



Join the Comprehensive Test Ban Treaty's International Monitoring System

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November 7, 2017

Editor's note: This essay is part of an initiative launched by the Stimson Center's South Asia Program, which we call the [Off Ramps Initiative](#). The nuclear competition among China, India, and Pakistan is accelerating with the introduction of new ballistic and cruise missiles. Counterforce capabilities are growing. China has begun to place multiple warheads on some of its ballistic missiles, Pakistan has advertised its ability to do so, and India has demonstrated this capacity in its space program. Diplomacy is dormant as these and other nuclear capabilities expand. What to do? Stimson has asked rising talent in this field, as well as a few veterans, to offer creative ideas that can help ameliorate and decelerate this dangerous triangular nuclear competition.

Introduction

China, India, and Pakistan are expanding and modernizing their nuclear arsenals.¹ Historical tensions, unresolved border disputes, and high levels of mistrust are among the factors behind their strategic modernization programs. The current, brittle security environment in Southern Asia makes it difficult for these countries to engage in bilateral nuclear confidence building measures (CBMs). In this context, cooperation with a multilateral organization focused on nuclear nonproliferation and disarmament could be a useful precursor to more substantive steps to build strategic trust.

The verifiable Comprehensive Nuclear Test Ban Treaty (CTBT) was opened for signature on September 24, 1996 with the objective of halting all nuclear weapon test explosions or any other nuclear explosion. Twenty-one years after its adoption by the United Nations General Assembly, the CTBT has yet to enter into force. Eight states—the United States, China, India, Pakistan, Egypt, Iran, Israel, and North Korea—commonly referred to as Annex 2 countries must join the Treaty before it can take effect.² Although China signed the CTBT in 1996, it never ratified it. Beijing has instead adopted a position that it will do so only once the United States ratifies the CTBT.³ India and Pakistan conducted nuclear tests in May 1998 and, to this day, have not signed or ratified the CTBT. Instead, they have upheld unilateral moratoria on nuclear testing and have

adhered to the basic stipulations and spirit of the Treaty.⁴ There is no evident incentive for either country to proceed with ratification. It appears that India's signature of the CTBT is contingent on ratification by the United States and China.⁵ Pakistan, meanwhile, has linked its signature and ratification of the Treaty to India's ratification.⁶ This approach of holding the signature and ratification of the CTBT hostage to that of other Annex 2 countries has made the Treaty's entry into force extremely challenging.

Despite the lack of momentum for entry into force, the CTBT does provide tangible value to the international community. The CTBT's International Monitoring System (IMS) network consists of 337 monitoring facilities and forms the basis of the CTBT's global monitoring regime.⁷ This network provides real-time monitoring and data processing of geophysical events to identify nuclear explosions anywhere in the world. For example, the network has provided data on North Korea's nuclear tests and increases the difficulty for states to carry out covert, low-yield nuclear tests without being detected.

Unlike India and Pakistan, China is already engaging with the CTBTO by participating in the IMS network. It hosts eleven IMS stations and regularly sends data to the CTBTO. It also recently certified one of its IMS facilities, indicating it has met the CTBTO's technical specifications to be part of the IMS and can transmit data to the International Data Centre in Vienna.⁸ India and Pakistan might similarly demonstrate their commitment to the CTBTO's mission by contributing to the CTBT's global monitoring network. This would be a worthwhile and realistic step for both countries as it would promote transparency in confirming India and Pakistan's non-testing to one another, could not be construed as undermining either country's national security interests, and would signal both countries' willingness to demonstrate leadership in halting nuclear testing even in the absence of ratification.

The Proposal

This Off Ramps essay argues that India and Pakistan build IMS facilities on their territories as a CBM and sign of "good faith" towards promoting the objectives of the CTBT, pending its entry into force. Establishing IMS facilities in India and Pakistan would constitute a way for both countries to grant one another assurances that their self-declared moratoria on nuclear testing are being upheld and will not be evaded by extremely low-yield testing. Furthermore, both countries could derive technical benefits from cooperating with the CTBTO and the Provision Technical Secretariat, the body responsible for assisting the Treaty's Preparatory Commission in establishing the IMS. Annex 1 of the CTBT lists two IMS stations at Rahimyar Khan (Infrasound Station) and Pari (Primary Seismic Station) in Pakistan, but construction has yet to begin on either facility.⁹ Pakistan also has yet to sign any facilities agreements with the CTBTO, which serve as formal commitments to construct and certify an IMS station on its territory.¹⁰

India's engagement with the CTBTO has also been minimal. India objected to having its national stations listed in this Annex 1 after it decided not to sign the Treaty. With the passage of time, India's intention not to become an original signatory has been clarified. Nevertheless, New Delhi could now demonstrate its support for the Treaty's objectives by contributing to the its monitoring network and buttressing its status as a responsible nuclear power. As Executive

Secretary of the CTBTO, Dr. Lassina Zerbo, noted in 2015, “For all of its efforts in galvanizing the creation of an effective international verification system, India is currently unable to derive either the political or the technical benefits from it.”¹¹ In this light, India should consider building CTBTO-certified monitoring stations on its territory, thereby bolstering its nonproliferation credentials and leadership in a global network comprising 89 countries.¹² The same holds true for Pakistan, which seeks to improve its image as a responsible nuclear-armed state but continues to block negotiations on the Fissile Material Cut-off Treaty.

To implement the first steps in establishing IMS facilities, India could proceed with the installation of the four monitoring stations that were originally planned for placement on its territory.¹³ If India took this step, it might spur Pakistan to fast-track the process of finalizing the planned IMS stations within its own territory and signing the requisite facilities agreements. Conversely, Pakistan could take the lead without waiting for India, thereby reaffirming its moratorium on nuclear testing while challenging New Delhi to follow suit.

Both India and Pakistan have displayed a willingness to consider and adhere to military and non-military CBMs to enhance stability despite their deep-seated rivalry and political differences. Efforts to normalize relations over nuclear issues were undertaken even before the 1998 tests. In 1988, for example, both India and Pakistan signed the Agreement on the Prohibition of Attack against Nuclear Installations and Facilities, whose stated goal was that both state parties would refrain from “undertaking, encouraging or participating in, directly or indirectly, any action aimed at causing the destruction of, or damage to, any nuclear installation or facility in the other country.”¹⁴ Pursuant to the agreement, India and Pakistan have exchanged lists of their nuclear installations and facilities since 1992. Both countries similarly adopted several other nuclear CBMs, including the Agreement on Pre-Notification of Flight Testing of Ballistic Missiles in 2005 and the Agreement on Reducing the Risks from Accidents Relating to Nuclear Weapons in 2007.¹⁵

These agreements demonstrate that India and Pakistan do recognize the need for CBMs but both countries struggle to commit to bilateral dispute resolution. Instead, both countries have taken limited steps, usually after crises, to reduce escalating tensions. As such, engaging with an existing multilateral monitoring regime could serve as an indirect CBM between India and Pakistan as the establishment of IMS stations would reaffirm both countries’ commitments to their unilateral testing moratoria.

Rationale

At a time when some U.S. senators are seeking to cut funding for the CTBTO, India and Pakistan’s engagement with the organization could send an important signal.¹⁶ It would reinforce Indian and Pakistani commitments to refrain from additional testing. It would also improve the CTBTO’s technical capabilities to detect clandestine, low-yield testing in South Asia and broader region, including China, Central Asia, and the Middle East. This step could also provide additional, societal benefits to India and Pakistan as data derived from IMS facilities are utilized in monitoring earthquakes and issuing early tsunami warnings.¹⁷

It can also be argued that India's ongoing efforts to gain support for its membership in the Nuclear Suppliers Group (NSG) and obtain a permanent seat on the UN Security Council could be advanced if leaders in New Delhi were to provide tangible indications of their support for the CTBT and its monitoring system¹⁸ Considering that Pakistan has also applied for NSG membership and is an observer to the Preparatory Commission of the CTBTO, such a move by India could be a powerful impetus for Islamabad to respond in kind by establishing its own IMS facilities on its territory and to commit to supporting the objectives of the CTBT.

In the view of Feroz Khan, a noted scholar on Pakistani nuclear issues, the construction of IMS facilities could constitute a powerful CBM in regions that are entwined in an enduring rivalry.¹⁹ Similarly, Michael Krepon argues that, by setting up IMS stations, India and Pakistan could send positive messages that they are responsible stewards of their nuclear weapons and that both countries see value in the CTBT, even though they are not willing to sign it.²⁰ Perhaps most importantly, this step could reconfirm both countries' commitment to refrain from testing nuclear weapons, which is vital both to maintaining regional stability and strengthening the global nonproliferation regime.

Challenges to the Proposal

India is dissatisfied with the CTBT's language as it currently exists and has argued that the CTBT is not truly comprehensive as it does not prohibit "sub-critical tests." In this way, India views the CTBT as a nonproliferation measure rather than a true disarmament measure.²¹ Additionally, New Delhi believes the CTBT's entry into force clause, which stipulates that the 44 countries that participated in the Conference on Disarmament and "possesse[d] nuclear research or nuclear power reactors" must ratify the Treaty before it can become operational, is an infringement on its national sovereignty.²² This stance is rooted in the view that the provisions of Article XIV of the CTBT are a violation of the 1968 Geneva Convention on the Law of the Treaties. According to that Convention, a treaty cannot bind nations that are not party to it. In India's view, the CTBT imposed obligations on it and denied its "right of voluntary consent in adherence to an international treaty."²³ On this basis, experts in India argue that the CTBT will continue to remain an elusive goal as long as the Treaty is just an instrument of nonproliferation rather than a step towards abolishing nuclear weapons entirely.

Since Pakistan's signature on the CTBT likely hinges on India's signature, it is similarly unlikely that Islamabad would undertake any positive steps towards the CTBT or the IMS network unilaterally. Nevertheless, there are some indications that Pakistan's position on the Treaty might be more flexible than India's. Although Pakistan echoed India's sentiments regarding the failure to link the CTBT with nuclear disarmament during the Treaty's negotiation, it nevertheless voted in favor of its adoption in the United Nations General Assembly in 1996.²⁴ Further, Pakistan does not appear to have doubts regarding the CTBT's verifiability. If Pakistan and the CTBTO could conclude a bilateral agreement to enable the Preparatory Commission to begin IMS construction activities, irrespective of Pakistan's Treaty status, it might put India on the defensive to respond. However, Pakistan's signature on the CTBT remains dependent on that of India's.²⁵ Moreover, there is hardly any public debate regarding the CTBT in Pakistan and its engagement with the CTBTO is marginal.

Benefits

In spite of these potential challenges to the building of IMS facilities in India and Pakistan, there are a number of practical reasons why this proposal might nevertheless be embraced by national leaders in both countries. Perhaps most significantly, becoming part of the CTBTO's IMS network is quite different from signing the CTBT. Taking one step does not oblige either state to take more meaningful steps. On this basis, establishing new IMS facilities could be defended as having value in that it enhances global information-sharing regarding the timely monitoring of low-yield, covert tests elsewhere in the region.

Second, the construction of IMS facilities would strengthen seismic data collection, which is of great utility on the earthquake-prone Subcontinent.²⁶ In India, the construction and certification of its four listed IMS stations could augment seismic networks already in existence.²⁷ The additional data these four stations could provide would help local bodies and the national government better forecast where powerful earthquakes are likely to occur and prepare for them more effectively. The same is true in Pakistan, where data compiled by the Pakistan Meteorological Department suggests that earthquakes are becoming more frequent and the likelihood for high magnitude quakes is rising.

Beyond earthquake monitoring, seismic and infrasound data from IMS facilities could also augment both countries' ability to anticipate tsunamis. The need for timely tsunami warnings became abundantly clear following the 2004 tsunami in the Indian Ocean, which killed over 230,000 people.²⁸ IMS data is especially useful in this respect because it is greater in volume and available more rapidly, accurately, and from more diverse locations than data derived from national networks.²⁹ By participating in the IMS, India and Pakistan would both contribute to, and benefit from, this increase in network coverage.

In this light, even apart from security and nonproliferation benefits, India and Pakistan would gain tangible benefits in the realm of natural disaster preparedness should they build IMS facilities on their territories. In linking these facilities to the IMS network, India and Pakistan would derive the benefits of information-sharing in the international system while demonstrating responsible nuclear stewardship. By participating in the IMS, scientists from both countries could also profit from increased interactions with the CTBTO. National entities in India and Pakistan have expressed their interest in establishing this type of contact. The Institute of Seismological Research in Gujarat, India, for example, highlighted its interest in "mechanisms for research, training and collaboration with national and international organizations in related fields."³⁰ The Seismic Monitoring and Early Tsunami Warning Center of the Pakistan Meteorological Department has identified "exchanging information pertaining to seismology with international agencies" as one of its objectives.³¹ On this basis, state and national research institutions would support the establishment of IMS facilities as one path to the interaction with the CTBTO that these entities seek. This contact could, in turn, build support among the scientific communities in both countries for greater engagement with the international nonproliferation regime.

Increasing interaction with the CTBTO might also increase contact between scientists and technical experts in India and Pakistan. This potential has already been realized on a limited

basis through the CTBTO's Science and Technology (SNT) forum. At SNT2017, for example, a team including Indian researchers presented the results of their analysis of 17 years of earthquake data derived from the IMS to predict the magnitude and frequency of future earthquakes in the Hindukush-Pamir Himalaya region.³² At the same conference, a researcher from Pakistan's National Defense University underscored how the application of Pattern Informatics onto global seismological data could be utilized in disaster prediction.³³ These studies highlight places where India and Pakistan's national interests coincide and raise awareness about the importance of the IMS to researchers in both countries. Because scientific cooperation is often less affected by political challenges than other types of interactions, the CTBTO-facilitated contact between Indian and Pakistani scientists might build trust and lay the groundwork for other, more ambitious CBMs in the future.

To conclude, there are a number of tangible, practical benefits for both India and Pakistan should they choose to build IMS facilities on their respective territories. Most importantly, both states would send a strong signal that they take seriously their responsibilities of nuclear stewardship. Despite longstanding mistrust and a lack of political will, policymakers in both countries would do well to seriously consider how the construction of IMS facilities on their territory could enhance their national security and strategic interests.



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- ¹⁸ The authors of this paper conducted an interview with Brig. Feroz Khan, professor at the Naval Postgraduate School in Monterey, California. The authors are grateful for Brig. Khan’s remarks, which helped strengthen the ideas put forward in this paper.
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