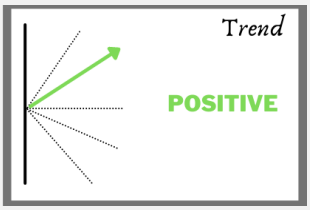
CAPS Nuclear Tracker

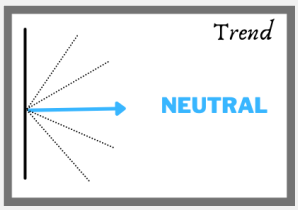
Issue IV: April-June 2022

This is the fourth edition of the *CAPS Nuclear Tracker*. For one year now, the NukeNerds at CAPS have been monitoring the trends along eight nuclear verticals from an Indian perspective. As the Russia-Ukraine war enters its fifth month, the mood on nuclear issues has gone from gloomy to gloomier. This is visible across the issues. Except for nuclear energy, which has remained consistently positive over the year, on most other issues the sentiment has moved towards negative. While the conduct of the first meeting of States Parties to Treaty on Prohibition of Nuclear Weapons made for a positive in this quarter, it was nullified by the increased perception of salience of nuclear weapons. This is reflected in the sections on nuclear proliferation and non-proliferation, sea-based developments, nuclear security, Iran and North Korea. Interestingly, this time we could find no development of interest for nuclear arms control, and have not included the section at all! Is that a sign of things to come?

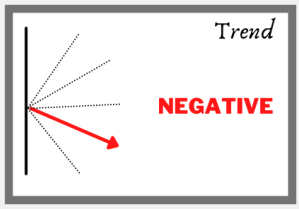
TREND OVERVIEW



- **Nuclear Energy**
  Ms Prachi Lokhande
  Dr Dhruba Tara Singh



- **Nuclear Non-Proliferation**
  Dr Manpreet Sethi
- **Nuclear Disarmament**
  Dr Manpreet Sethi
- **Nuclear Security**
  Ms Prachi Lokhande

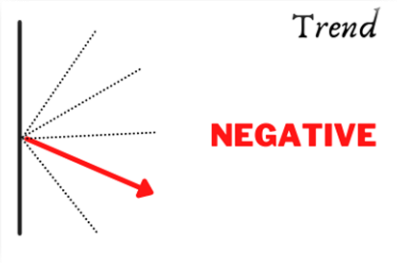


- **Vertical Nuclear Proliferation**
  Mr Abhishek Saxena
- **Sea-Based Nuclear Developments**
  Mr Anubhav S. Goswami
- **Iran**
  Dr Silky Kaur
- **North Korea**
  Dr Silky Kaur

Vertical Nuclear Proliferation

Abhishek Saxena

Previous Trend: Negative



In April, DARPA revealed that **United States** successfully tested Lockheed Martin's version of the Hypersonic Air-breathing Weapon Concept (HAWC) for the first time in mid-March. Overall, it was the second successful test of HAWC technology, the first being Raytheon HAWC tested in September last year. On April 5, the US designated its new intercontinental ballistic missile system, which until now was referred to as the Ground-Based Strategic Deterrent, as LGM-35A Sentinel. In mid-April, U.S. National Nuclear Security Administration revealed that US conducted two rounds of subcritical nuclear tests last year on June 22 and September 16. After three successive failures, the USAF, on May 14, successfully test-launched AGM-183A Air-Launched Rapid Response Weapon (ARRW) hypersonic missile. On June 17, the United States successfully launched four unarmed Trident II (D5LE) missiles from Ohio-class ballistic missile submarines. The recent New START data indicates that the United States, as of March 2022, has deployed 686 strategic launchers with 1515 warheads attributed to them. This is an increase of 21 deployed strategic launchers and 126 deployed warheads compared to compliance data released on September 1, 2021.

The New START data shows that **Russia** has an inventory of 526 deployed strategic launchers with 1474 deployed warheads. Compared to the previous data, this is a decrease of 1 deployed launcher and an increase of 16 deployed warheads. Achieving a major milestone on April 20, Russia successfully conducted the first test launch of a new advanced nuclear-capable ICBM RS-28 Sarmat. It can deliver MIRVed warheads and Hypersonic Glide Vehicles (HGVs) to any point of the globe through the North and South Poles. Russia, on May 28, successfully tested the Zircon hypersonic missile at the maximum range from Admiral Gorshkov, completing the state tests of the missile from a surface carrier.

According to unconfirmed reports, on May 26, **China** test-launched JL-3 SLBM from the South China Sea. On June 19, China conducted its sixth successful anti-ballistic missile test

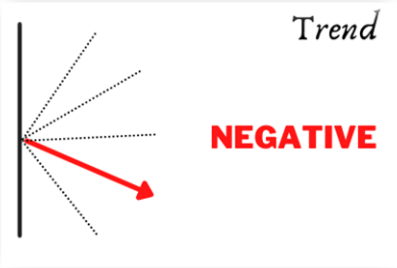
from its land-based mid-course interceptor. On April 9, **Pakistan** successfully conducted a flight test of the Shaheen-III surface-to-surface ballistic missile, revalidating the design and technical parameters. **India** conducted a "routine user training" launch test of its nuclear-capable Intermediate-Range Ballistic Missile, Agni-4, on June 6, reaffirming the credible minimum deterrence capability.

In its recent yearbook, **SIPRI** expressed concern about the expected rise of the global nuclear arsenal. In January, the five NPT recognised nuclear-armed states— Britain, China, France, Russia and the United States—issued a joint statement committing to disarmament and affirming that nuclear war "must never be fought." However, all five "continue to expand or modernise their nuclear arsenals and appear to be increasing the salience of nuclear weapons in their military strategies," the report said.

Sea-Based Nuclear Developments

Anubhav Shankar Goswami

Previous Trend: Negative



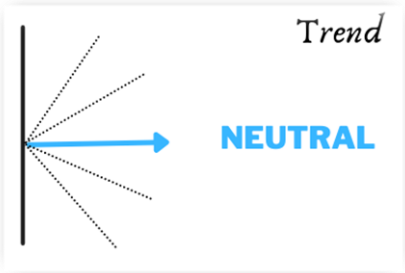
The keel-laying ceremony for the most advanced nuclear-powered ballistic missile submarine (SSBN) of the **United States** took place on June 4. Designated as the *Columbia-class*, it will be the biggest SSBN class of the US Navy and is touted to maintain its edge over American rivals. The new class is expected to be commissioned in 2027. The Columbia-class will replace the Ohio-class to become the main sea-based deterrent of the US. It will begin its deterrent patrol in 2031. According to Navy secretary Carlos Del Toro, the Columbia class would carry "70 per cent of America's deployed nuclear arsenal". Meanwhile, a bipartisan group of US House lawmakers in June unveiled a bill called "The Australia-U.S. Submarine Officer Pipeline Act" to train Royal **Australian** Navy with the US Navy for Australia's future fleet of nuclear-powered submarines under the AUKUS alliance. In June, **UK's** Astute-class SSN, HMS Audacious, completed NATO security operations in the Mediterranean. The operation included testing Audacious' "ability to evade, track and engage her foes underwater and on the surface". On June 3, the **French** Navy's new nuclear-powered attack submarine (SSN) "Suffren" entered "active duty". *Suffren* is part of the French Navy's Barracuda submarine and first of that class. Barracuda is composed of six SSNs which will become the mainstay of French Navy in the coming decades.

Satellite images from Huludao Port in Northeast **China** taken between April and early May reveal a new class of nuclear-powered attack submarine (SSN) that could be built by China. Early reports are not clear whether the submarine in the images is of a new model or an upgrade of Beijing's existing Type 093 SSN or Type 094 SSBN.

Nuclear Non-Proliferation

Manpreet Sethi

Previous Trend: Negative



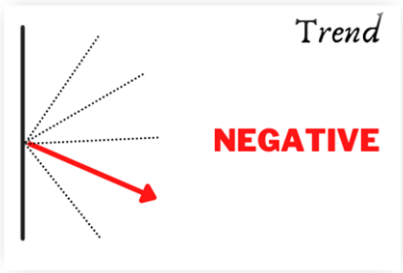
With the conclusion of the first meeting of the States Parties of Treaty on Prohibition of Nuclear Weapons in June 2022, all eyes are now on the forthcoming NPT Review Conference in August this year. The TPNW emphasized that it was not competing but complementing the NPT. In June 2022, **Japan** announced that Prime Minister Fumio Kishida will attend the upcoming review conference of the NPT in August. PM Kishida will be the first Japanese leader to attend the review conference.

Meanwhile, **Japan**, **USA** and **South Korea** have agreed to strengthen their shared deterrence strategy, which could involve South Korea restarting joint military exercises featuring American strategic bombers. A majority of the South Korean public favors acquiring nuclear weapons and many South Korean politicians, experts and commentators have been arguing in favour of low-yield "tactical" nuclear weapons (TNW) or a "sharing" arrangement in which South Korean aircraft and pilots would be equipped to deliver U.S. nuclear weapons during a conflict.

Iran

Silky Kaur

Previous Trend: Negative



The talks to revive the 2015 Iran nuclear deal have been on pause since March 2022. In May 2022, two reports on Iran's nuclear program by the IAEA warned that Iran has enough "highly enriched Uranium to produce material for a nuclear weapon in mere weeks". Iran has reportedly produced over 43 kilograms of 60% of highly enriched Uranium (HEU). Iran is reportedly running advanced centrifuges and building a rapidly growing stockpile of enriched Uranium. On June 21, IAEA disclosed that its inspectors had verified that "Iran was preparing to enrich uranium through a new cascade of 166 advanced IR-6 centrifuges at its underground **Fordo** facility". Iran is yet to acknowledge this new cascade. The 2015 nuclear deal prohibited all enrichment at Fordo. Iran is also believed to be digging a vast tunnel network south of the **Natanz** nuclear production site, which would be its biggest effort to construct new nuclear facilities that can withstand bunker-busting bombs and cyberattacks.

At the beginning of June 2022, **IAEA** censured Iran during its Board of Governors meeting in Geneva. In response, Iran further restricted the IAEA's ability to monitor the Iranian nuclear programme. It removed 27 surveillance cameras of the IAEA and stated that it is in "response to a draft resolution to censure Iran, introduced by US and European nations at the UN nuclear watchdog". Iran said that "it cannot cooperate while the IAEA behaves inappropriately". The standoff between Iran and IAEA has been at odds for some time.

However, on June 20, Iranian officials said that the "train has still not derailed" for restoring the nuclear deal despite US sanctions. On June 19, Iran also dropped the condition of removal of the Iranian Revolutionary Guard Corps (IRGC) from Washington's list of the designated terror group to revive stalled negotiations with the United States. Earlier Iran had made this a prerequisite for restoring the nuclear deal.

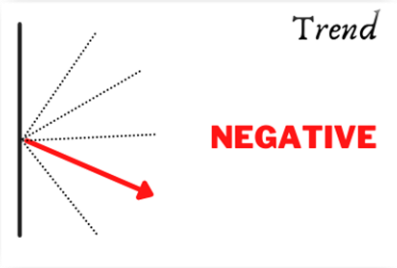
On June 17, **UAE** expressing concerns, urged Iran to provide reassurances on the peaceful nature of its nuclear program and closely cooperate with IAEA. The next day Iran assured UAE. On June 20, Iran expressed that it is ready to reach a "good deal" with world powers "if Washington fulfils its commitments". **US** has claimed that the ball remains in Iran's court and awaits a substantive communication and "constructive" proposal from Iran. Secretary of State Antony Blinken stated that Iran's leaders must "decide very quickly if they wish to proceed with what has been negotiated and which could be completed quickly if Iran chose to do so".

On June 22, **Jordan** and **Saudi Arabia** declared their support for international efforts to prevent Iran from getting nuclear weapons. According to reports, **Israel**, in its new covert moves under Octopus doctrine, is intensifying its efforts to thwart Iran's nuclear, missiles and drone programs. Biden's upcoming visit to Israel and Saudi Arabia in July 2022 will focus on finalizing "a clear joint plan of action" between Israel and the US to stop Iran's nuclear program".

North Korea

Silky Kaur

Previous Trend: Very Negative



On April 16, North Korea tested a new tactical guided weapon aimed at increasing its nuclear targeting capabilities. Reportedly, these new weapons have "great significance in drastically improving the firepower of the front-line long-range artillery units, enhancing the efficiency in the operation of (North Korea's) tactical nukes and diversification of their firepower missions". This test was also seen as a prelude to Pyongyang restarting the nuclear weapons test.

On May 21, **US** President Joe Biden and **South Korean** President Yoon Suk-Yeol met in Seoul. The backdrop of the meeting was North Korea's intention to conduct a nuclear test. Since 2017 North Korea has not tested nuclear weapons, but over the past few months, speculations regarding the possibility of a nuclear test have risen considerably. On June 3, US, South Korea and **Japan** officials met in Seoul to prepare for "all contingencies" amidst North Korea's nuclear test speculations.

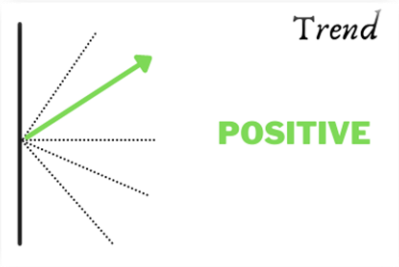
On June 23, North Korea discussed assigning additional duties to front-line army units at a key military meeting which, according to analysts, indicates the plan to deploy battlefield nuclear weapons. North Korea is also developing various short-range missiles for targeting South Korea. Officials in South Korea stated that North Korea has completed preparations for its first test of a nuclear explosive device in five years, and it is possible that the warheads in preparation can be mounted on shorter-range missiles. North Korea is also working on a second tunnel at its nuclear test site **Punggye-ri**. Tunnel No. 4 has been spotted with new construction activity, which will reenable it for future testing.

US and South Korea have warned North Korea that it will face consequences if it conducts nuclear tests. Meanwhile, on June 22, **Chinese** officials stated that US should take "visible measures" for mutual dialogue with North Korea and should work on removing sanctions instead of paying lip services. Beijing will not support new sanctions even if North Korea tests nuclear weapons.

Nuclear Energy

Prachi Lokhande and Dhruba Tara Singh

Previous Trend: Positive



Many countries in Europe**,** amidst the energy crisis, are working towards nuclear energy. Countries such as **Belgium** have decided to reverse their policy to phase out nuclear energy by 2025, and **France** guaranteed to strengthen the country's commitment to nuclear power by developing 14 new reactors. **UK's** energy security strategy, announced on April 07, targets a tripling of installed nuclear power capacity by 2050. The UK government has laid out its cybersecurity plans for the country's civil nuclear sector, focused on more testing, security by design, and improved collaboration. UK's Department of Business, Energy, and Industrial Strategy and India's Department of Atomic Energy signed an MoU on Nuclear Energy Partnership and Global Innovation Partnership. The MoU signed joint research and training on nuclear energy studies, radioactive applications, nuclear security, and safety. The Estonian Fermi Energia and Canadian Laurentis Energy Partners have signed a cooperation agreement to develop small modular reactors (SMRs) in **Estonia.**

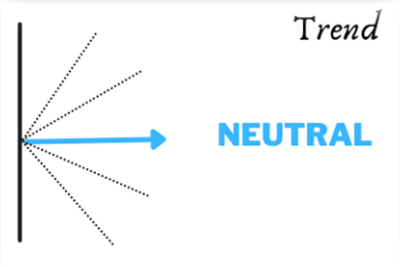
On April 19, the **US** Department of Energy (DOE) announced plans to seek applications and bid submissions under the $6 billion Civil Nuclear Credit Program (CNC) to support the continued operation of US nuclear reactors. The CNC Program is a Bipartisan Infrastructure Law (BIL) to help preserve the existing US reactor fleet. On May 02, the **US** and **Armenia** signed an MoU that aims to improve cooperation on energy security and solidify bilateral relations. This framework provides Armenia as a partner country to cooperate on civil nuclear issues and engage experts from the government, academic institutions, industries, and laboratories. A Joint Statement by the **US** and **South Korean** leaders, on May 21, reaffirmed their engagement in global civil nuclear cooperation. Both leaders have shown their commitments to using mechanisms such as the ROK-US MoU on Nuclear Technology and Export Cooperation.

South Korea and the **UAE** discussed ways to develop nuclear power cooperation. Seoul guaranteed its support to the ongoing construction of two reactors in the Barakah nuclear plant. **Russia** and **Kazakhstan** agreed to discuss new areas of mutual partnership concerning nuclear energy cooperation and investing in the uranium mining industry to reinforce the energy security of both countries. **China's** State Council approved the construction of six new reactors. It included two new reactors at Sanmen, Haiyang, and Lufeng power plant sites. The **Indian** government has approved the setting-up of six new reactors, each with a capacity of 1000 MW, at Andhra Pradesh's Kovvada nuclear plant.

Nuclear Security

Prachi Lokhande

Previous Trend: Neutral



The situation in **Ukraine** has fomented a new discourse on nuclear security in the context of security of civilian nuclear infrastructure in war-torn zones. Air and missile attacks at or in the vicinity of nuclear facilities have emerged as a major concern. On Apr 16, Ukraine's nuclear regulator formally informed the International Atomic Energy Agency (IAEA) that an onsite video surveillance recorded the flight of a missile flying directly over the south Ukraine nuclear plant. In March, a small nuclear facility in Kharkiv, used for R&D and isotope production, was hit by shelling. Fortunately, no harm was caused to the neutron source. Later, the Chernobyl nuclear site was also taken over by Russian forces, who kept the Ukrainian personnel hostage at the site. Fears of malfunctioning of the facility were triggered when the remote data transmission from monitoring systems at Chernobyl was interrupted.

IAEA Director-General made several efforts, including by visiting the nuclear sites in war-affected regions, to establish a framework agreement on safety and security of nuclear installations. On May 27, IAEA delivered specialised equipment to Ukraine in the first major step in its technical assistance to help the country ensure the safety and security of its nuclear facilities. **Japan** has pledged about US $ 2.1 million to support efforts by the IAEA to help ensure the safety of nuclear facilities in Ukraine.

On May 5, **Kazakhstan's** National Nuclear Centre launched its IVG.1M research reactor using low-enriched uranium (LEU). A large number of research reactors in the world operate with highly enriched uranium, which poses a proliferation threat because highly enriched fuel (HEU) can be used to build nuclear weapons. The project is Kazakhstan's important contribution to the global effort to reduce the threat of nuclear weapons proliferation.

IAEA's Integrated Regulatory Review Service Mission visited **Pakistan** in March 2022 and stated that Pakistan "had updated and strengthened nuclear and radiation safety since

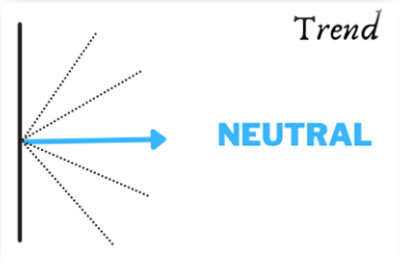
2014." Developments in better arrangements for regulatory inspections, emergency response and preparedness and occupational radiation protection were particularly mentioned.

On Apr 6, 2022, **India** passed the Weapons of Mass Destruction (WMD) and their Delivery Systems (Prohibition of Unlawful Activities) Amendment Bill in the Lok Sabha. The amended legislation prohibits the financing of such weapons. The 2005 Act had prohibited the manufacturing and unauthorised acquisition and possession of WMDs and their delivery systems.

Nuclear Disarmament

Manpreet Sethi

Previous Trend: Negative



The first meeting of States Parties to the **Treaty on the Prohibition of Nuclear Weapons** (TPNW) was convened from June 21 to June 23, 2022, in Vienna Austria. In a first of its kind, delegates at the meeting adopted a "declaration appealing for a world without nuclear arms as well as an action plan to achieve that". The delegates adopted Vienna Declaration which stated that state parties are "alarmed and dismayed by threats to use nuclear weapons and increasingly strident nuclear rhetoric". It called for "immediate action" to achieve a nuclear-weapons-free world.

On this occasion, **UN** Chief said in a video message that "these weapons offer a false promise of security and deterrence-while guaranteeing only destruction, death and endless brinkmanship" therefore "eliminate these nuclear weapons before they eliminate us". He further stated that TPNW is a "vital step towards the common vision of a world without nuclear weapons". TPNW was adopted in July 2017 and entered into force in January 2021. While the conduct of the first meeting of the TPNW States Parties was a welcome development, the non-participation of states with nuclear weapons does not make the prospects of nuclear disarmament any likely. While a majority of US allies under the nuclear umbrella stayed away from the meeting, Germany, Norway, Belgium and Australia attended as observers.

In the wake of **Russia-Ukraine** conflict, as the polarization between major nuclear armed states has increased, the value of nuclear weapons can only be seen to have risen.

Disclaimer: The views and opinions expressed in this document are those of the authors and do not necessarily reflect the position of the Centre for Air Power Studies [CAPS].

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.