



# **ENOUGH IS ENOUGH: 2019 GLOBAL NUCLEAR WEAPONS SPENDING**



**ICAN**

2017  
NOBEL  
PEACE  
PRIZE

# Acknowledgements

ICAN would like to thank experts from the Carnegie Endowment for International Peace, Fudan University, the James Martin Center for Nonproliferation Studies at the Middlebury Institute of International Studies at Monterey, Harvard University, the Massachusetts Institute of Technology, Sciences Po, the United Nations Institute for Disarmament Research and Women Cross DMZ for reviewing the estimates and offering comments and critiques, in addition to the many ICAN partner organisations that provided research and insights.

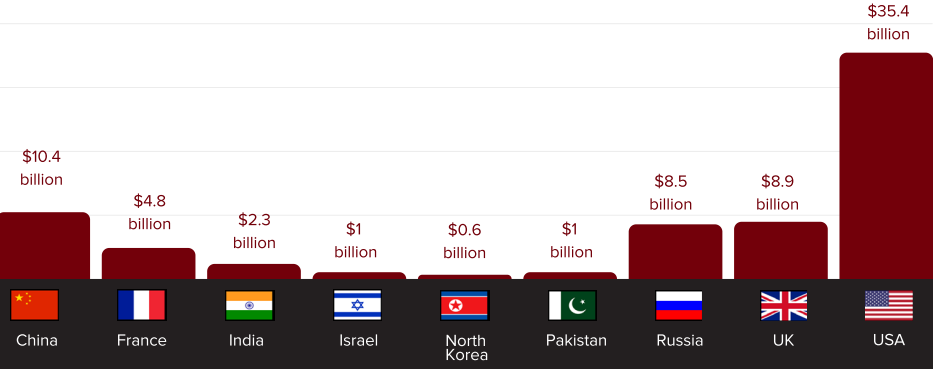
Published: May 2020

**Cover photo:** 2018 Moscow Victory Parade | Kremlin.ru | Wikimedia Commons CC BY 4.0

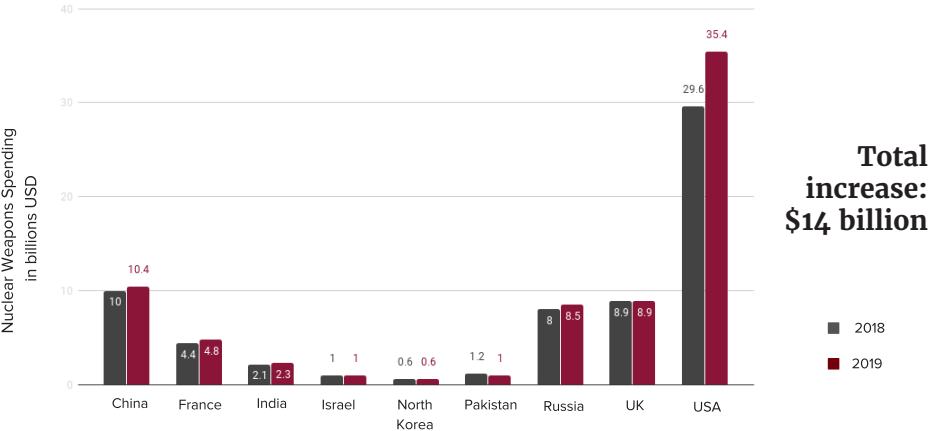
# Executive Summary

The International Campaign to Abolish Nuclear Weapons estimates that the nine nuclear-armed countries spent \$72.9 billion on their 13,000+ nuclear weapons in 2019, equalling \$138,699 every minute of 2019 on nuclear weapons, and a \$14 billion increase from 2018.

## Total 2019 spending: \$72.9 billion



In 2019, nuclear-armed states spent \$138,699 a minute on nuclear weapons.



# Introduction

These estimates (rounded to one decimal point) include nuclear warhead and nuclear-capable delivery systems operating costs and development where these expenditures are publically available and are based on a reasonable percentage of total military spending on nuclear weapons when more detailed budget data is not available. ICAN urges all nuclear-armed states to be transparent about nuclear weapons expenditures to allow for more accurate reporting on global nuclear expenditures and better government accountability.

Due to lack of reliable and consistent 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.<sup>1,2</sup> 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 arsenals was over 50% higher than just the cost of nuclear weapons system maintenance and development.<sup>3</sup>

The methodology and sources used to calculate each country’s spending on nuclear weapons in this report is outlined in the following section.



A Mark 7 Nuclear Bomb at the National Museum of the United States Air Force in Dayton, Ohio (USA). **Photo:** Chairboy | Wikimedia Commons CC BY SA 3.0

# Country-by-Country Methodology

## China: \$10.4 billion

China spent \$19,786  
every minute of  
2019 on nuclear  
weapons.



China has [320 nuclear weapons](#) and can launch nuclear weapons from land-based missiles, aircraft and submarines.<sup>4</sup>

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 total military spending on nuclear weapons based on a similar estimate in a [2019 Reaching Critical Will report](#) and in a [2011 Global Zero estimate](#).<sup>5,6</sup>

The Stockholm International Peace Research Institute (SIPRI) [estimated](#) that in 2019 China spent \$261.082 billion on military expenditures.<sup>7</sup> Four per cent of \$261.082 billion is \$10.4 billion, our estimate for Chinese nuclear spending in 2019. This means China spent \$19,786 every minute of 2019 on nuclear weapons. Based on this methodology, China spent \$10 billion in 2018 on nuclear weapons.

## France: \$4.8 billion

France spent \$9,132  
on nuclear weapons  
every minute in  
2019.



France has [290 nuclear weapons](#) and can launch nuclear weapons from aircraft and submarines.<sup>8</sup>

The [2019 French military programming law](#) allocated €4.45 billion for “dissuasion” or nuclear deterrence.<sup>9</sup> The law does not break down the costs within this line item, but does state that it includes the annual costs for French nuclear warheads, modernisation of its 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.<sup>10</sup> 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 the costs of the Rafale.

€4.45 billion converted to USD is \$4.8 billion\*. France spent roughly 15 per cent of its total military budget ([€30.249 billion](#)) on nuclear weapons in 2019.<sup>11</sup> This means France spent \$9,132 on nuclear weapons every minute in 2019. France spent [€4.04 billion](#) (\$4.4 billion) in 2018 on nuclear weapons.<sup>12</sup>

## India: \$2.3 billion

**India spent \$4,376  
every minute of  
2019 on nuclear  
weapons.**



India is estimated to have [150 nuclear weapons](#), can launch nuclear weapons from land-based missiles and likely from aircraft, and is developing a submarine-launched nuclear capability.<sup>13</sup>

While little is known about Indian nuclear weapon spending, a [October 2016 Stimson Center report](#) shed some light on Indian nuclear spending by looking at parliamentary oversight documents and creating a methodology to calculate annual spending on nuclear weapons.<sup>14</sup> 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 [2019-2020 DRDO budget](#) (19,021.02 crore Indian rupees) to get 8749.669 crore Indian rupees and doubling it to reach 17,499.3384 crore Indian rupees. A crore is 10 million, so 17,499 crore is 174.990 billion Indian rupees.<sup>15</sup> Converted into USD this total is \$2.3 billion, our estimate for Indian nuclear spending in 2019. This is roughly 3 percent of the \$71.125 billion India spent on its military in 2019. India spent \$4,376 every minute of 2019 on nuclear weapons. Based on this methodology, India spent \$2.1 billion in 2018 on nuclear weapons.

## Israel: \$1 billion

**Israel spent \$1,903  
every minute of  
2019 on nuclear  
weapons.**



Israel is estimated to have [90 nuclear weapons](#) and is believed to be able to launch nuclear weapons from land-based missiles, submarines and aircraft.<sup>16</sup>

There is no reliable public information about Israeli nuclear spending, given that it publicly denies possessing nuclear weapons. Therefore, ICAN used an average percentage (five per cent) of what nuclear-armed countries spend on nuclear weapons out of total military spending. The Stockholm International Peace Research Institute [estimated](#) that in 2019 Israel spent \$20.465 billion on its military.<sup>17</sup> Five percent of \$20.465

billion is 1 billion, our estimate for Israeli nuclear spending in 2019. This means Israel spent \$1,903 every minute on nuclear weapons in 2019. Based on this methodology, Israel spent \$1 billion in 2018 on nuclear weapons.

## North Korea: \$620 million

**North Korea spent  
\$1,180 every minute  
of 2019 on nuclear  
weapons.**



North Korea is estimated to have [35 nuclear weapons](#). It is developing nuclear-capable missiles which can be launched from the ground and nuclear-capable missiles that can be launched from submarines.<sup>18</sup>

There is very little public information about North Korean nuclear spending or military spending overall. South Korea annually estimates North Korean gross national income and it placed North Korea's 2018 GNI at [35.895 trillion Korean won](#).<sup>19</sup> North Korean military spending is very uncertain but in 2009 a South Korean think tank [estimated North Korea spent \\$8.77 billion](#)

[on its military](#), which represented about one-third (35%) of GNI at that time.<sup>20</sup> Assuming that North Korea continues to spend 35% of its GNI on its military, North Korea would have spent about 12.563 trillion Korean won on its military in 2018. [Global Zero estimated that in 2011](#) North Korea spent about six per cent of its military spending on its nuclear programme.<sup>21</sup>

Assuming that North Korea still spends six per cent of its annual military spending on nuclear weapons, North Korea would have spent about 753 billion Korean won on its nuclear programme in 2018. 753 billion Korean won is \$620 million\*, which is our estimate for 2019 North Korean nuclear spending. This means North Korea spent \$1,180 every minute on nuclear weapons in 2019. Based on this methodology, North Korea also spent about \$0.6 billion in 2018 on nuclear weapons.

## Pakistan: \$1 billion

**Pakistan spent  
\$1,903 on nuclear  
weapons every  
minute in 2019.**



Pakistan is estimated to have [160 nuclear weapons](#) and can launch them from land-based missiles and aircraft and is developing the ability to launch them from submarines.<sup>22</sup>

Analysts in the past decade have [estimated](#) that Pakistan spends about ten per cent of its total military spending on its nuclear arsenal, which appeared to be confirmed by a parliamentary report in 2016 [revealing](#) that Pakistan spent 9.8 per cent of its official military budget on nuclear weapons that year.<sup>23,24</sup>

Ten per cent of Pakistan's [2019 military spending](#) (\$10.256 billion) is \$1 billion, our estimate for Pakistani nuclear spending in 2019.<sup>25</sup> This means Pakistan spent \$1,903 spent every minute on nuclear weapons in 2019. Based on this methodology, Pakistan spent \$1.2 billion in 2018 on nuclear weapons.

## Russia: \$8.5 billion

Russia spent \$16,172 every minute of 2019 on nuclear weapons.



Russia has [6,370 nuclear weapons](#) which it can launch from land-based missiles, submarines and aircraft.<sup>26</sup>

A [2018 SIPRI report](#) found that Russian spending to maintain and develop new nuclear warheads and delivery systems has in recent years (in 2010 and 2016) cost about 13 per cent of total defence expenditures<sup>27</sup>. [SIPRI estimated](#) Russian nuclear spending at \$65.103 billion in 2019.<sup>28</sup> 13 per cent of \$65.103 billion is \$8.5 billion, our estimate for Russian nuclear spending in 2019. This means Russia spent \$16,172 every minute on nuclear weapons in 2019.

Based on this methodology, Russia spent \$8 billion in 2018 on nuclear weapons.

## United Kingdom: \$8.9 billion

The UK spent \$16,933 every minute of 2019 on nuclear weapons.



The United Kingdom has [195 nuclear weapons](#) which it can launch from submarines.<sup>29</sup> It cooperates closely with the United States to produce its nuclear warheads and loans its Trident II (D-5) submarine-launched ballistic missiles from the United States. Its primary nuclear weapon costs, therefore, consist of nuclear operating costs and the development of the Dreadnought-class submarine to replace its current Vanguard-class nuclear submarine. A [2016 Campaign for Nuclear Disarmament report](#) calculated that the overall cost to replace the UK nuclear submarine programme will be £205 billion.<sup>30</sup>

A [2018 BASIC report](#) calculated that annual UK nuclear operating costs are £2 billion and reported that the United Kingdom is scheduled to spend £5.2 billion on its Dreadnought development programme from 2018-2019.<sup>31</sup> The Dreadnought programme costs [include](#) £1.8 billion for the submarines, £1.4 billion for the missiles and warheads, £790 million for propulsion systems and £220 million in management costs.<sup>32</sup> There is little public information about what is included in £2 billion operating costs for the UK nuclear arsenal.

Adding those two components together leads to an estimated £7.2 billion spent on nuclear weapons in the United Kingdom in 2019, or \$8.9 billion.<sup>33</sup> £7.2 billion is 19 per cent of 2019 United Kingdom defence spending, estimated at [£38.093 billion](#). This means the United Kingdom spent \$16,933 every minute on nuclear weapons in 2019. Based on this methodology, the UK also spent about \$8.9 billion in 2018 on nuclear weapons.



## United States: \$35.4 billion

**The US spent  
\$67,352 on nuclear  
weapons every  
minute in 2019.**



The United States has [5,800 nuclear weapons](#) which it can launch from land-based missiles, submarines and aircraft.<sup>34</sup>

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 and dismantlement of the nuclear warheads themselves, 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 Department of Defense and NNSA enacted funding for nuclear weapons in 2019. NNSA [spent \\$11.1 billion](#) in 2019 on weapons activities.<sup>35</sup> The Defense Department [requested \\$24 billion](#) for nuclear weapons systems in fiscal year 2019, including \$11 billion for nuclear force sustainment and operations, \$7 billion for replacement programs, and \$6 billion for nuclear command, control, and communications.<sup>36</sup> Congress [added another \\$319 million](#) to the Defense Department's request in the 2019 National Defense Authorization Act, bringing enacted Defense Department spending on nuclear weapons to \$24.3 billion.<sup>37</sup>

Adding \$11.1 billion to \$24.3 billion results in a total of \$35.4 billion spent on nuclear weapons in the United States in 2019. This is roughly five per cent of [total U.S. military spending in 2019](#).<sup>38</sup>

The United States spent \$67,352 every minute of 2019 on nuclear weapons. The United States spent \$29.6 billion in 2018 on nuclear weapons, [\\$19 billion](#) requested for the Department of Defense and [\\$10.6 billion enacted](#) for the NNSA.<sup>3940</sup>

# Conclusion

The nuclear-armed states spent nearly three-quarters of one hundred billion dollars in 2019 on building and maintaining nuclear warheads and delivery systems. The incalculable human and environmental costs of nuclear weapons only add to this shocking figure. From 2018 to 2019, there was an estimated \$14 billion increase in nuclear weapon spending, and these totals will only continue to rise in the next decade according to documented nuclear weapon programmes and budgets in several nuclear-armed countries.

Nuclear weapon spending is always a choice, and an opportunity cost. Will citizens and leaders choose to continue to throw away \$73 billion on nuclear weapons, or will they join the majority of the world's countries in choosing to ban these weapons of mass destruction all together?



A homeless man in Seattle, USA with a sign saying "Anything helps - Hungry - God Bless". Reminiscent of the Pope's 2019 Easter Blessings "Humanity needs bread, not bomb."

**Photo:** Steve Knutson, 2018 | Published on [Unsplash](#)

# Endnotes

- 1 ICAN, "The Environmental Legacy of Nuclear Weapons Production: Five Case Studies," 22 April 2020.
- 2 ICAN, "Around the World Victim Assistance Comes Up Short," 13 December 2019.
- 3 Bruce Blair and Matthew Brown, "Nuclear Weapons Cost Study," Global Zero, June 2011.
- 4 Hans Kristensen and Matt Korda, "Status of World Nuclear Forces," Federation of American Scientists, April 2020.
- 5 Hui Zhang with Allison Pytlak, "China," *Assuring Destruction Forever: 2019 Edition*, Women's International League for Peace and Freedom, April 2019.
- 6 Blair and Brown, "Nuclear Weapons Cost Study."
- 7 Stockholm International Peace Research Institute, "SIPRI Military Expenditure Database," April 2020.
- 8 Kristensen and Korda, "Status of World Nuclear Forces."
- 9 Ministère des Arms, "Project de loi de Finances 2019," September 2018
- 10 Ministère des Arms, "Project de loi de Finances 2018," September 2017
- 11 Stockholm International Peace Research Institute, "SIPRI Military Expenditure Database."
- 12 Ministère des Arms, "Project de loi de Finances 2018," September 2017
- 13 Kristensen and Korda, "Status of World Nuclear Forces."
- 14 Shane Mason, *Military Budgets in India and Pakistan*, Stimson Center, October 2016.
- 15 "Steady rise in budget allocation for DRDO," Outlook Magazine, 27 November 2019.
- 16 Kristensen and Korda, "Status of World Nuclear Forces."
- 17 Stockholm International Peace Research Institute, "SIPRI Military Expenditure Database."
- 18 Kristensen and Korda, "Status of World Nuclear Forces."
- 19 Bank of Korea, "North Korea GDP related statistics," Accessed April 2020.
- 20 Jeremy Laurence and Danbee Moon, "North Korea spends about a third of income on military: group," Reuters, 18 January 2011.
- 21 Blair and Brown, "Nuclear Weapons Cost Study."
- 22 Kristensen and Korda, "Status of World Nuclear Forces."
- 23 Zia Mian, "Pakistan," *Assuring Destruction Forever: 2015 Edition*, Women's International League for Peace and Freedom, April 2015.
- 24 Mason, *Military Budgets in India and Pakistan*.
- 25 Stockholm International Peace Research Institute, "SIPRI Military Expenditure Database."
- 26 Kristensen and Korda, "Status of World Nuclear Forces."
- 27 Julian Cooper, "How much does Russia spend on nuclear weapons?" Stockholm International Peace Research Institute, 1 October 2018.
- 28 Stockholm International Peace Research Institute, "SIPRI Military Expenditure Database."
- 29 Kristensen and Korda, "Status of World Nuclear Forces."
- 30 Campaign for Nuclear Disarmament, "The costs of replacing Trident," 2016.
- 31 Ian Davis, "How much does the UK spend on nuclear weapons?" BASIC, November 2018.
- 32 National Audit Office, *The Defence Nuclear Enterprise: a landscape review*, 22 May 2018.
- 33 Stockholm International Peace Research Institute, "SIPRI Military Expenditure Database."
- 34 Kristensen and Korda, "Status of World Nuclear Forces."
- 35 Amy Woolf, *Energy and Water Development Appropriations: Nuclear Weapons Activities*, Congressional Research Service, Updated 6 April 2020.
- 36 Kingston Reif, *U.S. Nuclear Excess: Understanding the Costs, Risks and Alternatives*, Arms Control Association, April 2019.
- 37 Ibid.
- 38 Stockholm International Peace Research Institute, "SIPRI Military Expenditure Database."
- 39 Reif, *U.S. Nuclear Excess: Understanding the Costs, Risks and Alternatives*.
- 40 Woolf, *Energy and Water Development Appropriations: Nuclear Weapons Activities*.

## About ICAN and the Author

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 500 partner organisations in over 100 countries. More information about ICAN can be found at [www.icanw.org](http://www.icanw.org).

ICAN Policy and Research Coordinator Alicia Sanders-Zakre was the primary author of this report. She directs 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. She can be reached with any comments or questions at [alicia@icanw.org](mailto:alicia@icanw.org).

## About the UN 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 will enter into force once 50 countries ratify or accede to it.