

Nuclear Notebook: How many nuclear weapons does Pakistan have in 2021?

Thursday 9 September 2021, by [KORDA Matt](#), [KRISTENSEN Hans M.](#) (Date first published: 7 September 2021).

Editor's note: The Nuclear Notebook is researched and written by Hans M. Kristensen, director of the Nuclear Information Project with the Federation of American Scientists, and Matt Korda, a research associate with the project. The Nuclear Notebook column has been published in the Bulletin of the Atomic Scientists since 1987. This issue's column examines Pakistan's nuclear arsenal, which may include approximately 165 warheads. The authors estimate that the country's stockpile could realistically grow to around 200 by 2025, if the current trend continues. To see all previous Nuclear Notebook columns, click [here](#).

Contents

- [Pakistan's nuclear posture](#)
- [The nuclear weapons production](#)
- [Nuclear-capable aircraft](#)
- [Land-based ballistic missiles](#)
- [.](#)

AFP. 2018. "Thrifty at 50: Pakistan keeps ageing Mirages flying." *France 24*, April 29. <<https://www.france24.com/en/20180429-thrifty-50-pakistan-keeps-ageing-mirages-flying>>.

Albright, D., S. Burkhard, C. Chopin, and F. Pabian. 2018. *New Thermal Power Estimates of the Khushab Nuclear Reactors*, Institute for Science and International Security, May 23.

Available at:

<http://isis-online.org/isis-reports/detail/new-thermal-power-estimates-of-the-khushab-nuclear-reactors/12> [[Google Scholar](#)]

Albright, D., S. Burkhard, and F. Pabian. 2018. *Pakistan's Growing Uranium Enrichment Program*, Institute for Science and International Security, May 30. Available at:

<http://isis-online.org/isis-reports/detail/pakistans-growing-uranium-enrichment-program/12> [[Google Scholar](#)]

Albright, D., and S. Kelleher-Vergantini. 2015. *Pakistan's Chashma Plutonium Separation Plant: Possibly Operational*, Institute for Science and International Security, February 20.

Available at:

http://isis-online.org/uploads/isis-reports/documents/Chashma_February_20_2015_Final.pdf [[Google Scholar](#)]

Ansari, U. 2013. "Despite Missile Integration, Nuke Role Unlikely for Pakistan's JF-17." *Defense News*, February 7. [[Google Scholar](#)]

Associated Press. 1989. "Pakistani Jets Said to be Nuclear-Capable." [[Google Scholar](#)]

Boucher, R. A. 2007. "Assistant Secretary of State for South and Central Asian Affairs,

Testimony before Senate Foreign Relations Committee." In *U.S. Foreign Assistance to Pakistan* (U.S. Government Printing Office: December 6, 2007), 31. [[Google Scholar](#)]

Burkhard, S., A. Lach, and F. Pabian. 2017. "Khushab Update." Institute for Science and International Security, September 7. Available at: http://isis-online.org/uploads/isis-reports/documents/Khushab_Update_September_2017.pdf [[Google Scholar](#)]

Carnegie Endowment for International Peace. 2015. "A Conversation With Gen. Khalid Kidwai." Carnegie International Nuclear Policy Conference 2015. Transcript. March 23, pp. 4-5. Available at: <http://carnegieendowment.org/files/03-230315carnegieKIDWAI.pdf> [[Google Scholar](#)]

Cirincione, J., J. B. Wolfsthal, and M. Rajkumar. 2005. *Deadly Arsenal: Nuclear, Biological, and Chemical Threats*. 2nd ed. Washington, D.C.: Carnegie Endowment for International Peace. [[Google Scholar](#)]

Coats, D. R. 2019. *Worldwide Threat Assessment of the U.S. Intelligence Community*, Director of National Intelligence. January 29. <<https://www.dni.gov/files/ODNI/documents/2019-ATA-SFR—SSCI.pdf>>.

Dalton, T., and M. Krepon. 2015. *A Normal Nuclear Pakistan*, Carnegie Endowment for International Peace/Stimson Center, August. Available at: <http://www.stimson.org/sites/default/files/file-attachments/NormalNuclearPakistan.pdf> [[Google Scholar](#)]

Dawn. 2017. "Rare Light Shone on Full Spectrum Deterrence Policy." December 7. Available at: <https://www.dawn.com/news/1375079/rare-light-shone-on-full-spectrum-deterrence-policy> [[Google Scholar](#)]

Economic Times. 2016. "US Expresses Concern over Pakistan's Deployment of Nuclear Weapons." March 19. Available at: <https://economictimes.indiatimes.com/news/defence/us-expresses-concerns-over-pakistans-deployment-of-nuclear-weapons/articleshow/51465040.cms> [[Google Scholar](#)]

Economic Times. 2017a. "US Worried Pakistan's Nuclear-weapons could land up in Terrorists' Hands: Official." August 25. <https://economictimes.indiatimes.com/news/defence/us-worried-pakistans-nuclear-weapons-could-land-up-in-terrorists-hands-official/articleshow/60220358.cms> [[Google Scholar](#)]

Economic Times. 2017b. "Pakistan made 'counterproductive' moves risking nuke war: Joe Biden." January 13. <<https://economictimes.indiatimes.com/news/defence/pakistan-made-counterproductive-moves-risking-nuke-war-joe-biden/articleshow/56519361.cms?from=mdr>>.

[RELATED: Watch now—The UK's new nuclear posture: What it means for the global nuclear order](#)

FAS. 2000a. "Rawalpindi/Nilhore, PINSTECH/New Labs." *Federation of American Scientists*, March 18. Available at: <https://fas.org/nuke/guide/pakistan/facility/rawalpindi.htm> [[Google Scholar](#)]

FAS. 2000b. "Khushab/Khusab." *Federation of American Scientists*, March 15. Available at:

<https://fas.org/nuke/guide/pakistan/facility/khushab.htm> [Google Scholar]

Fisher, R. 2016. "JF-17 Block II Advances with New Refuelling Probe." *Jane's Defence Weekly*, January 27.

<<http://www.janes.com/article/57508/jf-17-block-ii-advances-with-new-refuelling-probe>>.

Gady, Franz-Stefan. 2020. "Pakistan Air Force to Take Delivery of First 12 JF-17B Fighters 'in Near Future.'" *The Diplomat*, February 5.

<<https://thediplomat.com/2020/02/pakistan-air-force-to-take-delivery-of-first-12-jf-17b-fighters-in-near-future/>>.

Gordon, M. 1989. "German Concern Said to Aid Pakistan A-Weapons." *New York Times*, January 29. Available at:

<https://www.nytimes.com/1989/01/29/world/german-concern-said-to-aid-pakistan-a-weapons.html> [Google Scholar]

Government of Pakistan. 2014-2015. Ministry of Defence Production, *Yearbook 2014-2015*, p. 12. Available at: <http://202.83.164.29/modp/userfiles1/file/Year%20Book%202014-15.pdf>

[Google Scholar]

Gul, A. 2014. "As Pakistan Expands Nuclear Program, China Seen as Most Reliable Partner." *Voice of America*. May 12. Available at:

<https://www.voanews.com/a/as-pakistan-expands-nuclear-program-china-seen-as-most-reliable-partner/1912529.html> [Google Scholar]

Gupta, S. 2020. "Pakistan's effort to launch 750km range missile crashes." *Hindustan Times*, March 23.

<<https://www.hindustantimes.com/india-news/pakistan-s-effort-to-launch-750km-range-missile-crashes/story-UT5CbOR3K0uVojmiOYoKjO.html>>.

Hyatt, N. and S. Burkhard. 2020. "New Extension to the Chashma Plutonium Separation Facility." *Institute for Science and International Security*, November 30.

<https://isis-online.org/uploads/isis-reports/documents/Extension_to_the_Chashma_plutonium_separation_facility_Nov30_2020_FINAL.pdf>.

India Today. 2015. "We have Low-yield N-weapons to Ward off India's War Threat: Pakistan." October 20. Available at: <http://indiatoday.intoday.in/articlePrint.jsp?aid=503185> [Google Scholar]

[Google Scholar]

International Panel on Fissile Materials. 2015. *Global Fissile Material Report 2015*. Available at: <http://fissilematerials.org/library/gfmr15.pdf> [Google Scholar]

International Panel on Fissile Materials. 2021. "Pakistan." April 29.

<<http://fissilematerials.org/countries/pakistan.html>>.

ISPR. 2011a. Press release No. PR40/2011-ISPR, February 10.

<https://www.ispr.gov.pk/press-release-detail.php?id=1666> [Google Scholar]

ISPR. 2011b. Press release No. PR94/2011-ISPR, April 19.

<https://www.ispr.gov.pk/press-release-detail.php?id=1721> [Google Scholar]

ISPR. 2011c. Press release No. PR104/2011-ISPR, April 29.

<https://www.ispr.gov.pk/press-release-detail.php?id=1732> [Google Scholar]

ISPR. 2012a. Press Release PR143/2012-ISPR, June 5.

<https://www.ispr.gov.pk/press-release-detail.php?id=2088> [Google Scholar]

ISPR. 2012b. Press release PR204/2012-ISPR, September 17.

<https://www.ispr.gov.pk/press-release-detail.php?id=2150> [Google Scholar]

ISPR. 2012c. Press release PR122/2012-ISPR, May 19.

<https://www.ispr.gov.pk/press-release-detail.php?id=2067> [Google Scholar]

ISPR. 2013a. Press Release No PR20/2013ISPR, February 15.

<https://www.ispr.gov.pk/press-release-detail.php?id=2242> Available at [Google Scholar]

ISPR. 2014a. Press release No. PR98/2014-ISPR, May 8.

https://www.ispr.gov.pk/front/main.asp?o=t-press_release&date=2014/5/8 [Google Scholar]

ISPR. 2014b. Press release No. PR248/2014-ISPR, November 13.

<https://www.ispr.gov.pk/press-release-detail.php?id=2701> [Google Scholar]

ISPR. 2015a. Press release No. PR92/2014-ISPR, April 15.

<https://www.ispr.gov.pk/press-release-detail.php?id=2835> [Google Scholar]

ISPR. 2015b. Press Release No PR382/2015/ISPR, December 15.

<https://www.ispr.gov.pk/press-release-detail.php?id=3129> [Google Scholar]

ISPR. 2016a. Press release No. PR16/2016-ISPR, January 19.

<https://www.ispr.gov.pk/press-release-detail.php?id=3163> [Google Scholar]

ISPR. 2016b. Press Release No. PR482/2016-ISPR, December 14. Available at:

<https://www.ispr.gov.pk/press-release-detail.php?id=3632> [Google Scholar]

ISPR. 2017a. Press Release No PR344/2017-ISPR, July 5.

<https://www.ispr.gov.pk/press-release-detail.php?id=4097> [Google Scholar]

ISPR. 2017b. Press release No. PR34/2017-ISPR, January 24.

<https://www.ispr.gov.pk/press-release-detail.php?id=3705> [Google Scholar]

ISPR. 2017c. Press Release No. PR10/2017-ISPR, January 9.

<https://www.ispr.gov.pk/press-release-detail.php?id=3672> [Google Scholar]

ISPR. 2017d. Press Release No. PR615/2017ISPR, December 21.

<https://www.ispr.gov.pk/press-release-detail.php?id=4459> [Google Scholar]

ISPR. 2018a. Press Release No PR142/2016ISPR, April 14.

<https://www.ispr.gov.pk/press-release-detail.php?id=4693> [Google Scholar]

ISPR. 2018b. Press Release No. PR125/2018-ISPR, March 29.

<https://www.ispr.gov.pk/press-release-detail.php?id=4660> [Google Scholar]

ISPR. 2018c. Press Release No. PR308/2018-ISPR, October 8.

<https://www.youtube.com/watch?v=x_fksZHGFWA&ab_channel=ISPROfficial>.

ISPR. 2018d. Press Release No. PR-PN-2/2018-ISPR, January 3.

<<https://www.ispr.gov.pk/press-release-detail.php?id=4480>>.

ISPR [@OfficialDGISPR]. 2019a. "Pakistan successfully carried out night training launch of surface to surface ballistic missile Ghaznavi, capable of delivering multiple types of warheads upto 290 KMs. CJCSC & Services Chiefs congrat team. President & PM conveyed appreciation to team & congrats to the nation." Tweet, August 29.

<<https://twitter.com/OfficialDGISPR/status/1166955085924130816>>.

ISPR [@OfficialDGISPR]. 2019b. "Pakistan successfully conducted training launch of SSBM Shaheen-1 capable of delivering all types of warheads upto range of 650 KMs. Launch was aimed at testing operational readiness of Army Strategic Forces Command (ASFC) ensuring Pakistan's credible minimum deterrence." Tweet, November 18.

<<https://twitter.com/OfficialDGISPR/status/1196342816777084929>>.

ISPR [@OfficialDGISPR]. 2019c. "Pakistan successfully conducted training launch of surface to surface ballistic Missile "Nasr" to enhance the operational efficiency of Army Strategic Forces Command besides re-validating the desired technical parameters." Tweet, January 24.

<<https://twitter.com/OfficialDGISPR/status/1088403258778009600>>.

ISPR. 2019d. Press Release No. PR37/2019-ISPR, January 31.

<https://www.youtube.com/watch?v=IH3go8W16yU&ab_channel=ISPROfficial>.

ISPR. 2019e. Press Release No. PR102/2019-ISPR, May 23.

<https://www.youtube.com/watch?v=iPOcXXQZdyI&ab_channel=ISPROfficial>.

ISPR. 2020a. Press Release No. PR27/2020-ISPR, February 18.

<<https://www.ispr.gov.pk/press-release-detail.php?id=5625>>.

ISPR. 2020b. Press Release No. PR8/2020-ISPR, January 23.

<<https://www.ispr.gov.pk/press-release-detail.php?id=5592>>.

ISPR [@OfficialDGISPR]. 2021a. "Pakistan Day Parade - March 2021." Tweet, March 24.

<<https://twitter.com/OfficialDGISPR/status/1374914302960893953>>.

[RELATED:Nuclear Notebook: How many nuclear weapons does North Korea have in 2021?](#)

ISPR. 2021b. Press Release No. PR19/2021-ISPR, February 3.

<<https://www.ispr.gov.pk/press-release-detail.php?id=6035>>.

ISPR. 2021c. Press Release No. PR59/2021-ISPR, March 26.

<https://www.youtube.com/watch?v=eA8mZ0w2NlM&ab_channel=ISPROfficial>.

ISPR. 2021d. Press Release No. PR12/2021-ISPR, January 20.

<https://www.youtube.com/watch?v=pL26yWXgBPc&ab_channel=ISPROfficial>.

ISPR. 2021e. Press Release No. PR24/2021-ISPR, February 11.

<https://www.youtube.com/watch?v=p7kSBvkBMYo&ab_channel=ISPROfficial>.

Jones, G.S. 2021. "Pakistan's Nuclear Material Production for Nuclear Weapons." *proliferationmatters.com*, February 21, 2021,

<https://nebula.wsimg.com/0aab8d9a81ac6cfa0c0c4a986cadd8f6?AccessKeyId=40C80D0B51471CD86975&disposition=0&alloworigin=1>

Kalinowski, M. B., and L. C. Colschen. 1995. "International Control of Tritium to Prevent Horizontal Proliferation and to Foster Nuclear Disarmament." *Science and Global Security* 5:

147. doi:10.1080/08929889508426422. [[Taylor & Francis Online](#)], [[Google Scholar](#)]

Khan, B. 2017. "Pakistan Officially Unveils Extended Range Ra'ad 2 Air-Launched Cruise Missile." *Quwa Defence News & Analysis Group*. March 23.
<https://quwa.org/2017/03/23/pakistan-officially-unveils-extended-range-raad-2-air-launched-cruise-missile/> [[Google Scholar](#)]

Khan, B. 2019. "Profile: Pakistan's New Hangor Submarine." *Quwa*, November 11.
<<https://quwa.org/2019/11/11/profile-pakistans-new-hangor-submarine/>>.

Khan, F. H. 2015. "Going Tactical: Pakistan's Nuclear Posture and Implications for Stability." *Proliferation Papers*. No. 53. Institut Français des Relations Internationales (IFRI). September. 41. https://www.ifri.org/sites/default/files/atoms/files/pp53khan_0.pdf [[Google Scholar](#)]

Khan, F. H. 2019. "Nuclear Command, Control and Communications (NC3): The Case of Pakistan." *NAPSNet Special Reports*, September 26.
<<https://nautilus.org/napsnet/napsnet-special-reports/nuclear-command-control-and-communications-nc3-the-case-of-pakistan/>>.

Kidwai, K. 2015. "A Conversation with Gen. Khalid Kidwai." *Carnegie Endowment for International Peace*, March 23.
<<https://carnegieendowment.org/files/03-230315carnegieKIDWAI.pdf>>.

Kidwai, K. 2020. "Deterrence, Nuclear Weapons and Arms Control." Keynote Address, "Workshop on South Asian Strategic Stability." *International Institute for Strategic Studies and Centre for International Strategic Studies*, February 6.
<https://www.youtube.com/watch?v=bInVdvk39e0&ab_channel=TheInternationalInstituteforStrategicStudies>.

Kristensen, H. M. 2007. "Pakistani Nuclear Forces, 2007." *FAS Strategic Security Blog*, May 9.
http://fas.org/blogs/security/2007/05/article_pakistani_nuclear_forc/ [[Google Scholar](#)]

Kristensen, H. M. 2009. "Pakistani Nuclear Forces, 2009." *FAS Strategic Security Blog*, August 28. <http://fas.org/blogs/security/2009/08/pakistan2009/> [[Google Scholar](#)]

Kristensen, H. M. 2016. "Pakistan's Evolving Nuclear Missile Infrastructure." *FAS Strategic Security Blog*, November 1.
<https://fas.org/blogs/security/2016/11/pakistan-nuclear-infrastructure/> [[Google Scholar](#)]

Laskar, R. H. 2021. "Pakistan PM Imran Khan again seeks US intervention on Kashmir." *The Hindustan Times*, June 21.
<<https://www.hindustantimes.com/india-news/pakistan-pm-imran-khan-again-seeks-us-intervention-on-kashmir-101624274376335.html>>.

National Air and Space Intelligence Center. 2013. *Ballistic and Cruise Missile Threat*.
http://fas.org/programs/ssp/nukes/nuclearweapons/NASIC2013_050813.pdf [[Google Scholar](#)]

National Air and Space Intelligence Center. 2017. *Ballistic and Cruise Missile Threat*.
https://www.nasic.af.mil/Portals/19/images/Fact%20Sheet%20Images/2017%20Ballistic%20and%20Cruise%20Missile%20Threat_Final_small.pdf?ver=2017-07-21-083234-343 [[Google Scholar](#)]

National Air and Space Intelligence Center. 2020. *Ballistic and Cruise Missile Threat*.

<https://media.defense.gov/2021/Jan/11/2002563190/-1/-1/1/2020%20BALLISTIC%20AND%20CRUISE%20MISSILE%20THREAT_FINAL_2OCT_REDUCEDFILE.PDF>.

Nayyar, A. H., and Z. Mian. 2010. *The Limited Military Utility of Pakistan's Battlefield Use of Nuclear Weapons in Response to Large Scale Indian Conventional Attack*, Pakistan Security Research Unit (PSRU), Brief Number 61, November 11. Available at: <http://spaces.brad.ac.uk:8080/download/attachments/748/Brief61doc.pdf> [Google Scholar]

Quwa. 2021. "Pakistan Aeronautical Complex Delivers New JF-17B Batch." January 2. <<https://quwa.org/2021/01/02/pakistan-aeronautical-complex-delivers-new-jf-17b-batch-2/>>.

Panda, A. 2016. "Pakistan's Shaheen-III Ballistic Missile May Use Chinese Transporter." *The Diplomat*, July 1. <<https://thediplomat.com/2016/07/pakistans-shaheen-iii-ballistic-missile-may-use-chinese-transporter/>>.

Rahmat, R. 2019. "Pakistan Navy flexes land attack capabilities in Arabian Sea." *Janes*, April 24. <<https://www.janes.com/defence-news/news-detail/pakistan-navy-flexes-land-attack-capabilities-in-arabian-sea>>.

Reed, T. C., and D. B. Stillman. 2009. *The Nuclear Express: A Political History of the Bomb and Its Proliferation*. Minneapolis: Zenith Press. [Google Scholar]

Sanger, D.E. 2015. "U.S. Exploring Deal to Limit Pakistan's Nuclear Arsenal." *The New York Times*, October 15. Available at: <https://www.nytimes.com/2015/10/16/world/asia/us-exploring-deal-to-limit-pakistans-nuclear-arsenal.html> [Google Scholar]

Schaffer, T. 1989. Deputy Assistant Secretary of State for South Asia. U.S. Department of State. *Proposed Sale of F-16s to Pakistan: Hearings before the Committee on Foreign Relations*. U.S. Senate Committee on Foreign Affairs, August 2. [Google Scholar]

Scroll. 2016. "No, Pakistan's Defence Minister did not Threaten Nuclear Strikes after the Uri Attacks." September 19. Available at: <https://scroll.in/video/816903/no-pakistans-defence-minister-did-not-threaten-nuclear-strikes-after-the-uri-attacks> [Google Scholar]

Senate Committee on National Defense. 2016. "Pakistan & China's JF-17 Fighter Program." n.d. [accessed 8 September]. <http://www.senatedefencecommittee.com.pk/production-detail.php?pageid=news-detail&pid=MTc=> [Google Scholar]

Siddique, F., and M. Faisal. 2016. "Pakistan's Strategic Nuclear Policy and Implications for Deterrence Stability." *CISS Insight: Quarterly News and Views IV* (1): 1-17. Center for International Strategic Studies, March. <http://ciss.org.pk/wp-content/uploads/2016/05/1-Article-Farzana-Faisal.pdf> [Google Scholar]

Tasleem, S. 2017. "No Indian BMD for No Pakistani MIRVs." Stimson Center, Off Ramps Initiative, Paper, October 2. [Google Scholar]

Tasleem, S., and Dalton, T. 2019. "Nuclear Emulation: Pakistan's Nuclear Trajectory." *The Washington Quarterly*, January 22, 2019, pp. 135-155.

<https://carnegieendowment.org/2019/01/22/nuclear-emulation-pakistan-s-nuclear-trajectory-pub-78215>

The White House. 2017. "Remarks by President Trump on the Strategy in Afghanistan and South Asia." August 21. Available at:

<https://www.whitehouse.gov/briefings-statements/remarks-president-trump-strategy-afghanistan-south-asia/> [Google Scholar]

US Defense Intelligence Agency. 1999. *The Decades Ahead: 1999-2020, A Primer on the Future Threat*, in Scarborough R (2004) *Rumsfeld's War: The Untold Story of America's Anti-Terrorist Commander, 194-223*. Washington, DC: Regnery. [Google Scholar]

US NATO Mission. 2008. "Subject: Allies Find Briefing on Afghanistan NIE 'Gloomy'." USNATO 000453, December 5, paragraph 12.

<http://www.theguardian.com/world/us-embassy-cables-documents/181529> [Google Scholar]

Warnes, A. 2020. "PAC Kamra rolls out final 14 JF-17B fighters for Pakistan Air Force." *Janes*, December 30.

<<https://www.janes.com/defence-news/news-detail/pac-kamra-rolls-out-final-14-jf-17b-fighters-for-pakistan-air-force>>.

World Bulletin. 2013. "Pakistan Refutes Saudi Funding, Weapons Claims." November 9.

[Google Scholar]

P.S.

- Bulletin of the Atomic Scientists. September 7, 2021:

<https://thebulletin.org/premium/2021-09/nuclear-notebook-how-many-nuclear-weapons-does-pakistan-have-in-2021/>

[Hans M. Kristensen](#)

Kristensen is the director of the Nuclear Information Project with the Federation of American Scientists (FAS) in Washington, DC. His work focuses on... [Read More](#)

[Matt Korda](#)

Matt Korda is a Senior Research Associate and Project Manager for the Nuclear Information Project at the Federation of American Scientists, where... [Read More](#)