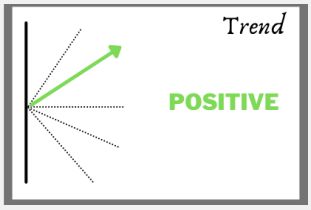
CAPS Nuclear Tracker

Issue 1: July-September 2021

NukeNerds at CAPS bring you a new offering – CAPS Nuclear Tracker. In this quarterly publication, the nuclear team at CAPS analyses major nuclear developments from an Indian perspective along eight verticals to pronounce evident trendlines along five axes – very positive, positive, neutral, negative, very negative. A short write-up accompanies the graphic indication to explain the trendline by recounting major events that have shaped the evaluation. The tracker will enable quick assimilation of ongoing developments. Your feedback and suggestions are welcome.

TREND OVERVIEW



- **Nuclear Energy**
  Ms. Zoya Akhter
- **Nuclear Security**
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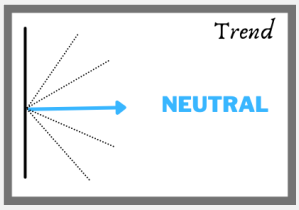
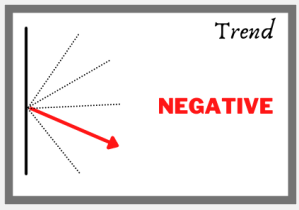


- **Iran**
  Dr. Hina Pandey
- **Nuclear Disarmament**
  Dr. Manpreet Sethi
- **Nuclear Arms Control**
  Dr. Silky Kaur



- **Vertical Nuclear Proliferation**
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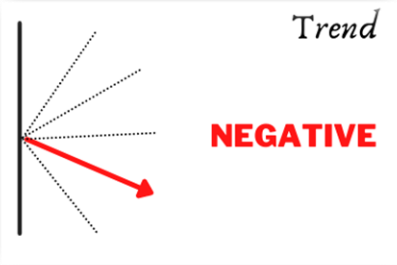
Vertical Nuclear Proliferation

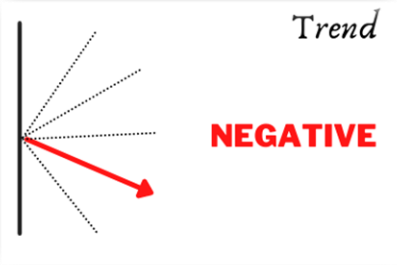
Abhishek Saxena



On July 1, **US** Air Force awarded Raytheon Technologies a $2 billion contract to develop a new nuclear-capable, air-launched cruise missile. In a boost to its hypersonic cruise missile programme, the US successfully tested an air-breathing hypersonic weapon prototype on September 27, co-developed by Defense Advanced Research Projects Agency (DARPA) and the US Air Force. Under its Hypersonic and Ballistic Tracking Space Sensor (HBTSS) initiative, US Missile Defense Agency (MDA) is planning to place satellites and sensor facilities in the low-earth orbit to detect and intercept hypersonic missiles in their glide flight phase. In a major boost to its conventional prompt strike program, the US Navy successfully tested the second stage solid rocket booster for the common hypersonic missile for the Army and Navy. USA, in partnership with Israel, is also developing Arrow 4 air-defense system, to counter hypersonic and multiple independently targetable re-entry vehicles. On July 19, **Russia** successfully test-fired its Zircon hypersonic cruise missile. Russia's Defense Ministry has inked a contract with the Research and Production Association of Machine-Building to deliver Tsirkon Hypersonic missiles by 2025. Three US-based researchers, using open-source intelligence (OSINT), discovered three under construction missile silo fields in **China** located at Yumen, Hami and, Hanggin Banner, that would expectedly add 250-300 new silos to Chinese arsenal. Scholars argue that this may allow China to make a shift from a low-alert nuclear retaliatory posture towards a high-alert launch on warning posture. In the recent nuclear notebook released by the *Bulletin of Atomic Scientists*, authors have contended that **Pakistan** "continues to expand its nuclear arsenal with more warheads, more delivery systems, and a growing fissile materials production industry." Given this growth trajectory, Pakistan's nuclear stockpile is likely to increase from 165 warheads to around 200 by the mid-2020s.

Nuclear Non-Proliferation

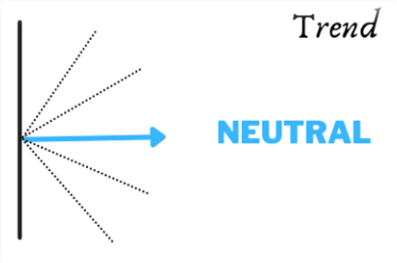
Manpreet Sethi



After the Summit meeting between Presidents Biden and Putin in Geneva in June 2021, US Deputy Secretary of State and Russian Deputy Defence Minister met in the same city on 28 July to initiate the **Strategic Stability Dialogue**. While the meeting itself was a positive development, differences showed up in the perspectives of both on BMD deployments, next generation nuclear weapons, emerging technologies, verification and space systems. It was agreed to continue with informal consultations on the issues. In Aug 2021, **NPT Review Conference** was rescheduled to January 2022 in view of the ongoing pandemic. This RevCon was originally to be held in May 2020 and would have marked 50 years of the treaty. It has had to be postponed three times by now. Meanwhile, many fissures and difficult issues, long standing ones such as Iran and DPRK, as well as new ones such as quantitative and qualitative nuclear increases, relationship with the Ban treaty, AUKUS (Australia, UK, US trilateral security arrangement), etc are likely to animate the RevCon whenever it is held. In September 2021, **CTBT** turned 25 years. The UN Security Council marked its anniversary by recalling that it had "created and sustained a norm against nuclear testing so powerful, that less than one dozen tests have been conducted since adoption, and only one country has violated it this millennium." Despite having 185 signatories and 170 ratifications, the treaty has nevertheless not been able to enter into force. It still has eight holdouts. On 15 Sept 2021, **South Korea** successfully tested a submarine launched ballistic missile (SLBM) with a range of 400 km. This test followed the one in July where the same missile was tested from an underwater barge. South Korea is the only country to have built this capability without having nuclear weapons, which has raised questions on its eventual intention. AUKUS, announced in middle of Sept 2021 envisages transfer of nuclear technology to Australia to help build eight nuclear-powered submarines (SSNs). While the technical dimensions of the deal are not yet clear, several comments on the possible proliferation problems that could arise from the precedent are beginning to be highlighted.

Iran

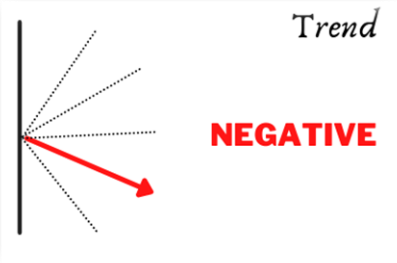
Hina Pandey



After the sixth round of stalled **Vienna Talks** aimed at salvaging the **JCPOA**, the Iranian Foreign Minister-Hossein Amir-Abdollahian on 23 September 2021, expressed a "very clear intent" to return to nuclear talks, without indicating any exact date. Negotiations on renewing the JCPOA had reached a **deadlock** after concluding several rounds of satisfactory discussions. The Iranian Deputy Foreign Minister Seyed Abbas Araqchi,- (lead negotiator) had previously remarked in June 2021 that all texts of the agreement are almost ready and that all parties involved in the talks need to make decisions. A similar indication was expressed by the outgoing Foreign Minister Javad Zariff in a 264-page detailed report to the Iranian Parliament which hinted at the possibility of negotiations to have reached the framework of a possible agreement to lift the US sanctions. The **seventh round** of Vienna talks were expected to take place after the Iranian Presidential elections, in mid-August 2021. While the new leadership in Iran led by President Ebrahim Raisi pledged to support and take forward the negotiations, the next round of the Vienna talks is still pending. It is to be reckoned that President Raisi, has put special emphasis on pursuing **"smart engagement"** to compel the negotiating parties, especially the US to lift sanctions. It remains concerning to note that Iran has expanded considerably on its uranium enrichment limits and have previously refused to share data with the IAEA. Only a few days ago, in September 2021, Iran and the IAEA reached a **critical agreement** to prevent a further crisis, however as on 26th September 2021, the IAEA Chief indicating that Iran is not honouring its terms of the deal by blocking the Agency's access to some areas in order to conduct inspections.

North Korea

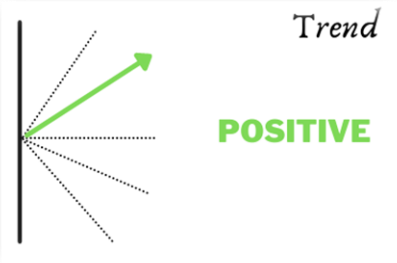
Hina Pandey



The graph of North Korean nuclear developments currently remains **highly fluctuating**. From July to September, both the North and South resumed their communication hotline that was cut off by Pyongyang in June last year in addition to the recent indication by Kim Yo Jong on resumption of talks with South Korea. However, in late August **nuclear reactor** at Yongbyon was **restarted** and the month of September witnessed **three missile tests** by North Korea, the most recent being the hypersonic missile test. While the military parade commemorating the 73rd founding anniversary left out showcasing major weapons, in September alone, North Korea tested a new long-range cruise missile capable of hitting much of Japan and also claimed to have successfully launched ballistic missiles from a train for the first time. This accentuates the need for nuclear diplomacy; while the US appears to be ready to engage with North Korea, as President Biden had indicated the possibility of talks with the DPRK, as on 27th September 2021, there are no official confirmations from the DPRK about when the bilateral nuclear diplomacy between the two can resume.

Nuclear Energy

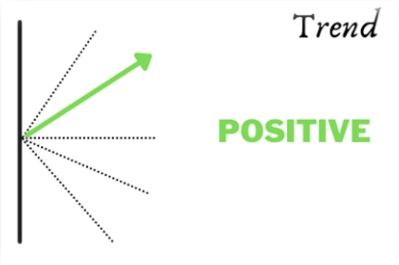
Zoya Akhter



For the first time since the 2011 Fukushima nuclear accident, the IAEA has revised up its **growth in civil nuclear power** sector in the coming decades. The report, "Energy, Electricity and Nuclear Power Estimates for the Period up to 2050" published in September, revised the high case projection up by 10% compared to last year. WNA report, 'The Nuclear Fuel Report: Global Scenarios for Demand and Supply Availability 2021-2040' published in September has also indicated a continued growth of the nuclear power industry. WNA forecasts that capacity will grow by 2.6% in the next 20 years. In September, an official announced that **India** in the coming decade. In August Ukrainian nuclear utility **Energoatom signed an agreement with US** based Westinghouse Electric Company**,** for expansion of its nuclear power programme. Similarly, Britain was in talks with Westinghouse in September to build a new nuclear power plant in Wales. In September, **South Africa** announced its plans to issue a Request for Proposal for 2500 MWe of nuclear capacity in the coming year. The President of **Kazakhstan** has announced in September, intentions to consider developing nuclear energy in the country in order to attain carbon neutrality by 2060. The Lawrence Livermore National Laboratory (USA) on August 08th announced a major **breakthrough** in **nuclear fusion technology.** In July, Chinese scientists unveiled the design for a commercial **thorium-fuelled molten salt reactor,** which has the potential to revolutionise the nuclear power industry. **Australia** and the **United Kingdom** signed a letter of intent to in July to enter into partnership on low emissions solutions which includes research and development of small modular reactors.

Nuclear Security

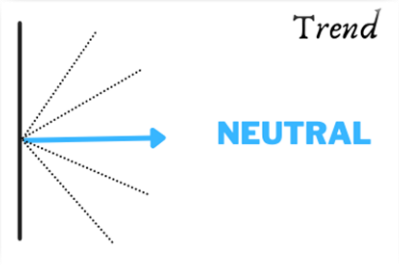
Zoya Akhter



The global nuclear community, led by the International Atomic Energy Agency (IAEA), sought to **strengthen global norms** to develop and maintain systems to ensure nuclear security. IAEA introduced plans to set up a **Nuclear Security Training and Demonstration Centre** to assist countries in combating threats of nuclear terrorism. New training platforms such as the Radiation Safety Navigator was also launched by the IAEA to assist professionals communicate with related industries and the public about radiation safety. 65th IAEA General Conference Department of Nuclear Safety and Security to draw attention to augmenting regulations for nuclear safety and security amidst the ongoing covid-19 pandemic. IAEA conducted **nuclear security advisory mission** in Burkina Faso and a nuclear safety mission at Slovakia's Mochovce Nuclear Power Plant. Zimbabwe joined four multilateral treaties pertaining to nuclear safety and security. **Regional collaborative efforts** were undertaken between Bulgaria and Romania at a cooperatively staffed crossing point to combat illicit trafficking of nuclear materials. Regional workshops were also held such as on Asian countries and nuclear legal frameworks for Latin American and Caribbean countries.

Nuclear Arms Control

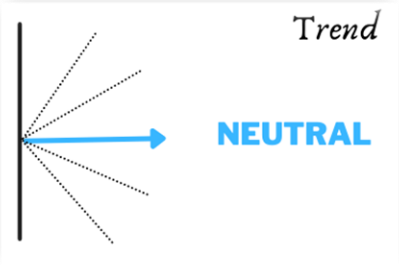
Silky Kaur



Bilateral **Strategic Stability Dialogue** between United States and Russia was relaunched on July 28 to lay the groundwork for future arms control and risk reduction measures. These negotiations with the aim to ensure predictability and reducing the risk of armed conflict and threat of nuclear war can be the beginning of new age of arms control negotiations. Although there are points of convergences to capitalize on, these talks also have large asymmetric interests. On September 30, the second round of US-Russia bilateral Strategic Stability Dialogue is planned in Geneva, Switzerland. At the July 28 **Geneva talks**, US delegation touched upon issues of "security environment, national perceptions of threats to strategic stability, prospect for new nuclear arms control, and the format for future Strategic Stability dialogue". US also has concerns of new developments in Russia's nonstrategic nuclear weapons and new delivery systems. Russia focused on U.S. ballistic missile defenses and all nuclear and nonnuclear, offensive and defensive weapons of the United States that affect strategic stability. Russia also wants to bring France and United Kingdom into arms control negotiations. US wants to include China into arms control talks. China has largely declined the proposals to join trilateral talks on nuclear arms control. A letter dated 25 August 2021, issued by China's Embassy in London, stated that China is against hype of trilateral arms control negotiations. Also given huge gap in nuclear arsenals of China with US and Russia, it is "impractical to ask China to join" and "China will not participate in such negotiation and will never accept any coercion or blackmail". Meanwhile, Russia itself has officially signed off from the 1992 Open Skies Treaty recently and will completely withdraw by December 2021. The only remaining arms control treaty, the **New START** ends in 2026 and its replacement requires considerable amount of groundwork.

Nuclear Disarmament

Manpreet Sethi



While commemorating the 76th year of the bombing of Hiroshima and Nagasaki in Aug 2021, **UN Secretary General** reaffirmed support to amplifying the testimonies of the atomic bomb survivors as a way of getting nations to realize the unimaginable suffering caused by the use of nuclear weapons, and thus, pushing them towards disarmament. **Japan**'s Prime Minister announced that his country would not join the **Treaty on Prohibition of Nuclear Weapons** owing to the "severe security environment". The TPNW, whose first meeting was to be held in January 2022 has been postponed to March that year. On Sept 26, another **International Day for Elimination of Nuclear Weapons** went by without any official events being held to mark the occasion in any of the nine nuclear armed states. The United Nations General Assembly, however, held a high-level plenary meeting to commemorate and promote the day.

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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 brief orientation capsules for the Armed Forces and officers of security and technological organisations.