

CAPS Nuclear Tracker



Issue VIII: April-June 2023

The second quarter of the year 2023 has gone by with pretty much the same trends as had been seen in the first three months of the year. With no endgame for the ongoing Russia – Ukraine conflict in sight, the world is reconciled to living with the deployment of Russian tactical nuclear weapons in Belarus, even as the newest NATO member, Finland socialises itself into the NATO nuclear sharing process. Nuclear modernisation continues in all states with nuclear weapons, and there is no silver lining to report from North Korea and Iran nuclear proliferation issues either.

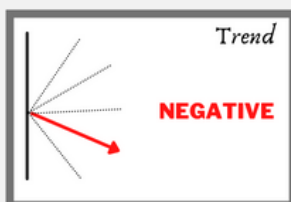
The only positive trendlines continue to persist on the front of nuclear energy and nuclear security. Though Germany has shutdown its last nuclear reactor this quarter, many countries in Europe are keen on including nuclear energy in the basket of green energies. France is leading the charge on this.

NukeNerds at CAPS remain alert to all nuclear dimensions to mark the most significant trends for you. Please keep sending us your thoughts and suggestions.

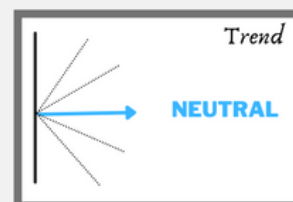
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Dr Dhruba Tara Singh
Ms Rishika Singh
- **Nuclear Security**
Ms Prachi Lokhande



- **Missile Developments**
Mr Jay Desai
- **Iran**
Dr Silky Kaur
- **North Korea**
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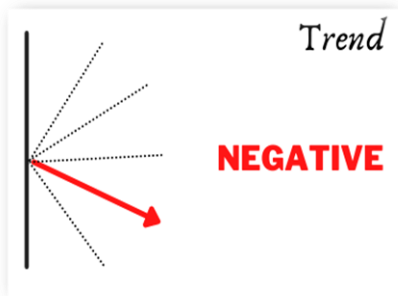


- **Nuclear Disarmament**
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Missile Developments

Jay Desai

Previous Trend: Negative



On April 13, 2023, **North Korea** [launched](#) its ICBM Hwasong-18. Unlike the earlier liquid propellant missiles of **North Korea**, this is a solid propellant missile, offering the ability of quick launch. On June 15, 2023, **North Korea** [launched](#) two ballistic missiles towards the sea in order to protest the **US-South Korea** military drills. This was the first time a [test](#) was conducted by **North Korea** after its failure to put a satellite into orbit in end of May 2023. It is unclear as to which missiles were launched. **South Korea's** Joint Chief of Staff [said](#) the missiles were launched from the Pyongyang region as they travelled 780 km and landed between Korean Peninsula and **Japan**. Prime Minister Kishida [said](#) that the two missiles had landed in **Japan's** exclusive economic zone.

On April 19, 2023, the **US** Air Force Global Strike Command [conducted](#) a test launch of an unarmed Minuteman III ICBM. A June 8, 2023, **US** Government [report](#) called the 'Weapon Systems Annual Assessment' said that the LGM-35A Sentinel ICBM will become operational during April-June 2030. [This](#) ICBM is meant to replace the only ICBM that the **US** has known as Minuteman III.

On April 21, 2023, **India** [successfully](#) conducted a flight test of the sea-based endo-atmospheric interceptor missile off the Odisha coast. On June 1, 2023, **India** successfully tested its AGNI-I [missile](#). This missile has got a proven track [record](#), as it is capable to strike targets with high accuracy. This [user training launch](#) has proved all the operational and technical parameters of the AGNI-I. On June 7, 2023, , **India** conducted a successful test [launch](#) of the AGNI-P at night. This was the first pre-induction night launch of the AGNI-P. The MoD [said](#) that the testing has met all the aims and cleared the path for inducting it into the Strategic Forces Command. The MoD [stated](#), "Range instrumentation like radar, telemetry and electro optical

tracking systems were deployed at different locations, including two down-range ships, at the terminal point to capture flight data covering the entire trajectory of the vehicle”.

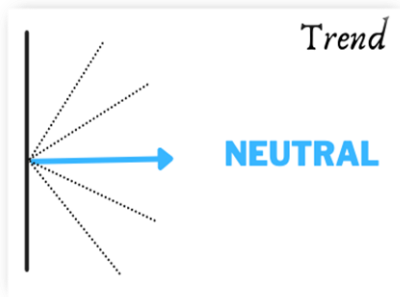
On May 9, 2023, **Russia** [conducted](#) a missile test of its ICBM. This test came [after](#) the **Russian** suspension of the New START Treaty in February 2023. The **Russian** Defence Ministry [said](#), “combat crew successfully launched an intercontinental ballistic missile [ICBM] of a mobile ground-based missile system”. This same statement also [said](#), “The missile's training warhead hit a mock target at the Sary-Shagan training ground [Republic of Kazakhstan] with given precision,”. On June 16, 2023, President Putin [said](#) that the first batch of tactical nuclear weapons have been stationed in **Belarus**. This was expected as President Putin had [announced](#) earlier that he would deploy tactical nuclear weapons in **Belarus**. President Putin had [told](#) Russia 1 (Russian State Broadcaster) that the Iskander short range missile (which can be made nuclear tipped) had been transferred to **Belarus**.

In April/May 2023 it was reported that **China** was developing a new hypersonic missile ‘DF-27’, but a source also [claimed](#) that this missile had been in operational service for several years now.

Sea-Based Nuclear Development

Anubhav Shankar Goswami

Previous Trend: Neutral



Senior commanders of the Royal Australian Navy have disclosed the specifics of Australia's trilateral AUKUS nuclear submarine deal with the US and UK. On May 30 and 31, during Australian parliamentary military budget hearings, information on the number of additional AUKUS boats to be built, the configurations and timings for the introduction of the first three [Virginia class attack submarines \(SSN\)](#), and the intended ultimate size of Australia's future SSN fleet came to light after lengthy questioning. The government of Australia has a strategy of developing an operational fleet of eight nuclear-powered, conventionally armed submarines by the middle of the 2050s. This fleet will comprise of five Australian-built AUKUS class next-generation SSNs and three transferred Virginia class SSN. The Virginia boats are scheduled to arrive first, starting from early 2030s, according to the Aukus proposal. The Virginia submarines would have a shelf life of more than 20 years.

In order to meet the growing demand from the Royal Navy and Royal Australian Navy, as well as obligations made under the most current AUKUS agreement, Rolls-Royce has unveiled ambitious plans to significantly expand its Raynesway plant in Derby. [As part of the trilateral agreement between Australia, the UK, and the US](#), "it was confirmed that Rolls-Royce Submarines would provide all the nuclear reactor plants that will power new attack submarines in March 2023". The demand for Rolls-Royce's services has increased as a result of this partnership.

On May 31, UK-based business solutions company Capita granted Metaverse VR a contract for the [interactive 3D Walkthrough training system \(i3DWT\)](#), which is designed to aid and update UK submarine qualification training as part of the UK Royal Navy's Project Selborne training project. Currently, the UK Royal Navy employs three different submarine classes: five Astute-class SSNs, four Vanguard-

class SSBNs, and one surviving Trafalgar-class nuclear-powered assault boat (SSN). As more Astute boats become online, the solitary Trafalgar-class submarine, *HMS Triumph*, is anticipated to be retired from duty in the 2024–2025 timeframe. Additionally, the UK has revealed plans to launch a new type of SSBN, known as the Dreadnought class. Project Selborne will, according to the press release, provide the training of submarine crews using immersive technology. The i3DWT, which is intended for use in His Majesty's Naval Base, Clyde's (one of three operating bases in the United Kingdom for the Royal Navy) classroom-based training, may be used in either free-play mode for platform orientation or training mode, which includes interactive menus for drills, exercises, and processes.

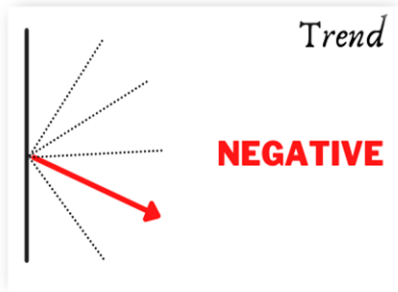
According to the South Korean Joint Chiefs of Staff (JCS), **North Korea** launched two short-range [submarine-launched ballistic missiles](#) (SLBM) into the Sea of Japan (also known as the East Sea in both Koreas) on June 15. The missile or projectiles appear to have fallen within the Japanese Exclusive Economic Zone (EEZ), according to Japanese government officials cited by local media, without any immediate reports of damage.

On June 2, 2023, the **USA** implemented countermeasures in retaliation for Russian "violations" of the New START nuclear agreement, including withholding updates on telemetric data on Intercontinental Ballistic Missile (ICBM) and SLBM launches. However, the United States declared that it would continue to inform Russia of the launches of ICBMs and SLBMs in compliance with the [1988 Ballistic Missile Launch Notifications Agreement](#).

Nuclear Proliferation

Manpreet Sethi

Previous Trend: Negative



After the announcement of March 28, 2023, that **Russia** would deploy tactical nuclear weapons in **Belarus**, the Russian defence ministry announced on Apr 14, 2023, that [Belarusian air force](#) crews have completed their training for using tactical nuclear weapons. Russia also has helped modernize

Belarusian warplanes to adapt them to carrying nuclear weapons and provided [Iskander short-range missiles](#) that could be fitted with a nuclear warhead. Meanwhile, construction of the storage facilities for the TNWs is likely to be completed in Belarus by first week of July 2023. However, Putin has emphasized that Russia would retain control over the deployed nuclear weapons, akin to how U.S. controls its TNWs on the territory of NATO allies.

Meanwhile, in Western Europe, after assuming membership of NATO on Apr 4, 2023, **Finland** would be now participating in [NATO nuclear planning](#) and support operations. It has however decided not to station any nuclear weapons on its own territory.

On Apr 24, 2023, the [NNSA released its annual plan](#), outlining the multibillion-dollar effort to manufacture plutonium pits, the spherical cores that trigger the explosion in thermonuclear weapons, at national laboratories in New Mexico and South Carolina. This has been described as resumption of production of nuclear weapons by **USA** after a [32 year long hiatus](#) by Anton Gerashchenko, an advisor to head of Ukraine's Ministry of Internal Affairs. This decision was approved by President Biden and will cost US\$ 634 by 2031.

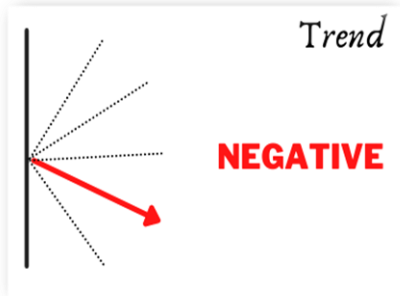
During the State Visit of President Yoon of **Republic of Korea** to **USA** on April 26, 2023, the leaders of the two countries [affirmed their strong, shared commitment](#) to deepening extended deterrence in the Washington Declaration. The assurances include enhancing deployment of U.S. strategic assets, especially nuclear submarines, in and around the Korean Peninsula; expanding the scope and scale of

joint exercises and maintaining regular, senior-level defense engagements and dialogues to contend with regional threats; improving ROK preparedness for nuclear threat scenarios through participation by ROK military personnel in Department of Defense courses and trainings, which will focus on how the Alliance approaches nuclear deterrence on the Korean Peninsula, including through conventional-nuclear integration; and involving Seoul in nuclear planning operations through the creation of a Nuclear Consultative Group. American deployment of nuclear submarines in South Korea will happen for the first time in 40 years. Such assurances are expected to address the clamour in South Korea for the development of its own nuclear weapons.

Iran

Silky Kaur

Previous Trend: Negative



In recent months, there has been a [resumption](#) of discussions between European and U.S. officials on Iran's nuclear program. According to reports, in May 2023, indirect talks were held between the United States and Iranian officials in Oman. These talks, referred to as "[proximity talks](#)," signify the first known indirect engagement between the U.S. and Iran in several months. They took place against the backdrop of Iran's advancements in its nuclear program. The U.S. and European powers fear that Iran's aggressive expansion of its nuclear program could potentially ignite a regional war.

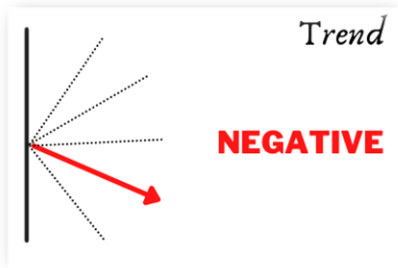
Media reports in May 2023 revealed that Iran is [constructing](#) a nuclear facility deep underground in the Zagros Mountains, making it potentially immune to attacks, especially from U.S. airstrikes. Additionally, tunnels are also being dug near the Natanz nuclear site. Also, in May 2023, Iran successfully [test-launched](#) a ballistic missile with a potential range of 2,000 km, which prompted France to accuse Iran of violating a U.N. Security Council resolution. Although these launches are seen as contrary to UNSC Resolution 2231, which calls on Iran not to engage in any activity related to ballistic missiles capable of delivering nuclear weapons, Western officials do not consider them a violation of the core nuclear agreement. However, Western powers are concerned about the impending expiration of U.N. Security Council restrictions on missiles and related technologies in October 2023, which would allow Iran to pursue ballistic missile activities without limitations.

Meanwhile, on June 18, 2023, Israeli Prime Minister Benjamin Netanyahu expressed opposition to any reported interim agreement being negotiated between the U.S. and Iran. Israel opposes even limited understandings or "[mini-agreements](#)" as they do not serve the ultimate goal of resolving the issue.

North Korea

Silky Kaur

Previous Trend: Negative



In April, the U.S. and South Korea conducted joint air exercises. United States flew nuclear-capable [B-52 bombers](#) to the Korean Peninsula to demonstrate force against North Korea. This action was taken due to apprehensions that North Korea might engage in a nuclear test. On April 13, 2023, North

Korea announced the successful test of its first solid-fuel intercontinental ballistic missile named [Hwasong-18](#).

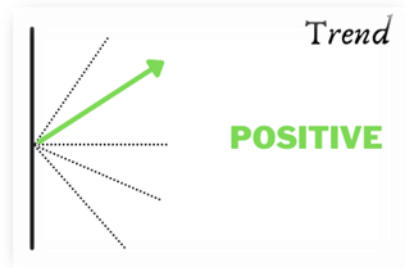
In a significant development, on April 26, 2023, President Biden welcomed South Korean President Yoon Suk Yeol for a state visit to the U.S. Both leaders officially adopted the [Washington Declaration](#). According to the declaration, "The two Presidents announced the [establishment](#) of a new Nuclear Consultative Group (NCG) to strengthen extended deterrence, discuss nuclear and strategic planning, and manage the threat to the nonproliferation regime posed by the Democratic People's Republic of Korea (DPRK)." President Biden warned that any North Korean [nuclear attack](#) against the U.S. or its allies would be met with an overwhelming response.

On June 16, 2023, a U.S. nuclear-powered [submarine](#) USS Michigan made its way to South Korea, marking its [first visit](#) in nearly six years. The Defense Ministry in Seoul confirmed this development, which comes in response to North Korea's launch of two [ballistic missiles](#) into Japan's exclusive economic zone (EEZ) near Ishikawa Prefecture on June 15, 2023. North Korea claimed these missile tests are in protest to the joint U.S.- South Korean [live-fire drills](#) held five times since May 25, 2023. Meanwhile, in a three-day party meeting concluded on June 18, 2023, North Korea pledged to [boost the production](#) of more powerful nuclear weapons.

Nuclear Energy

Rishika Singh & Dhruba Tara Singh

Previous Trend: Positive



The second quarter of 2023 witnessed Germany and Ukraine shutting down their nuclear plants. **Germany** [shut](#) down its last nuclear power plants – Emsland, Isar 2, and Neckarwestheim on April 15, 2023. It had announced the decision to phase out nuclear power in 2011. With the Ukraine crisis limiting access to electricity, Germany chose to keep three nuclear reactors operational for a few months beyond the original date. **Ukraine's** nuclear energy agency, Energoatom [shut](#) down its only operational reactor as a precaution amid catastrophic floods caused by Russia's assault that led to the collapse of a dam, on June 10, 2023. Apart from these reversals for nuclear energy, the sector saw high level of activity in Europe and Asia.

France saw a lot of international collaborations in this quarter. On June 08, 2023, **France** [stated](#) its refusal to give up the competitive advantages linked with nuclear power. On 6 April, **China** National Nuclear Corporation Chairman Yu Jianfeng and EDF Chairman and CEO Luc Rémont of **France** [signed](#) a Memorandum of Understanding on low-carbon energy development. The Federation of Electric Power Companies of **Japan** [announced](#) on June 12, 2023, its intentions to launch an experimental study in **France** to recycle substances used in mixed oxide (MOX) fuel from Japanese nuclear power reactors. The study's goal is to recover recyclable substances from wasted MOX fuel.

On April 13, 2023, **Hungary** and **Belarus** [signed](#) a memorandum of understanding (MoU) on collaboration related to both countries' initiatives for new Russian VVER-1200 nuclear reactors.

On April 17, 2023, the **United States** EXIM Bank [signed](#) a letter of interest in lending up to \$3 billion, and the US International Development Finance Corporation signed a letter of interest in lending up to \$1 billion to **Poland's** ORLEN Synthos Green Energy

project, which will develop 20 Small Modular Reactors (SMR) designed by GE Hitachi Nuclear Energy. On June 16, 2023, KGHM Polska Mied SA, a **Polish** copper and silver company, [signed](#) a statement of intent with the Legnica Special Economic Zone (LSEZ) to collaborate on research and development projects and investment efforts involving SMR technology.

On 16 June 2023, **Russia's** Rosatom and TSS Group [agreed](#) to form a joint venture to build a series of floating power units with a capacity of at least 100 MWe. The fleet will be powered by RITM-200M reactors, which are adapted from those used on Russia's most recent nuclear-powered icebreakers.

In Asia, **South Korea** witnessed a high level of activity. On April 28, a ceremony marked the commencement of construction of the 15 MWt open-tank-in-pool type reactor. The new research reactor aspires for self-sufficiency as well as exports of important medicinal and industrial radioactive isotopes, which are now imported. The **Korea** Atomic Energy Research Institute (KAERI) [reported](#) on May 3, 2023, that the first concrete for the Kijang Research Reactor (KJRR) in the Radiology Science Industrial Complex in Gijang-gun, Busan, has been placed. On June 12, 2023, following the **South Korean** government's [approval](#), groundwork began for construction of units 3 and 4 of the Shin Hanul nuclear power plant. The **South Korean** and **US** corporations have [inked](#) agreements to collaborate on SMRs. The MoU between NuScale, Doosan, and KEXIM intends to promote NuScale's SMR implementation. On 10 April 2023, **South Korea** and the **UK** [signed](#) a joint declaration stating their agreement on the need for an energy transition from fossil fuels to low-carbon power sources. It sought to accelerate civil nuclear plans, plans to construct strong and resilient nuclear supply chains, share experiences in creating the most advanced civil nuclear technologies, as well as actively collaborate on increasing renewable energy technologies.

China Atomic Energy Agency (CAEA) [signed](#) various agreements with the **International Atomic Energy Agency** (IAEA) on May 22, 2023. The agreements, according to the IAEA, will boost collaboration on SMRs, nuclear fusion, nuclear data, fuel cycle and waste management, and communication initiatives. On 15 June 2023, the Shanghai Institute of Applied Physics (SINAP) of the Chinese Academy of

Sciences has been granted an operating [licence](#) for the experimental TMSR-LF1 thorium-powered molten-salt reactor, construction of which started in Wuwei city, Gansu province, in September 2018.

India showed promising developments in nuclear energy in the second quarter. On 9 April 2023 the Minister of State Jitendra Singh said that nuclear energy is likely to account for 9% of India's electricity by 2024, with [approvals](#) by the PM of the construction of reactors in the fleet mode. In addition, a supplementary [joint venture](#) agreement was signed on 1 May 2023 between **India's** largest integrated energy company –NTPC and government enterprise Nuclear Power Corporation of India Ltd (NPCIL) for the construction of six 700 MWe pressurised heavy water reactors (PHWRs) across two sites. On 5 May 2023, **India's** think-tank [Niti Aayog](#) headed by PM recommended opening India's nuclear power industry to foreign investments.

Nuclear Security

Prachi Lokhande

Previous Trend: Positive



As In a general [statement](#) by the IAEA Director General to United Nations Security Council on 30th May 2023, he stated that the nuclear safety and security situation at the Zaporizhzhya NPP continues to be extremely fragile and dangerous. The same was previously asserted in the [update](#)

[156](#)- IAEA DG statement on the situation in Ukraine released on 6th May 2023.

The USA is [installing](#) a network of sensors in Ukraine to detect potential nuclear explosions and radiation bursts. These atomic sensors can detect radiation from both dirty bombs and nuclear weapons, aiming to deny Russia the chance to use nuclear weapons without attribution.

A total of 146 incidents of illegal or unauthorized activities involving nuclear and other radioactive material were [reported](#) in 2022, the IAEA said in April in an annual [fact sheet](#) summarizing data from the IAEA [Incident and Trafficking Database](#) (ITDB). The numbers, which include some incidents connected to illicit trafficking or malicious use, remained at around the same levels as in recent years.

The IAEA has launched a new [software](#) tool – the Mobile-Integrated Nuclear Security Network (M-INSN) – that provides real time radiation data on operations at high-traffic areas for goods and passengers, such as seaports, land border crossings and airports, which require nuclear security measures to be in place. The M-INSN tool enables decision-makers, to use visual real-time radiation data, to make informed decisions to protect the public in case of a potential incident involving nuclear or other radioactive material.

On 21st March 2023, U.N. inspectors visiting southern [Libya](#) [found](#) drums containing natural uranium, which were reported missing since early March in the country. The

IAEA said that some 2.5 tons of natural uranium stored at a site in the southern town of Sabha had gone missing since early March.

An IAEA International Security Advisory Mission (INSServ), following a 10-day visit to Vietnam [said](#) the country has made progress towards establishing an effective national nuclear security regime for nuclear or other radioactive material out of regulatory control.

The IAEA Task Force [reviewing](#) the safety of Japan's plan to discharge Advanced Liquid Processing System (ALPS) treated water from the Fukushima Daiichi Nuclear Power Station (NPS) into the sea released a new [report](#) in April 2023. It assesses the technical responsibilities including the safety-related aspects of the systems built to discharge the ALPS treated water, the radiological environmental impact assessment, source and environmental monitoring programmes, and occupational radiation protection.

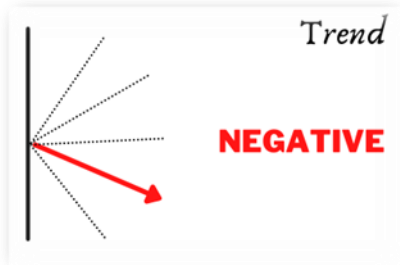
China presented its national [report](#) on nuclear safety during the Joint Eighth and Ninth Review Meeting of the Contracting Parties to the Convention on Nuclear Safety (CNS) on March 23 at the headquarters of the IAEA in Vienna, Austria. The report highlighted China's innovative measures on nuclear safety supervision for new-type reactors and shared experience on safeguarding nuclear safety.

Lao PDR has become the 132nd Party to the [Amendment](#) to the Convention on the Physical Protection of Nuclear Material (A/CPPNM), an instrument that strengthens the international legal framework for the physical protection of nuclear material and facilities used for peaceful purposes. Lao PDR's ratification of the A/CPPNM on 12 April is the first ratification of the Amendment this year. Last year four countries had joined the A/CPPNM: Brazil, Malawi, Mozambique and Oman.

Nuclear Arms Control

Silky Kaur

Previous Trend: Very Negative



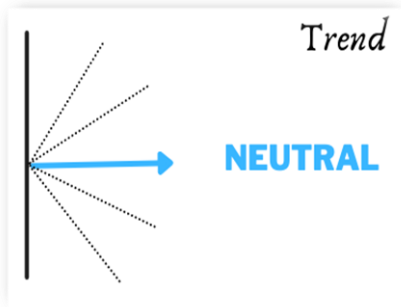
In response to the Russian decision to suspend its membership of the New START treaty in February this year, USA responded on June 1, 2023, with its own set of countermeasures. These were described as "[lawful countermeasures](#) in response to Russia's ongoing violations of the New START Treaty, which can be promptly reversed if Russia returns to compliance." These include withholding New START Treaty data and notifications and refraining from facilitating Russian inspections on U.S. territory while Russia continues refusing to allow U.S. inspections on Russian territory.

On June 2, 2023, U.S. National Security Adviser Jake Sullivan said in a speech that the United States is [seeking dialogue](#) with Russia and China on nuclear arms without preconditions. He added that though the U.S. is modernising its nuclear forces, it is not increasing its size. Sullivan warned that the world is facing an "inflection point" on nuclear stability. He added that the U.S. would attempt to "establish a global accord" to ensure that "[artificial intelligence](#) programs can never be used to authorise nuclear weapons use without a human in the decision loop." In this speech, Sullivan addressed China's recent military expansion and outlined President Biden's plans to address the challenges faced by a world where the nuclear foundation established after the Cold War is under threat.

Nuclear Disarmament

Manpreet Sethi

Previous Trend: Neutral



The [Second Arab Forum on Arms Control, Disarmament and Non-proliferation](#) was held in Doha from 2-4 May, 2023. It was jointly organised by the Arab League and Qatar's National Committee for the Prohibition of Weapons.

On May 19, 2023, G-7 leaders announced the [Hiroshima Vision on Nuclear Disarmament](#).

Assembled at Hiroshima for the G-7 Summit, they renewed their commitment to a world without nuclear weapons with undiminished security for all, underscored the importance of the 77-year-old record of non-use of nuclear weapons, emphasised the importance of transparency, and the benefit of pre-notification of strategic activities as a mode of risk reduction.

The UN Office on Disarmament Affairs and Government of Japan have launched an innovative learning programme called the [Youth Leader Fund for a World Without Nuclear Weapons](#) from 2023 to 2030. It will offer 100 scholarships to people aged 18 years and above to train them on general principles of disarmament, non-proliferation and arms control as part of disarmament education efforts.

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Centre for Air Power Studies (CAPS) was established in 2001 as an autonomous defence research and analysis body for research and focused analyses on issues related to national security, defence, and aerospace issues in the evolving strategic and international security environment. Its objective is to facilitate a greater understanding of these issues amongst the Armed Forces, the strategic community, and the public besides contributing to policy generation and decision-making.

CAPS research faculty comprises senior retired and serving Armed Forces officers from the three services besides academic scholars from national universities and retired members from the diplomatic community. CAPS also conducts nuclear strategy capsules for the Armed Forces and officers of security and technological organisations.

