétaire De La Mission'. Ministère de Finances et des Comptes Publics, Oct. 02, 2018. [Online]. Available: <https://www.performance-publique.budget.gouv.fr/sites/performance-publique/files/farandole/ressources/2019/pap/pdf/DBGPGMPGM146.pdf>; Airbus, "Generic Supply-Chain and Quality Requirements for Suppliers", Airbus DS Company Directive TT.GOV.D)&, Issue 3. 8 March 2019, available: <https://www.airbus.com/content/dam/corporate-topics/publications/suppliers/TT.GOV.D070.pdf>. Viewed February 2020; Pascal Rabiller, 'Gilles Fonblanc pilote le décollage d'ArianeGroup en Aquitaine', SudOuest.fr, Jul. 03, 2017. <https://www.sudouest.fr/2017/06/30/gilles-fonblanc-pilote-le-decollage-d-arianegroup-en-aquitaine-3578863-6099.php> (accessed May 15, 2021).

56. MBDA Systems, 'About Us', MBDA. <https://www.mbdasystems.com/about-us/> (accessed May 15, 2021).

57. Airbus, 'Financial Results & Annual Reports', Feb. 2021. Accessed: May 15, 2021. [Online]. Available: <https://www.airbus.com/content/dam/corporate-topics/financial-and-company-information/Full%20-Report-Airbus-SE-Annual-Report-2020.pdf>

58. 'PRÉSENTATION PAR ACTION ET TITRE DES CRÉDITS DEMANDÉS', 2020. <https://www.performance-publique.budget.gouv.fr/sites/performance-publique/files/farandole/ressources/2020/pap/html/DBGPGMPRESCREDPGM146.htm> (accessed May 15, 2021).

59. MBDA, 'MBDA: Resilience and innovation for growth', Newsroom MBDA, Mar. 31, 2021. <https://newsroom.mbdasystems.com/mbda-resilience-and-innovation-for-growth/> (accessed Apr. 22, 2021).

60. ArianeGroup, 'ArianeGroup signs contract with ESA to develop Themis reusable stage demonstrator', ArianeGroup, Dec. 15, 2020. <https://www.arianegroup/en/news/arianegroup-signs-contract-with-esa-to-develop-themis-reusable-stage-demonstrator/> (accessed May 15, 2021).

61. United States Senate, 'Lobbying Disclosure Act (LDA) Reports'. <https://lda.senate.gov/system/public/> (accessed May 15, 2021).

62. BAE Systems (2020) 'Annual Report 2020 BAE Systems plc'. Available at: https://investors.baesystems.com/~/_media/Files/B/Bae-Systems-Investor-Relations-V3/PDFs/results-and-reports/results/2021/bae-ar-complete-2020.pdf (Accessed: 13 May 2021).

63. Florence Parly, Ministre des Armées, 'Extrait Du Bleu Budgétaire De La Mission'. Ministère de Finances et des Comptes Publics, Oct. 02, 2018. [Online]. Available: <https://www.performance-publique.budget.gouv.fr/sites/performance-publique/files/farandole/ressources/2019/pap/pdf/DBGPGMPGM146.pdf>; Florence Parly, Ministre Des Armées, 'Extrait Du Bleu Budgétaire De La Mission : Défense'. Ministère de Finances et des Comptes Publics, Oct. 03, 2017. [Online]. Available: <https://www.performance-publique.budget.gouv.fr/sites/performance-publique/files/farandole/ressources/2018/pap/pdf/DBGPGMPGM146.pdf>

64. BAE Systems, 'Supporting the Air Force's Ground-Based Strategic Deterrent program', BAE Systems | International. /cs/

65. BAE Systems, 'Annual Report 2020 BAE Systems plc'. 2020. Accessed: May 13, 2021. [Online]. Available: https://investors.baesystems.com/~/_media/Files/B/Bae-Systems-Investor-Relations-V3/PDFs/results-and-reports/results/2021/bae-ar-complete-2020.pdf

66. MBDA, 'MBDA: Resilience and innovation for growth', Newsroom MBDA, Mar. 31, 2021. <https://newsroom.mbdasystems.com/mbda-resilience-and-innovation-for-growth/> (accessed Apr. 22, 2021).

67. United States Senate, 'Lobbying Disclosure Act (LDA) Reports'. <https://lda.senate.gov/system/public/> (accessed May 15, 2021).

68. Transparency International UK, 'Open Access UK: monitor lobbying meetings with Government', 2021. <https://openaccess.transparency.org.uk> (accessed May 15, 2021).

69. 'Office of the Registrar of Consultant Lobbyists'. <https://registrarofconsultantlobbyists.org.uk/> (accessed May 15, 2021).

70. 'Federal Contract Awards - GovTribe'. <https://govtribe.com/award/federal-contract-award?searchId=60783a0574fb432456285e95> (accessed May 15, 2021).

71. 'Definitive Contract DEAC5207NA27344 - GovTribe'. <https://govtribe.com/award/federal-contract-award/definitive-contract-deac5207na27344> (accessed May 15, 2021).

72. Amy F Woolf and James D Werner, 'The U.S. Nuclear Weapons Complex: Overview of Department of Energy Sites', Congressional Research Service, R45306, Mar. 2021. Accessed: Apr. 26, 2021. [Online]. Available: <https://crsreports.congress.gov/product/pdf/R/R45306>

73. Bechtel, 'Ensuring the future of America's nuclear security mission', Bechtel Corporate. <https://www.bechtel.com/projects/uranium-processing-facility/> (accessed May 15, 2021).

74. United States Senate, 'Lobbying Disclosure Act (LDA) Reports'. <https://lda.senate.gov/system/public/> (accessed May 15, 2021).

75. Boeing, '2021 Annual Meeting of Shareholders'. Mar. 05, 2021. Accessed: May 13, 2021. [Online]. Available: https://s2.q4cdn.com/661678649/files/doc_financials/2020/ar/Boeing-2021-Proxy-Statement.pdf

76. U.S. Department of Defense, 'Contracts for October 1, 2020', U.S. DEPARTMENT OF DEFENSE. <https://www.defense.gov/Newsroom/Contracts/Contract/Article/2369073/> (accessed May 15, 2021).

77. U.S. Department of Defense, 'Contracts for March 24, 2020', U.S. DEPARTMENT OF DEFENSE. <https://www.defense.gov/Newsroom/Contracts/Contract/Article/2123763/> (accessed May 15, 2021); U.S. Department of Defense, 'Contracts for September 22, 2020', U.S. DEPARTMENT OF DEFENSE. <https://www.defense.gov/Newsroom/Contracts/Contract/Article/2357052/> (accessed May 15, 2021).

78. U.S. Department of Defense, 'Contracts for June 12, 2020', U.S. DEPARTMENT OF DEFENSE. <https://www.defense.gov/Newsroom/Contracts/Contract/Article/2218996/> (accessed May 15, 2021).

79. United States Senate, 'Lobbying Disclosure Act (LDA) Reports'. <https://lda.senate.gov/system/public/> (accessed May 15, 2021).

80. CNIM, 'CNIM Group signs a memorandum of understanding setting out the terms of a financial restructuring agreement with the French State, its historical industrial partner Martin GmbH and its creditors and credit insurers'. Mar. 25, 2021. Accessed: May 15, 2021. [Online]. Available: <https://cnim.com/sites/default/files/media/Communiqu%C3%A9s%20financiers/2021-03-25-CNIM-Communiqu%C3%A9-EN.pdf>

81. CNIM, 'Regulated information'. Apr. 27, 2021. Accessed: May 15, 2021. [Online]. Available: <https://cnim.com/sites/default/files/media/Communiqu%C3%A9s%20financiers/2021-04-27-CNIM-Suspension%20cotation-cp-EN.pdf>

82. CNIM, 'Défense, sécurité et intelligence numérique'. <https://cnim.com/en/businesses/defense-security-and-digital-intelligence#deterrent-systems> (accessed Apr. 28, 2021).

83. Florence Parly, Ministre Des Armées, 'Extrait Du Bleu Budgétaire De La Mission: Défense'. Ministère de Finances et des Comptes Publics, Oct. 03, 2017. [Online]. Available: <https://www.performance-publique.budget.gouv.fr/sites/performance-publique/files/farandole/ressources/2019/pap/pdf/DBGPGMPGM146.pdf>

84. Constructions Industrielles De La Méditerranée, 'Financial Report for the six-month period ended JUNE 30, 2020', Jun. 2020. Accessed: Apr. 28, 2021. [Online]. Available: <https://cnim.com/sites/default/files/media/Communiqu%C3%A9s%20financiers/2020-06%20Rapport%20Financier%20semestriel%20complet-EN.pdf>

85. Draper, 'Trident II MARK 6 MOD 1 Guidance System'. <https://www.draper.com/explore-solutions/trident-ii-mark-6-mod-1-guidance-system> (accessed Apr. 28, 2021).

86. United States Senate, 'Lobbying Disclosure Act (LDA) Reports'. <https://lda.senate.gov/system/public/> (accessed May 15, 2021).

87. For more information about the connection between nuclear weapons and US universities, please see "Schools of Mass Destruction", <https://universities.icanw.org/>

88. Fluor Corporation (2021) 'Proxy Statement Pursuant to Section 14(a) of the Securities Exchange Act of 1934 for Fluor Corporation'. Page 52. Available at: <https://investor.fluor.com/static-files/e7c741ba-64bf-4343-9023-873aecf8e85f> (Accessed: 13 May 2021).

89. Woolf, A. F. and Werner, J. D. (2021) The U.S. Nuclear Weapons Complex: Overview of Department of Energy Sites. R45306. Congressional Research Service, p. 39. Available at: <https://crsreports.congress.gov/product/pdf/R/R45306> (Accessed: 26 April 2021).

90. United States Senate, 'Lobbying Disclosure Act (LDA) Reports'. <https://lda.senate.gov/system/public/> (accessed May 15, 2021).

91. General Dynamics, '2021 Notice of Annual Meeting of Shareholders and Proxy Statement'. Mar. 25, 2021. Accessed: May 13, 2021. [Online]. Available: https://s22.q4cdn.com/891946778/files/doc_financials/2020/ar/updated/General-Dynamics-Final-Proxy-Statement-Bookmarked.pdf

92. A. Mehta, 'Northrop teams with Lockheed on ICBM replacement. Here's who else is involved.', Defense News, Sep. 16, 2019. <https://www.defensenews.com/digital-show-dailies/afa-air-space/2019/09/16/northrop-teams-with-lockheed-on-icbm-replacement-heres-who-else-is-involved/> (accessed Apr. 28, 2021).

93. U.S. Department of Defense, 'Contracts for December 16, 2019', U.S. DEPARTMENT OF DEFENSE, Dec. 16, 2019. <https://www.defense.gov/Newsroom/Contracts/Contract/Article/2041268/> (accessed Apr. 28, 2021).

94. United States Senate, 'Lobbying Disclosure Act (LDA) Reports'. <https://lda.senate.gov/system/public/> (accessed May 15, 2021).

95. Honeywell, '2021 Proxy Statement'. Apr. 09, 2021. Accessed: May 13, 2021. [Online]. Available: https://s27.q4cdn.com/359586471/files/doc_downloads/proxy_materials/2021/HON-2021-Proxy.pdf

96. A. Mehta, 'Northrop teams with Lockheed on ICBM replacement. Here's who else is involved.', Defense News, Sep. 16, 2019. <https://www.defensenews.com/digital-show-dailies/afa-air-space/2019/09/16/northrop-teams-with-lockheed-on-icbm-replacement-heres-who-else-is-involved/> (accessed Apr. 28, 2021).

97. U. S. Department of Energy, 'Kansas City National Security Campus contract', Energy.gov. <https://www.energy.gov/nnsa/kansas-city-national-security-campus-contract> (accessed Apr. 28, 2021).

98. 'NNSA Awards Nevada National Security Site Management & Operating Contract to Mission Support and Test Services, LLC', Energy.gov, May 12, 2017. <https://www.energy.gov/nnsa/articles/nnsa-awards-nevada-national-security-site-management-operating-0> (accessed Apr. 28, 2021).

99. U. S. Department of Energy, 'NNSA Awards Sandia National Laboratories Management & Operating Contract to National Technology and Engineering Solutions of Sandia (NTES)', Energy.gov, Dec. 16, 2016. <https://www.energy.gov/nnsa/articles/nnsa-awards-sandia-national-laboratories-management-operating> (accessed Apr. 28, 2021).

100. United States Senate, 'Lobbying Disclosure Act (LDA) Reports'. <https://lda.senate.gov/system/public/> (accessed May 15, 2021).

101. Huntington Ingalls Industries, 'Notice of Annual Meeting and Proxy Statement'. Mar. 19, 2021. Accessed: May 13, 2021. [Online]. Available: <https://ir.huntingtoningalls.com/static-files/d4f79256-e9a1-4285-b571-b1834d4c08ed>

102. Huntington Ingalls Industries, 'Hard Stuff Done Right'. Mar. 19, 2021. Accessed: Apr. 29, 2021. [Online]. Available: <https://ir.huntingtoningalls.com/static-files/812a9b42-57d8-49b2-b23d-e097879741b5>

103. Huntington Ingalls Industries, 'Huntington Ingalls Industries Awarded Contract for Construction of First Two Columbia-Class Submarine Modules', Huntington Ingalls Newsroom, Nov. 23, 2020. <https://newsroom.huntingtoningalls.com/releases/huntington-ingalls-industries-awarded-contract-for-construction-of-first-two-columbia-class-submarine-modules> (accessed Apr. 29, 2021).

104. U.S. Department of Defense, 'Contracts for September 30, 2020', U.S. DEPARTMENT OF DEFENSE, Sep. 30, 2020. <https://www.defense.gov/Newsroom/Contracts/Contract/Article/2367105/> (accessed Apr. 29, 2021).

105. Huntington Ingalls Industries, 'Huntington Ingalls Industries Joint Venture Awarded Position on U.S. Department of Energy Contract', Huntington Ingalls Newsroom, Jul. 27, 2020. <https://newsroom.huntingtoningalls.com/releases/huntington-ingalls-industries-joint-venture-awarded-position-on-u-s-department-of-energy-contract> (accessed Apr. 29, 2021).

106. United States Senate, 'Lobbying Disclosure Act (LDA) Reports'. <https://lda.senate.gov/system/public/> (accessed May 15, 2021).

107. Jacobs, 'Schedule 14A Information Proxy Statement Pursuant to Section 14(a) of the Securities Exchange Act of 1934'. Accessed: May 13, 2021. [Online]. Available: <https://d18m0p25nwr6d.cloudfront.net/CIK-0000052988/6cbfdcdca-49b6-42b8-bcb7-d8232ca11848.pdf>

108. Ministry of Defence and Defence Nuclear Organisation, 'Atomic Weapons Establishment (AWE) Written Ministerial Statement', GOV.UK, Nov. 02, 2020. <https://www.gov.uk/government/news/atomic-weapons-establishment-awe-written-ministerial-statement> (accessed Apr. 29, 2021); George Allison, 'UK renationalises Atomic Weapons Establishment', UK Defence Journal, Nov. 02, 2020. <https://ukdefencejournal.org.uk/uk-renationalises-atomic-weapons-establishment/> (accessed Apr. 29, 2021).

109. United States Senate, 'Lobbying Disclosure Act (LDA) Reports'. <https://lda.senate.gov/system/public/> (accessed May 15, 2021).

110. Transparency International UK, 'Open Access UK: monitor lobbying meetings with Government', 2021. <https://openaccess.transparency.org.uk> (accessed May 15, 2021).

111. L3Harris, 'L3Harris 2021 Proxy Statement'. Mar. 11, 2021. Accessed: May 13, 2021. [Online]. Available: https://www.l3harris.com/sites/default/files/2021-03/L3Harris_2021_Proxy_Statement.pdf

112. Northrop Grumman, 'Partners Banner'. Accessed: May 04, 2021. [Online]. Available: https://www.northropgrumman.com/wp-content/uploads/GBSD-Partners_Banner_v3.pdf

113. GovTribe, 'Definitive Contract N0003018C0001', Jan. 13, 2021. <https://govtribe.com/award/federal-contract-award/definitive-contract-n0003018c0001> (accessed May 15, 2021).

114. United States Senate, 'Lobbying Disclosure Act (LDA) Reports'. <https://lda.senate.gov/system/public/> (accessed May 15, 2021).

115. Transparency International UK, 'Open Access UK: monitor lobbying meetings with Government', 2021. <https://openaccess.transparency.org.uk> (accessed May 15, 2021).

116. Leidos, 'Notice of Annual Meeting of Shareholders 2021 PROXY STATEMENT'. Mar. 19, 2021. Accessed: May 13, 2021. [Online]. Available: https://s22.q4cdn.com/107245822/files/doc_financials/2020/ar/Proxy-Statement.pdf

117. U. S. Department of Energy, 'NNSA Production Office contract', Energy.gov, Jun. 25, 2020. <https://www.energy.gov/nnsa/nnsa-production-office-contract> (accessed May 15, 2021).

118. GovTribe, 'Definitive Contract DENA0001942 - GovTribe', GovTribe, Apr. 29, 2021. <https://govtribe.com/award/federal-contract-award/definitive-contract-dena0001942> (accessed May 15, 2021).

119. Florence Parly, Ministre des Armées, 'Extrait Du Bleu Budgétaire De La Mission'. Ministère de Finances et des Comptes Publics, Oct. 02, 2018. [Online]. Available: https://www.performance-publique.budget.gouv.fr/sites/performance_publique/files/farandole/ressources/2019/pap/pdf/DBGPGMPGM146.pdf

120. Steve Trimble, 'Scramjet Will Power France's Next Nuclear Missile | Aviation Week Network', Aviation Week, Apr. 04, 2019. <https://aviationweek.com/defense-space/scramjet-will-power-frances-next-nuclear-missile> (accessed May 15, 2021).

121. MBDA, 'MBDA: Resilience and innovation for growth', Newsroom MBDA, Mar. 31, 2021. <https://newsroom.mbdasystems.com/mbda-resilience-and-innovation-for-growth/> (accessed Apr. 22, 2021).

122. United States Senate, 'Lobbying Disclosure Act (LDA) Reports'. <https://lda.senate.gov/system/public/> (accessed May 15, 2021).

123. Transparency International UK, 'Open Access UK: monitor lobbying meetings with Government', 2021. <https://openaccess.transparency.org.uk> (accessed May 15, 2021).

124. 'Haute Autorité'. <https://www.hatvp.fr/> (accessed May 15, 2021).

125. Lockheed Martin (2021) '2021 Proxy Statement & Notice of Annual Meeting of Stockholders'. p 75. Available at: <https://investors.lockheedmartin.com/static-files/eaf2fad3-e2ca-4b27-b8a1-30f56c8a0b60> (Accessed: 13 May 2021).

126. U.S. Department of Defense, 'Contracts for April 16, 2019', U.S. DEPARTMENT OF DEFENSE. <https://www.defense.gov/Newsroom/Contracts/Contract/Article/1815651/> (accessed May 15, 2021).

127. U.S. Department of Defense, 'Contracts for April 1, 2019', U.S. DEPARTMENT OF DEFENSE. <https://www.defense.gov/Newsroom/Contracts/Contract/Article/1802502/> (accessed May 15, 2021).

128. GovTribe, 'Definitive Contract N0003018C0023', GovTribe, Nov. 23, 2020. <https://govtribe.com/award/federal-contract-award/definitive-contract-n0003018c0023> (accessed May 15, 2021).

129. Ministry of Defence and Defence Nuclear Organisation, 'Atomic Weapons Establishment (AWE) Written Ministerial Statement', GOV.UK, Nov. 02, 2020. <https://www.gov.uk/government/news/atomic-weapons-establishment-awe-written-ministerial-statement> (accessed Apr. 29, 2021); George Allison, 'UK renationalises Atomic Weapons Establishment', UK Defence Journal, Nov. 02, 2020. <https://ukdefencejournal.org.uk/uk-renationalises-atomic-weapons-establishment/> (accessed Apr. 29, 2021).

130. United States Senate, 'Lobbying Disclosure Act (LDA) Reports'. <https://lda.senate.gov/system/public/> (accessed May 15, 2021).

131. Transparency International UK, 'Open Access UK: monitor lobbying meetings with Government', 2021. <https://openaccess.transparency.org.uk> (accessed May 15, 2021).

132. Northrop Grumman, '2021 Proxy Statement'. Apr. 02, 2021. Accessed: May 13, 2021. [Online]. Available: <https://www.northropgrumman.com/wp-content/uploads/2021-Proxy-Statement-Northrop-Grumman.pdf>

133. GovTribe, 'Delivery Order FA861614D6060-0005', GovTribe, Jan. 20, 2021. <https://govtribe.com/award/federal-contract-award/delivery-order-fa861614d6060-0005> (accessed May 15, 2021).

134. GovTribe, 'Definitive Contract DENA0001942', GovTribe, Apr. 29, 2021. <https://govtribe.com/award/federal-contract-award/definitive-contract-dena0001942> (accessed May 15, 2021).

135. U. S. Department of Energy, 'NNSA Awards Sandia National Laboratories Management & Operating Contract to National Technology and Engineering Solutions of Sandia (NTES)', Energy.gov, Dec. 16, 2016. <https://www.energy.gov/nnsa/articles/nnsa-awards-sandia-national-laboratories-management-operating> (accessed Apr. 28, 2021).

136. 'Definitive Contract N0003016C0010', GovTribe, Jan. 19, 2021. <https://govtribe.com/award/federal-contract-award/definitive-contract-n0003016c0010> (accessed May 15, 2021).

137. 'Contracts for September 29, 2020', U.S. DEPARTMENT OF DEFENSE, Sep. 29, 2020. <https://www.defense.gov/Newsroom/Contracts/Contract/Article/2365695/> (accessed Apr. 29, 2021).

138. S. Snyder, '\$13 Billion to Northrop Grumman for new US nukes – Don't Bank on the Bomb'. <https://www.dontbankonthebomb.com/13-billion-to-northrop-grumman-for-new-us-nukes/> (accessed May 15, 2021).

139. U.S. Department of Defense, 'Contracts for September 8, 2020', U.S. DEPARTMENT OF DEFENSE, Sep. 08, 2020. <https://www.defense.gov/Newsroom/Contracts/Contract/Article/2340084/> (accessed May 15, 2021).

140. Valerie Insinna, 'Northrop could get \$85 billion award to make next-gen ICBMs sooner than expected', Defense News, Apr. 20, 2020. <https://www.defensenews.com/space/2020/04/16/northrop-could-be-getting-an-85b-award-to-produce-next-gen-icbms-sooner-than-expected/> (accessed May 15, 2021).

141. United States Senate, 'Lobbying Disclosure Act (LDA) Reports'. <https://lda.senate.gov/system/public/> (accessed May 15, 2021).

142. Transparency International UK, 'Open Access UK: monitor lobbying meetings with Government', 2021. <https://openaccess.transparency.org.uk> (accessed May 15, 2021).

143. Raytheon Technologies, 'Notice of 2021 Annual Meeting of Shareowners and Proxy Statement'. Mar. 12, 2021. Accessed: May 13, 2021. [Online]. Available: <https://investors.rtx.com/static-files/dbeb1ec4-94ab-4993-ada9-b0f63daa855e>

144. 'United Technologies and Raytheon Complete Merger of Equals Transaction'. <https://www.rtx.com/news/2020/04/03/united-technologies-and-raytheon-complete-merger-of-equals-transaction> (accessed May 15, 2021).

145. V. Insinna, 'The Air Force made a surprise decision to sole-source the Long Range Standoff Weapon. Here's who will move forward.', Defense News, Apr. 21, 2020. <https://www.defensenews.com/smr/nuclear-arsenal/2020/04/20/the-air-force-made-a-surprise-decision-to-sole-source-the-long-range-standoff-weapon-heres-who-will-move-forward/> (accessed May 05, 2021).

146. Northrop Grumman, 'GBSD', Northrop Grumman. <https://www.northropgrumman.com/gbsd> (accessed May 04, 2021).

147. United States Senate, 'Lobbying Disclosure Act (LDA) Reports'. <https://lda.senate.gov/system/public/> (accessed May 15, 2021).

148. Transparency International UK, 'Open Access UK: monitor lobbying meetings with Government', 2021. <https://openaccess.transparency.org.uk> (accessed May 15, 2021).

149. 'Office of the Registrar of Consultant Lobbyists'. <https://registrarofconsultantlobbyists.org.uk/> (accessed May 15, 2021).

150. Terrington Management LLP, 'Who we are'. <https://terringtonmanagement.com/about/> (accessed May 15, 2021).

151. 'Haute Autorité'. <https://www.hatvp.fr/> (accessed May 15, 2021).

152. Safran, '2020 Universal Registration Document'. Apr. 11, 2021. Accessed: May 13, 2021. [Online]. Available: https://www.safran-group.com/file/download/opt_me_safr_deu_2020_production_uk_202104011830.pdf

153. Ministère des Armées, 'Le missile ASMPA', Mar. 24, 2016. <https://www.defense.gouv.fr/fre/dga/equipement/dissuasion/le-missile-asmpa> (accessed Apr. 15, 2021).

154. Florence Parly, Ministre des Armées, 'Extrait Du Bleu Budgétaire De La Mission'. Ministère de Finances et des Comptes Publics, Oct. 02, 2018. [Online]. Available: https://www.performance-publique.budget.gouv.fr/sites/performance_publique/files/farandole/ressources/2019/pap/pdf/DBGPGMPGM146.pdf

155. 'Roxel market segments: military propulsion systems, civil sector...', Roxel. <https://www.roxelgroup.com/en/market-segments/> (accessed May 15, 2021).

156. MBDA, 'MBDA: Resilience and innovation for growth', Newsroom MBDA, Mar. 31, 2021. <https://newsroom.mbdasystems.com/mbda-resilience-and-innovation-for-growth/> (accessed Apr. 22, 2021).

157. ArianeGroup, 'ArianeGroup signs contract with ESA to develop Themis reusable stage demonstrator', ArianeGroup, Dec. 15, 2020. <https://www.ariane.group/en/news/arianegroup-signs-contract-with-esa-to-develop-themis-reusable-stage-demonstrator/> (accessed May 15, 2021).

158. United States Senate, 'Lobbying Disclosure Act (LDA) Reports'. <https://lda.senate.gov/system/public/> (accessed May 15, 2021).

159. Transparency International UK, 'Open Access UK: monitor lobbying meetings with Government', 2021. <https://openaccess.transparency.org.uk> (accessed May 15, 2021).

160. 'Haute Autorité'. <https://www.hatvp.fr/> (accessed May 15, 2021).

161. Serco, 'Annual Report and Accounts 2020'. Feb. 24, 2021. Accessed: May 13, 2021. [Online]. Available: <https://www.serco.com/media/6077/serco-annual-report-accounts-2020.pdf>

162. Ministry of Defence and Defence Nuclear Organisation, 'Atomic Weapons Establishment (AWE) Written Ministerial Statement', GOV.UK, Nov. 02, 2020. <https://www.gov.uk/government/news/atomic-weapons-establishment-awe-written-ministerial-statement> (accessed Apr. 29, 2021); George Allison, 'UK renationalises Atomic Weapons Establishment', UK Defence Journal, Nov. 02, 2020. <https://ukdefencejournal.org.uk/uk-renationalises-atomic-weapons-establishment/> (accessed Apr. 29, 2021).

163. United States Senate, 'Lobbying Disclosure Act (LDA) Reports'. <https://lda.senate.gov/system/public/> (accessed May 15, 2021).

164. Transparency International UK, 'Open Access UK: monitor lobbying meetings with Government', 2021. <https://openaccess.transparency.org.uk> (accessed May 15, 2021).

165. Textron, 'Proxy Statement and Notice of Annual Meeting of Shareholders'. Mar. 2021. Accessed: May 13, 2021. [Online]. Available: <http://d18rnOp25nwr6d.cloudfront.net/CIK-0000217346/a3319861-001f-4665-b0e6-c8c1e0483651.pdf>

166. 'Contracts for February 25, 2019', U.S. DEPARTMENT OF DEFENSE. <https://www.defense.gov/Newsroom/Contracts/Contract/Article/1766751/> (accessed May 15, 2021).

167. A. Mehta, 'Northrop teams with Lockheed on ICBM replacement. Here's who else is involved.', Defense News, Sep. 16, 2019. <https://www.defensenews.com/digital-show-dailies/afa-air-space/2019/09/16/northrop-teams-with-lockheed-on-icbm-replacement-heres-who-else-is-involved/> (accessed Apr. 28, 2021).

168. 'Nuclear Deterrence', Atlantic Council. <https://www.atlanticcouncil.org/issue/nuclear-deterrence/> (accessed May 15, 2021).

169. Matthew Kroenig, Mark Massa, and Christian Trotti, 'Russia's exotic nuclear weapons and implications for the United States and NATO', Atlantic Council, Mar. 06, 2020. <https://www.atlanticcouncil.org/in-depth-research-reports/issue-brief/russias-exotic-nuclear-weapons-and-implications-for-the-united-states-and-nato/> (accessed May 15, 2021).

170. 'Shaping the Global Future Together', Atlantic Council, Annual Report, 2020. [Online]. Available: <https://www.atlanticcouncil.org/wp-content/uploads/2020/07/AC-Annual-Report-20192020.pdf>

171. Nate Van Duzer, 'Texas A&M University', ICAN, Nov. 2019. https://universities.icanw.org/texas_a_m (accessed May 15, 2021).

172. 'About the Arms Control and Non-Proliferation Initiative', Brookings, Jul. 28, 2016. <https://www.brookings.edu/about-acnpi/> (accessed May 15, 2021).

173. 'Brookings 2020 Annual Report', Brookings, Annual Report, 2020. [Online]. Available: <https://www.brookings.edu/wp-content/uploads/2020/12/2020-annual-report.pdf>

174. 'Nuclear Policy Program', Carnegie Endowment for International Peace, 2021. <https://carnegieendowment.org/programs/npp/> (accessed May 15, 2021).

175. '2021 Carnegie International Nuclear Policy Conference', Carnegie Endowment for International Peace. <https://carnegieendowment.org/2021/06/24/2021-carnegie-international-nuclear-policy-conference-event-7506> (accessed May 15, 2021).

176. '2020 Annual Report', Carnegie Endowment for International Peace, Annual Report. Accessed: May 15, 2021. [Online]. Available: https://ceipfiles.s3.amazonaws.com/pdf/2020_Annual+Report_final.pdf

177. Ilan Goldenberg, 'Returning to The Iran Nuclear Deal Is Essential for Biden's Foreign Policy Agenda', Apr. 09, 2021. <https://www.cnas.org/publications/podcast/returning-to-the-iran-nuclear-deal-is-essential-for-bidens-foreign-policy-agenda> (accessed May 15, 2021); 'The North Korea Threat', Center for a New American Security. <https://www.cnas.org/research/indo-pacific-security/north-korea> (accessed May 15, 2021).

178. 'CNAS Supporters', Center for a New American Security, 2021. <https://www.cnas.org/support-cnasa/cnas-supporters> (accessed May 15, 2021).

179. 'People', Center for a New American Security, 2021. <https://www.cnas.org/people> (accessed May 15, 2021).

180. 'People | Board of Directors', Center for a New American Security, 2021. <https://www.cnas.org/people> (accessed May 15, 2021).

181. 'Project on Nuclear Issues', Center for Strategic and International Studies, 2021. <https://www.csis.org/programs/international-security-program/project-nuclear-issues> (accessed May 15, 2021).

182. 'Weapons of Mass Destruction Proliferation', Center for Strategic and International Studies, 2021. <https://www.csis.org/topics/defense-and-security/weapons-mass-destruction-proliferation> (accessed May 15, 2021).

183. '2018/2019 Annual Report', Center for Strategic and International Studies, Annual Report, 2020. [Online]. Available: https://csis-website-prod.s3.amazonaws.com/s3fs-public/200420_AnnualReport_20182019.pdf?7.3dovSji8NKXD7xjIMK2EOApW7BqQx

184. '2018/2019 Annual Report', Center for Strategic and International Studies, Annual Report, 2020. [Online]. Available: https://csis-website-prod.s3.amazonaws.com/s3fs-public/200420_AnnualReport_20182019.pdf?7.3dovSji8NKXD7xjIMK2EOApW7BqQx

185. 'Dissuasion/Désarmement'. <https://www.frstrategie.org/competences/dissuasion-desarmement> (accessed May 15, 2021).

186. 'Presentation', Foundation for Strategic Research (FRS). <https://www.frstrategie.org/en/frs/presentation> (accessed May 15, 2021).

187. CEA, 'Defence and security', CEA/English Portal, Jun. 29, 2016. <https://www.cea.fr/english/Pages/research-areas/defence-and-security.aspx> (accessed May 15, 2021). 'Presentation', Foundation for Strategic Research (FRS). <https://www.frstrategie.org/en/frs/presentation> (accessed May 15, 2021).

188. 'Deterrence and Proliferation', IFRI - Institut français des relations internationales. <https://www.ifri.org/en/recherche/thematiques-transversales/securite-defense/dissuasion-proliferation> (accessed May 15, 2021).

189. '40 Ans de L'IFRI', French Institute of International Relations, Annual Report, 2019. Accessed: May 15, 2021. [Online]. Available: https://www.ifri.org/sites/default/files/atoms/files/ifri_annual_report_2019.pdf

190. '40 Ans de L'IFRI', French Institute of International Relations, Annual Report, 2019. Accessed: May 15, 2021. [Online]. Available: https://www.ifri.org/sites/default/files/atoms/files/ifri_annual_report_2019.pdf

191. 'Arms Control and Nonproliferation', Hudson Institute, 2021. <http://www.hudson.org/topics/106-arms-control-and-nonproliferation> (accessed May 15, 2021).

192. 'Hudson Institute Annual Report 2019', Hudson Institute, Annual Report, 2020. Accessed: May 15, 2021. [Online]. Available: <https://s3.amazonaws.com/media.hudson.org/Hudson%20AR%202019.FINAL-mediumres.pdf>

193. 'Non-Proliferation and Nuclear Policy', IISS. <https://www.iiss.org/people/non-proliferation-and-nuclear-policy> (accessed May 15, 2021).

194. 'Membership, Sponsorship and Royalties', IISS. <https://www.iiss.org/governance/funding---membership-sponsorship-and-royalties> (accessed May 15, 2021).

195. Currency conversions conducted on 3 May 2021.

196. 'The Advisory Council', IISS. <https://www.iiss.org/governance/the-advisory-council> (accessed May 15, 2021).

197. 'Nuclear and Space Studies', Observer Research Foundation (ORF). <https://www.orfonline.org/programme/strategic-studies/nuclear-and-space-studies/> (accessed May 15, 2021).

198. 'Declaration of Contributions', Observer Research Foundation (ORF). <https://www.orfonline.org/declaration-of-contributions/> (accessed May 15, 2021).

199. Currency conversion conducted on 3 May 2021.

200. 'Proliferation and Nuclear Policy', RUSI. <https://rusi.org/expertise/research/nuclear-proliferation> (accessed May 15, 2021).

201. 'Supporters of RUSI', RUSI. <https://rusi.org/inside-rusi/rusi-funding/supporters> (accessed May 15, 2021).

202. Currency conversion conducted on 3 May 2021.

203. 'Nonproliferation', Stimson Center. <https://www.stimson.org/nonproliferation/> (accessed May 15, 2021); Michael Krepon, 'Norms for Nuclear-Armed Rivals', Stimson Center, Feb. 08, 2021. <https://www.stimson.org/2021/norms-for-nuclear-armed-rivals/> (accessed May 15, 2021); 'Asia', Stimson Center. <https://www.stimson.org/asia/> (accessed May 15, 2021).

204. 'Funding Sources', Stimson Center. <https://www.stimson.org/about/transparency/funding-sources/> (accessed May 15, 2021).

205. 'Board of Directors', Stimson Center. <https://www.stimson.org/about/people/board-directors/> (accessed May 15, 2021).

206. 'The Environmental Legacy of Nuclear Weapons Production: Five Case Studies', ICAN, Apr. 22, 2020. https://www.icanw.org/the_environmental_legacy_of_nuclear_production_five_case_studies (accessed May 15, 2021); 'Around the World, Victim Assistance Comes Up Short', ICAN, Dec. 13, 2019. https://www.icanw.org/around_the_world_victim_assistance_comes_up_short (accessed May 15, 2021); See a U.S. estimate for FY2021 which does include some of these additional figures here: <https://www.psr-la.org/nuclear-costs>.

207. Bruce G Blair and Matthew A Brown, 'Nuclear Weapons Cost Study', Global Zero, Jun. 2011. Accessed: May 15, 2021. [Online]. Available: <https://www.globalzero.org/wp-content/uploads/2020/01/GZ-Weapons-Cost-Global-Study.pdf>

208. James McGann, '2019 Global Go To Think Tank Index Report', TTCSP Global Go To Think Tank Index Reports, Jun. 2020, [Online]. Available: https://repository.upenn.edu/think_tanks/17

