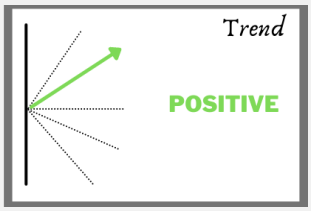
CAPS Nuclear Tracker

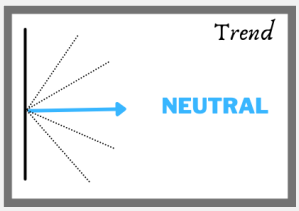
Issue 3: January-March 2022

NukeNerds at CAPS have closely monitored the global nuclear developments over the first quarter of 2022. The trend lines are encapsulated in this third edition of the *CAPS Nuclear Tracker*. On nearly all nuclear issues, the trend appears to be negative. Nuclear energy seems to be the only domain that has continued to mark a positive trend over the last three quarters since we started publishing the *Nuclear Tracker*. While the trend on vertical nuclear proliferation, sea-based nuclear developments and Iran continue to be negative, as it was in the last quarter, remarkable changes are visible on the issues of nuclear non-proliferation, nuclear arms control and nuclear disarmament which have slipped from neutral in the last quarter to negative in this one. North Korea, meanwhile has moved from negative to very negative. Nuclear security too has shifted from positive to neutral as the IAEA struggles to find ways of ensuring the safety and security of nuclear power facilities in war-torn Ukraine. Overall, it has not been a happy quarter from the nuclear perspective.

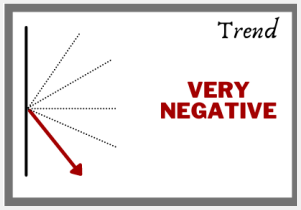
TREND OVERVIEW



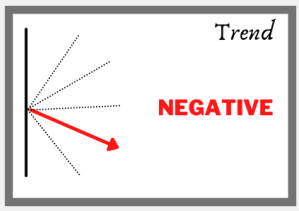
- **Nuclear Energy**
  Ms Prachi Lokhande
  Dr Dhruba Tara Singh



- **Nuclear Security**
  Ms Prachi Lokhande



- **North Korea**
  Ms Silky Kaur

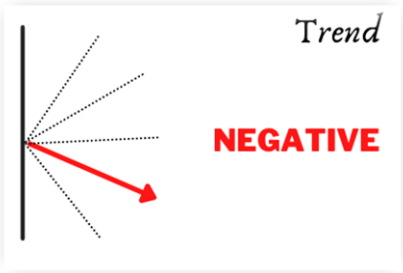


- **Vertical Nuclear Proliferation**
  Mr Abhishek Saxena
- **Sea-Based Nuclear Developments**
  Mr Anubhav S. Goswami
- **Nuclear Non-Proliferation**
  Dr Manpreet Sethi
- **Iran**
  Dr Silky Kaur
- **Nuclear Arms Control**
  Dr Silky Kaur
- **Nuclear Disarmament**
  Dr Manpreet Sethi

Vertical Nuclear Proliferation

Abhishek Saxena

Previous Trend: Negative

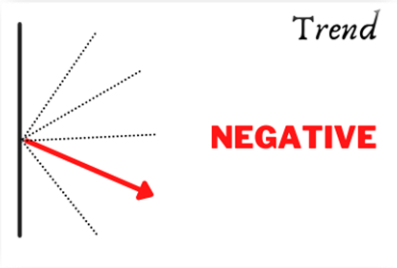


Days before starting the 'special military operation' in Ukraine, **Russia** conducted strategic nuclear exercises involving the launch of hypersonic and other weapons from warships, submarines and warplanes. On March 1, Russia put its nuclear warships and mobile missile launchers on high alert and conducted drills to operate nuclear forces in stormy circumstances. On March 19, the Russian defence ministry allegedly claimed that the Russian military launched Kh-47M2 Kinzhal "hypersonic missiles" to destroy an ammunition warehouse in western Ukraine. This is the first-ever instance of hypersonic weapons used in combat. Amidst Russian threats of nuclear escalation, **the US** cancelled the routine Minuteman III ICBM missile test launch. Pentagon has taken the call to speed up the development of hypersonic weapons systems to bridge the gap with Russia and China. Biden Administration 2023 Budget Request has endorsed the US nuclear triad modernisation, requesting $34.4 billion to upgrade weapon systems and nuclear command, control, and communication networks. According to reports, the US seem to have cancelled the modern nuclear-armed sea-launched cruise missile (SLCM) program launched by the Trump administration. In a significant turnaround, **Germany** has decided to replace the ageing fleet of Tornado aircraft with the US-made F-35 fighter jet, demonstrating its commitment to NATO's nuclear deterrence. According to a report published in **Pakistan** Daily, Pakistan's military showcased the SH-15 self-propelled howitzer, "a supreme shoot and scoot artillery weapon for the use of nuclear shells," in the recent Pakistan Day Parade.

Sea-Based Nuclear Developments

Anubhav Shankar Goswami

Previous Trend: Negative



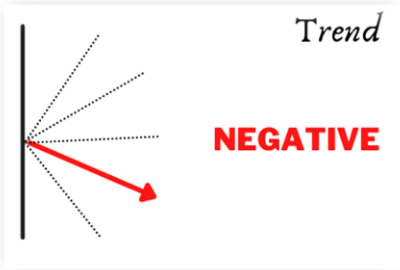
US Navy recently received the newest of the *Virginia*-class fast-attack submarine Montana (SSN 794) on March 11, which had successfully completed sea trials in February. SSN 794 is the 10th Virginia-class submarine to be delivered by America's largest shipbuilder Huntington Ingalls Industries (HII). In a significant development at a time of unprecedented tensions in Europe, **France** has put three of its four *Triomphant* class SSBNs to sea simultaneously for the first time in around 30 years. Normally, only one French SSBN used to patrol at any given time with 16 submarine-launched ballistic missiles (SLBMs) equipped with multiple warheads. The latest spurt in French nuclear activity in March 2022 is an indicative of the fact that Paris is taking a strong stand against Russian nuclear saber-rattling over the Ukrainian crisis.

Open-sourced intelligence have de-cluttered new satellite photos to discover two **Russian** SSBNs leaving their Gadzhiyevo base sometime since February 23, 2022. Images taken by the Sentinel-2 satellite confirm that the two boats were from Russia's Northern Fleet. This move should be seen in the context of Russian President Vladimir Putin's order to put Russia's nuclear deterrence forces on high alert. The departure of the two SSBNs suggest that the Kremlin is increasing its strategic readiness to deploy its nuclear arsenal. Meanwhile, to further strengthen the credibility of its nuclear triad, **India** has launched its third SSBN to step up its sea-based deterrence capability. Numbered as S4 of the *Arihant-class*, the newest sub is yet to be named.

Nuclear Non-Proliferation

Manpreet Sethi

Previous Trend: Neutral

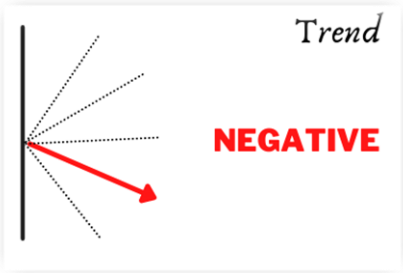


The NPT Review Conference (**RevCon**) had to be postponed once again amid the surging Covid cases at the start of the year. Scheduled to be held in January 2022, the RevCon was pushed back yet again, this time to Aug 2022. As and when the RevCon does take place, it will now be in the shadow of the Russia-Ukraine conflict and the many nuclear issues that have surfaced. These would include the dangers to nuclear power facilities in war zones as well as the seriousness of negative security assurances by NWS to NNWS. The rift amongst the NWS has been pronounced by the Russian invasion of Ukraine, China's decision to not criticize the action, and the response of the rest of the three P-5 to collectively oppose Russia by imposing severe sanctions. Meanwhile, the differences between the NWS and the NNWS can also be expected to grow. Even more worrisome from the nuclear non-proliferation point of view would be if the idea that nuclear weapons are necessary to face up to a nuclear armed adversary gains popularity. Voices to this effect have been heard in Japan, and South Korea soon after the Russian military action against Ukraine. Belarus too undertook a referendum to approve change of the language in its constitution to allow Russia to station its nuclear weapons on its soil if NATO deploys its nuclear weapons further east or Ukraine joins the alliance. Meanwhile, the IAEA DG intensified his efforts to get more countries to join the Additional Protocol to plug gaps in the safeguards system.

Iran

Silky Kaur

Previous Trend: Negative



The ongoing talks in Vienna between Britain, China, France, Germany, Russia and US (indirectly) with Iran to restore the 2015 Joint Comprehensive Plan of Action (**JCPOA**) accord again appear stalled at the end of March 2022. By now, these talks have been on for 11 months since the inauguration of Biden Presidency in US. Overall, there has been some progress and it is being speculated that an agreement may be close. Josep Borrell, European Union's high representative for foreign affairs and security policy announced on March 26 that a nuclear deal with Iran is very close to being signed. But US special envoy for Iran Robert Malley, stated on March 27 that he was not confident that a nuclear deal between western powers and Iran was imminent. There remain some unresolved issues which continue to stall the talks, such as Iran's quest for broader sanctions relief and also a formal guarantee from US to prevent a withdrawal from accord in the future to avoid a replication of Trump's withdrawal from the JCPOA in 2018. Iran has also put the condition of taking the Revolutionary Guard Corps (IRGC) off the US terrorist list as part of the revived accord, which US has refused to accept and reiterated that IRGC will remain sanctioned under US law. The other factor which has contributed to the derailment of talks has been the last-minute Russian demands for guarantees that the western sanctions imposed on its economy, following its invasion of **Ukraine**, would not affect its trade with Iran. Thus, the ongoing Ukraine conflict has also entered the Vienna talks and is affecting the negotiations. Under JCPOA 2015 accord, **Russia** agreed to buy excess uranium of Iran so that Iran could not build a nuclear weapon. Although the lawmakers are against Russia's role in new nuclear deal but it is speculated that Biden administration may allow Russia to buy Iran's excess enriched uranium under revived nuclear deal.

Meanwhile, **Israel** and **US**, on March 27, decided to cooperate on preventing a nuclear-armed Iran despite disagreements they have on emerging nuclear deal. **IAEA** has reported that Iran's enriched uranium stockpile continues to expand. Iran, meanwhile, has claimed that IAEA's probe remains politically motivated and, therefore, it should drop the investigation as a precondition for restoring JCPOA. On March 1, IAEA Director General Rafael Mariano Grossi pushed back on Iran's demand and said that inspections in Iran should not be used as a "bargaining chip" to revive a troubled nuclear deal. March 3 report of IAEA notes that Iran is continuing its test and accumulation of enriched uranium for the advanced model centrifuges at the **Natanz** facility. Also, shortly after allowing the re-installation of camera on Karaj site in December last year, Iran decided to move the centrifuge production to a new site at **Esfahan**. At this new site, cameras were installed on January 24, to ensure centrifuge production monitoring. On **Karaj** site at January 22, the agency "applied seals on all the production machines" and removed the surveillance cameras.

North Korea

Silky Kaur

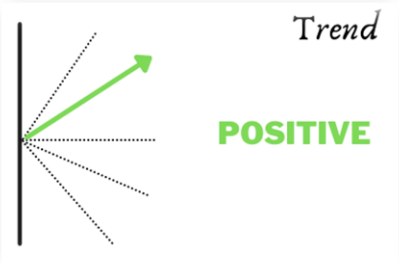
Previous Trend: Negative

Since January 2022, North Korea has conducted a spate of missile launches that remain unparalleled since the inception of its missile programme in the 1960s. In January alone, ten missiles were launched on seven different instances. On January 5 and January 11, North Korea allegedly tested hypersonic missiles. On January 14 and January 27, it tested short-range ballistic missile **KN-23** to examine the combat readiness of a rail-based missile regiment and performance of an airburst warhead for the KN-23 ballistic missiles, respectively. On January 17, it tested short-range ballistic missile **KN-24**. On January 25, it tested two land-attack cruise missiles. On January 30, **Hwasong-12**, an intermediate-range ballistic missile, was tested. On February 27 and March 5, the tests were conducted for developing a reconnaissance satellite system. In a significant and most provocative development, on March 24, North Korea tested its longest-range ICBM, **Hwasong-17**, also described as a 'monster missile'. It further claimed that its nuclear forces were "fully ready to thoroughly check and contain any dangerous military attempts of the U.S. imperialists". Hwasong-17 is claimed to be the world's largest road-mobile liquid-propellant ICBM. Reportedly, "Hwasong-17 flew for 67.5 minutes to a range of 1,090 km, a maximum altitude of 6,248.5 km and precisely hit a target in the sea". It was launched directly from a transporter erector launcher (TEL) vehicle, and it is speculated to be able to carry multiple warheads and decoys to better penetrate missile defences. North Korea also released a Hollywood style video that was seen by many as propaganda for domestic viewers. This latest test is the first time an ICBM has been fired since 2017, breaking Pyongyang's self-imposed moratorium on nuclear and long-range missile testing. According to reports, North Korea is also preparing to carry out a nuclear weapons test after a gap of nearly four years since 2017-18. They are digging a shortcut to Tunnel 3, a previously closed nuclear test site in **Punggye-ri** and rebuilding it.

Nuclear Energy

Prachi Lokhande and Dhruba Tara Singh

Previous Trend: Positive



The mood on nuclear energy reflects an optimism across regions. In Asia, this is evident in a number of actions in many countries. The **Indian** government has approved the construction of 10 nuclear reactors in "fleet mode" in upcoming years with an objective to reduce cost and construction time of nuclear reactors. The **Japan** Atomic Energy Agency and the Mitsubishi Heavy Industries have signed an agreement to participate in a next generation nuclear energy project with Terra Power. On February 28, **Philippines** President Duterte has accepted to implement country's nuclear energy programme following recommendation of the Nuclear Energy Programme Inter-Agency Committee. In **Singapore,** the Energy Market Authority has released a report that identifies nuclear as a potential source of power by 2050 supplying 10% of country's energy requirements. The **UAE** Nuclear Energy Corporation has announced the commencement of commercial operations of Unit 2 of the Barakah Nuclear Energy Plant in Abu Dhabi which would add 1,400 megawatts of clean electricity to the national electricity grid.

On February 11, US's Department of Energy (DOE) established a $6 billion nuclear credit program to preserve America's clean nuclear energy infrastructure. The nuclear credit program supports the continued operation of U.S. nuclear reactors, the nation's largest source of clean power. On February 1, **EU** proposed green investment label for gas and nuclear energy making them sustainable investments. Scientists at the Joint European Torus (JET) laboratory near Oxford (**UK)** made a breakthrough to develop practical nuclear fusion. **Finland** finally operationalised its nuclear power plant, Olkiluoto 3, the first European nuclear power plant to open in 15 years, amid concerns of European energy war. The **Belgium** government decided to delay the scrapping of nuclear energy by a decade as a result of increasing energy prices. The government extended the operation of Doel 4 and Tihange 3 until 2035. The new government of **Czech Republic** in its latest policy program

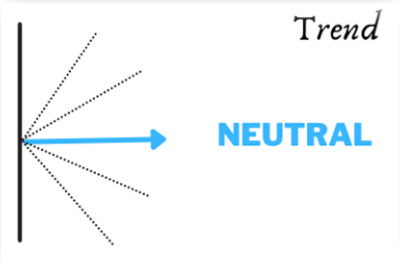
has expressed the aim to phase out coal by 2033, and move towards nuclear energy sources. As of now, the country depends on six nuclear reactors for a third of its electricity. On February 10, President of **France** Emmanuel Macron announced government's plan to construct six new nuclear reactors in its drive for carbon neutrality by 2050.

In Africa too, The **Nigerian** Nuclear Regulatory Agency initiated bidding for the construction of a 4 GW nuclear plant under the Nigerian government endeavour to diversity its energy mix, and to secure energy security.

Nuclear Security

Prachi Lokhande

Previous Trend: Positive



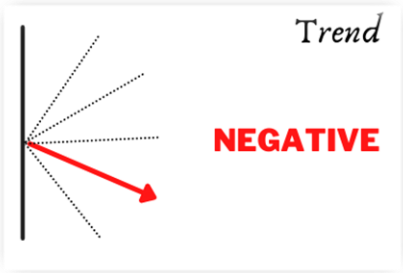
Russian military attacks on nuclear facilities in Ukraine represented an unprecedented threat to nuclear installations and raised important questions about nuclear security efforts in war zones. On March 3, Russian forces attacked the Zaporizhzhia nuclear power plant in **Ukraine**. This led the International Atomic Energy Agency (**IAEA**) to establish a high level dialogue between Russia and Ukraine on nuclear safety. The Director General of IAEA, Rafael Mariano Grossi, was in Ukraine on March 29 for talks with senior government officials on IAEA's planned delivery of urgent technical assistance to ensure the safety and security of the country's nuclear facilities and help avert the risk of an accident that could endanger people and the environment.

The Conference of Parties to the Amended Convention on the Physical Protection of Nuclear Materials (**A/CPPNM**) took place from March 28-April 1 at the IAEA. It was the first-ever review of the A/CPPNM which is the only legally binding treaty on nuclear security. Government officials and experts from international organizations, non-governmental organizations, academia, and nuclear industry gathered to review the implementation of the A/CPPNM, assess its adequacy, and consider current threats to the security of nuclear materials. Assessing the nuclear security dimension, the trend in the first quarter of 2022 seems neutral.

Nuclear Arms Control

Silky Kaur

Previous Trend: Neutral



The year began on a positive note, wherein a statement issued by the five nuclear weapons states (**P5**), US, Russia, China, UK and France affirmed that "a nuclear war cannot be won and must never be fought". It also affirmed the importance of arms control agreements. The P-5 assured their commitment to Nuclear Non-Proliferation Treaty and other arms control, non-proliferation, and disarmament measures. Subsequently, an "extraordinary session" of strategic stability dialogue between **US** and **Russia** was held in Geneva on January 10. It was extraordinary because, unlike the previous two sessions held in July and September last year, this session was held against the backdrop of increasing tensions between the West and Russia. Also, it was held without the preliminary meetings of the two expert working groups. With the intensifying Ukraine crisis, the third session included discussions on issues of nuclear missile placement in Europe and the eastward expansion of NATO, which were two major themes of Russian demand for security guarantees. US pushed back on security proposals of Russia and reiterated NATO's "open door" policy. The talks failed, and nothing substantial came out of the third session.

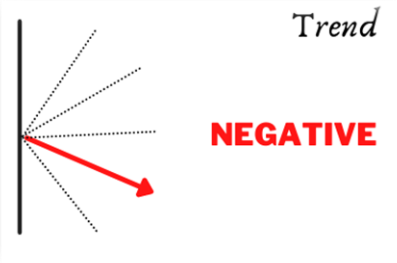
Russia invaded Ukraine on February 24 and the US cut-off arms control talks with Russia. A meeting between US Secretary of State Antony Blinken and Russian Foreign Minister Sergei Lavrov was cancelled and prospects of a summit between US and Russia Presidents have receded for now. Meanwhile, Russia put its nuclear deterrent forces on high alert on February 27. President Putin has since continued nuclear signalling.

On March 12, Russia said it was ready to work again with the US on security issues and the Strategic Arms Reduction Treaty. While the US would do well to seize this offer and continue engagement on strategic issues with Russia, the situation appears grim at end of the first quarter of 2022.

Nuclear Disarmament

Manpreet Sethi

Previous Trend: Neutral



2022 started with optimism when the **P-5** issued a joint statement reiterating the iconic words of former Presidents Reagan and Gorbachev that a "nuclear war cannot be won and must not be fought". Issued on Jan 5, the Joint Statement of the Leaders of the Five Nuclear Weapon States on Preventing Nuclear War and Avoiding Arms Races was unique since the five collectively acknowledged the need to address nuclear threats and work to preserve the existing bilateral and multilateral non-proliferation, disarmament and arms control agreements. Prepared with the NPT RevCon in mind which was scheduled to take place in Jan 2022, the Statement was issued despite the RevCon being postponed to later this year. The gesture was welcomed across the world, though many expressed the hope that it would be followed by suitable actions. However, the very next month brought out the hollowness of the statement and the projected unity of the P-5 when the Russian invasion of Ukraine divided the group into Russia and China on one side and the US, UK and France on the other. Possibilities of any steps being collectively taken by the P-5 to move towards strategic stability mechanisms of any kind that could help launch efforts towards universal nuclear disarmament seem to have been seriously eroded in the first quarter of this year.

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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.