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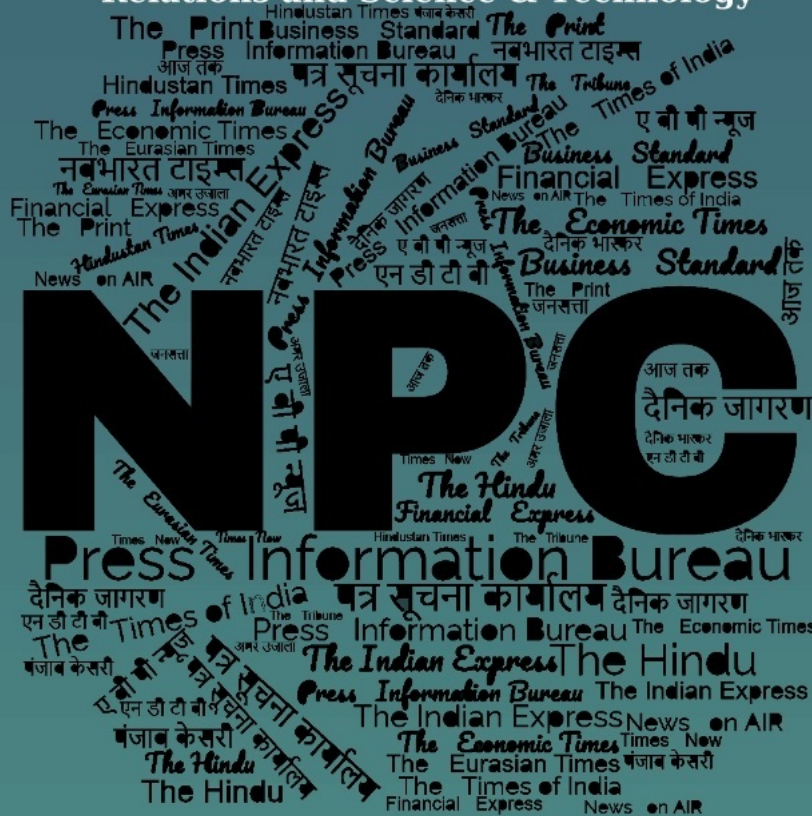
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Defence News

Innovate at speed of relevance: IAF Chief to defence agencies

Source: The Times of India, Dt. 19 May 2026

With countries developing new defence systems at a faster pace amid ongoing conflicts, IAF chief Air Chief Marshal (ACM) A P Singh has a word of advice for Indian defence agencies involved in research and development (R&D): they must “innovate at the speed of relevance”.

“We need to increase the speed because the system has to come in before it becomes irrelevant. While we build the systems today, we must be doing R&D on systems of tomorrow. It is good to have, maybe 85-90% capability of the system on time than to wait for that 100% and delay it beyond its relevance period,” the IAF chief stressed while speaking at a recent seminar co-hosted by think-tank CAPSS and Indian Military Review publication here.

Addressing senior military officials, IAF chief said for any modern aerial threat, complete domain awareness is key, and there should be “total coordination” among the three services. “We have seen what happens... if you don’t have domain awareness, you don’t know where your people are and where others are. We’ve seen what happened to F-15s (US fighter jets) in Kuwait. The fratricide part. So, we cannot afford to have things like that,” ACM Singh said.

He was referring to the incident on March 1 in which “three US F-15E Strike Eagles went down over Kuwait due to an apparent friendly fire”, according to the US CENTCOM. He also highlighted the importance of drones, unmanned aircraft systems (UAS) and counter-UAS. “There is no denying that the battlefield has shifted. We are shifting totally from very concentrated air power to a sort of decentralised and autonomous power. So, all rules of air power will apply when you use UAS. And they are no more eyes in the sky. They are like claws in the sky now,” he said.

Recalling IAF’s key role during Op Sindoor, Singh said, “I think we did reasonably well in Op Sindoor. And that happened because there was coordination...Without having IACCS (Integrated Air Command and Control System) as a nerve centre, whether it was counter-UAS, counter-weapon or counter-aircraft, it wouldn’t have been possible.”

<https://timesofindia.indiatimes.com/india/good-to-have-a-90-developed-system-on-time-than-having-100-after-it-loses-relevance-iaf-chief/articleshow/131185818.cms>

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सान्या बर्नी भारतीय वायुसेना की पहली महिला फ्लाईंग इंस्ट्रक्टर

Source: Dainik Jagran, Dt. 19 May 2026

भारतीय वायुसेना में नारी शक्ति ने ऐसा मुकाम हासिल किया है, जिसने पूरे देश का सिर गर्व से ऊंचा कर दिया है। स्क्वाड्रन लीडर सान्या भारतीय वायुसेना की पहली महिला अधिकारी बन गई हैं, जिन्होंने प्रतिष्ठित कैटेगरी-ए क्वालिफाइड फ्लाईंग इंस्ट्रक्टर यानी कैट-ए क्यूएफआइ की उपलब्धि हासिल की है। भारतीय वायुसेना ने स्वयं इस ऐतिहासिक उपलब्धि की जानकारी साझा करते हुए कहा कि स्क्वाड्रन लीडर सान्या ने

कैट-ए. क्यूएफआइ की प्रतिष्ठित योग्यता प्राप्त कर इतिहास रच दिया है। वायुसेना ने इसे भारतीय सैन्य इतिहास का गर्वपूर्ण क्षण बताया। कैट-ए क्यूएफआइ की योग्यता भारतीय वायुसेना में अत्यंत कठिन व प्रतिष्ठित मानी जाती है। इसे प्राप्त करने के लिए असाधारण उड़ान कौशल, तकनीकी दक्षता, व नेतृत्व क्षमता की आवश्यकता होती है।

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IAF gets 1st top rated woman flying instructor

Source: The Times of India, Dt. 19 May 2026

In another example of women breaking glass ceiling in the Indian armed forces, Squadron Leader Saanya has made history by becoming the first woman officer to achieve the top category qualified flying instructor position in the Indian Air Force.

In a post on X, the IAF said, "Excellence takes flight. Squadron Leader Saanya achieved a historic first by becoming the first woman officer to earn the coveted Cat-A Qualified Flying Instructor (QFI) qualification."

Highlighting her achievement, the air force said, "Her achievement embodies dedication and relentless pursuit of excellence. A proud milestone for the IAF and an inspiration for aspiring aviators across the nation."

The IAF uses a structured system to rank the instructional expertise of its pilots. Cat-C is for trainee or probationary instructors, Cat-B is for instructors capable of standard flying instruction and Cat-A is the pinnacle of the grading system, allowing the pilot to train other instructors and assess advanced flight skills.

Cat-A QFI plays a crucial role in shaping the next generation of fighter pilots. Trainers in such a category train young aviators, assess their progress, correct their errors, build their confidence and prepare them for the top flying skills needed for air combat.

The role requires a rare combination of skill, patience, clarity, composure and deep technical knowledge. By earning this qualification, Squadron Leader Saanya has placed herself among the finest flying instructors in the IAF training system.

Public service records list Sq Ldr Saanya as an officer of the Flying branch, commissioned on June 20, 2015 from the 42 SSC (W) FP Course. She was promoted to Flight Lieutenant in 2017 and Squadron Leader in 2021.

Her achievement has come at a time when women officers in the IAF are breaking new grounds regularly: From fighter jet flying and transport operations to helicopter units, flight testing, command appointments and instructional roles, Indian women aviators have steadily expanded their presence in areas once dominated by men.

<https://timesofindia.indiatimes.com/india/sqn-ldr-saanya-makes-history-becomes-iafs-first-woman-cat-a-qualified-flying-instructor/articleshow/131185805.cms>

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Rajnath Singh embarks on four-day visit to Vietnam, South Korea

Source: The Pioneer, Dt. 19 May 2026

Defence Minister Rajnath Singh on Monday embarked on a four-day visit to Vietnam and South Korea to explore ways to shore up strategic defence cooperation, including joint production of military hardware.

Before leaving for Vietnam's Capital Hanoi, he said the focus of his trip to the two Asian nations will be to strengthen defence industrial partnerships, boost maritime collaboration and promote peace and stability in the Indo-Pacific region.

After concluding his trip to Vietnam, the defence minister will travel to South Korea on Tuesday on a three-day visit. Rajnath Singh's visit to Vietnam comes days after the two countries elevated their ties to an enhanced comprehensive strategic partnership during Vietnamese President To Lam's trip to New Delhi.

In Hanoi, the defence minister will hold bilateral talks with National Defence Minister Gen Phan Van Giang. It is understood that the two sides will also deliberate on the prevailing situation in the South China Sea, a region that has witnessed increasing Chinese military muscle-flexing.

There have been growing concerns over China's sweeping claims of sovereignty over all of the South China Sea, a huge source of hydrocarbons. Several countries in the region, including Vietnam, the Philippines and Brunei, have counterclaims.

India and many other democratic countries have been pressing for a peaceful settlement of the disputes and for adherence to international law, especially the UNCLOS (UN Convention on the Law of the Sea). Officials said Rajnath Singh and Gen Giang will hold extensive talks on boosting bilateral defence industrial cooperation, including joint development of military hardware.

A joint vision statement of India-Vietnam defence partnership towards 2030 was signed as part of Singh's last visit to Vietnam in 2022. The vision statement clearly enunciates a defined way ahead for bilateral defence cooperation. During his visit to South Korea, Rajnath Singh will hold bilateral talks with National Defence Minister Ahn Gyu-back.

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Rajnath Singh visits Vietnam within fortnight of BrahMos sale talks

Source: The Tribune, Dt. 19 May 2026

Defence Minister Rajnath Singh landed in Vietnam on Monday, on a two-day visit, as part of the military cooperation outreach with the South East Asian nation. Rajnath's visit to Vietnam is taking place within two weeks of India and Vietnam having discussed the sale of the BrahMos missile.

New Delhi has also offered maintenance repair and overhaul (MRO) facilities for the Sukhoi-30 jets and Kilo-class of Submarines in the fleet of the South-East Asian country. Vietnam has expressed its keenness on buying the BrahMos from India and is seeking faster deliveries. It has conveyed its interest in the shore-based anti-ship variant to bolster coastal defence capabilities in the South China Sea.

A discussion on the BrahMos and on implementing the MRO, took place earlier this month, when Prime Minister Narendra Modi met with Vietnam's President To Lam in New Delhi. India has already supplied the BrahMos missile to the Philippines and firmed up a deal with Indonesia earlier this year. Vietnam and the Philippines are among the five countries locked in a maritime territorial dispute with China in the South China Sea.

Sources indicate the India-Vietnam BrahMos deal could be worth approximately USD 630 million, and the package would likely include the missile systems, specialised training for Vietnamese personnel, and long-term logistical support.

After his visit in Vietnam, the Defence Minister will proceed to South Korea for two days. In a post on X, Singh wrote, "Today, 18th May, I shall be reaching Hanoi. Looking forward to visiting Vietnam and South Korea this week to further expand the scope of our engagement. I will focus on deepening strategic military cooperation, strengthening defence industrial partnerships, and boosting maritime collaboration promoting peace and stability in the Indo-Pacific region."

Singh's visit to Vietnam marks 10 years of 'comprehensive strategic partnership' between the two nations, which was upgraded to 'enhanced comprehensive strategic partnership' during the state visit of President To Lam to India from May 5 to 7.

Singh will also hold bilateral talks with the Minister of National Defence of Vietnam General Phan Van Giang. A 'joint vision statement' of India-Vietnam Defence Partnership towards 2030 was signed back in 2022.

During his visit to South Korea, Singh will hold bilateral talks with the Minister of National Defence, Republic of Korea Ahn Gyu-back. Meanwhile, to honour the role of Indian forces in the Korean war, Singh will jointly inaugurate the Indian War Memorial with Minister of Patriots and Veterans Affairs South Korea Kwon Oh-eul on May 21.

<https://www.tribuneindia.com/news/world/defence-minister-rajnath-singh-arrives-in-vietnam-defence-cooperation-key-focus/>

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Indian Ocean Ship Sagar departs Colombo after successful Port Call

Source: Press Information Bureau, Dt. 18 May 2026

The Indian Navy's Indian Ocean Ship (IOS) Sagar departed Colombo, Sri Lanka on 18 May 2026 following a successful three-day port call, further reinforcing the enduring maritime partnership between India and Sri Lanka and advancing India's vision of MAHASAGAR - Mutual and Holistic Advancement for Security and Growth Across Regions.

During the visit, the Commanding Officer of IOS Sagar called on senior leadership of the Sri Lanka Navy and held discussions focused on enhancing maritime cooperation, regional security, and collective efforts towards ensuring safe and secure sea lanes in the Indian Ocean Region.

A deck reception hosted onboard IOS Sagar served as a platform for diplomatic engagement and strengthened professional interactions among naval personnel and distinguished guests. The event highlighted the multinational character of the ship's crew and underscored the spirit of regional cooperation embodied by the deployment.

As part of outreach activities, IOS Sagar welcomed senior Sri Lanka Navy officers, local school children, and members of the Indian diaspora onboard, providing them with an opportunity to experience the operational capabilities and life aboard the ship firsthand.

The visit also featured professional and cultural engagements aimed at fostering camaraderie and mutual understanding. A friendly volleyball match between the personnel of Sri Lanka Navy and IOS Sagar promoted esprit de corps and strengthened interpersonal bonds between the two navies. In addition, the multinational crew undertook cultural visits to Galle and Kandy, gaining deeper insights into Sri Lanka's rich cultural and historical heritage.

On departure from Colombo, IOS Sagar participated in a Passage Exercise (PASSEX) with Sri Lanka Navy Ship SLNS Nandimithra. The exercise included coordinated tactical manoeuvres and communication drills designed to enhance interoperability, seamanship, and operational coordination between the two navies.

IOS Sagar is presently enroute Kochi, continuing its mission of fostering maritime cooperation, interoperability and friendship among partner nations in the Indian Ocean Region.

<https://www.pib.gov.in/PressReleasePage.aspx?PRID=2262449®=3&lang=1>

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Science & Technology News

Nano-Gold embedded in Thin Films paves way for Self-Powered Sensors & Wearable Electronics

Source: Press Information Bureau, Dt. 18 May 2026

New ultrathin flexible film developed by researchers that can efficiently convert tiny temperature fluctuations into electrical signals, could support future smart photodetectors, low-grade heat harvesters, and advanced flexible electronic systems relevant to healthcare, environmental monitoring, and energy-efficient devices. There is strong demand for lightweight, flexible, and low-power materials that can convert tiny thermal fluctuations into usable electrical signals for next-generation smart devices and autonomous sensors.

Earlier plasmonic-pyroelectric and PVDF composite systems have shown enhanced thermal-to-electrical conversion, but many such approaches rely on micron-thick devices or less controlled hybrid interfaces, which limits their suitability for thin, wearable, and low-power electronics. There is a growing interest in combining plasmonic with pyroelectric polymers to create high-speed, low-power, self-powered devices that can respond to both thermal and optical stimuli.

Scientists from Institute of Nano Science and Technology (INST), Mohali, an autonomous institute of the Department of Science and Technology have demonstrated that embedding a minute amount of nanogold into a common ferroelectric polymer dramatically boosts its pyroelectric performance or the ability to generate electricity from changes in temperature. The team led by Prof. Dipankar Mandal and collaborators including Sudip Naskar, engineered ultrathin films made from polyvinylidene fluoride (PVDF), a flexible polymer widely used in electronic and sensing applications.

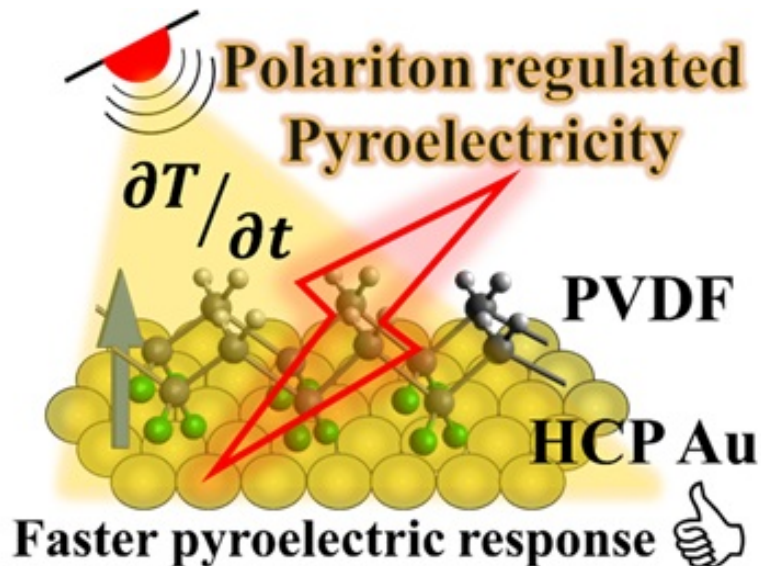


Fig: Gold polaritons regulate molecular dipoles of PVDF to enhance pyroelectricity, enabling a faster and more efficient thermal energy-harvesting response.

They built on known ferroelectric and film-forming properties of PVDF, and designed a low-dose in-situ nanogold strategy to understand how nanoscale gold–polymer interactions, dipole orientation, and confined plasmonic excitations can be used to tailor pyroelectric performance in very thin films. By incorporating hexagonal nanogold particles into films thinner than 100 nanometres, the researchers achieved a nearly pure polar phase of PVDF with highly ordered dipoles, a structure essential for efficient pyroelectric behaviour.

The research published in *Adv. Funct. Mater.* establishes that a polymer-supported metastable hexagonal closed pack phase of gold nanoparticle and a highly ordered polar phase of PVDF matrix can be integrated into a robust 2D hybrid thin film, where plasmon-dipole-electron coupling act cooperatively to enhance pyroelectricity, dipole ordering, and broadband optical absorption. By demonstrating efficient pyroelectric energy conversion in an ultrathin film over a small temperature fluctuation range of 294 to 301 K, this work addresses an important need for ambient-temperature thermal sensing and wearable energy harvesting technologies.

Publication link: (<https://doi.org/10.1002/adfm.202515437>).

<https://www.pib.gov.in/PressReleasePage.aspx?PRID=2262288®=3&lang=1>

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How does the Earth protect itself from the Sun? A joint Chinese-European mission aims to find out

Source: *The Indian Express*, Dt. 19 May 2026

In a first, Chinese and European space agencies are sending a joint mission to study the Earth's defences against the Sun. The (Solar wind Magnetosphere Ionosphere Link Explorer (SMILE) mission will be launched on Tuesday (May 19) at 05:52 CEST (09:22 IST) on a European Vega-C rocket.

The mission aims to capture the first X-ray images of Earth's protective magnetic shield in action as it battles and deflects harmful charged particles and energies coming from the Sun.

These periodic events, when the Sun's ejections interact with the outer layers of Earth's magnetic field, give rise to spectacularly bright 'dancing lights' in the sky, called auroras. Auroras have been visible from Earth for centuries and evoked a sense of wonder. For the very first time, a satellite placed deep in space will capture the full spectrum of this interaction and take never-before-seen images of a crucial process that enables life on Earth.

By studying these interactions, the SMILE mission can help enable an early warning system for solar ejections that would be useful not just in protecting our space assets but also ground-based infrastructure like electricity grids from particularly nasty solar flares.

The shield

The Sun constantly spews various types of matter, magnetic fields, energy and plasma into space. Among the most harmful solar ejections are solar flares, solar storms and coronal mass ejections, all of which are highly potent and can interfere with space weather. Perturbations to space weather can have major ramifications on many of Earth's critical space assets.

Earth remains largely protected from these ejections thanks to the magnetic field that blankets it, called the magnetosphere. In our solar system, Earth has one of the strongest magnetospheres. It is a vast, comet-shaped bubble that continuously shields the planet from harmful solar and cosmic particle radiation.

It is the magnetosphere that makes it possible for life to form, exist and sustain on Earth. It also acts as a shield, preventing the Earth's atmosphere from being eroded due to the incoming solar winds. The magnetosphere thus adapts and reacts to the solar, planetary and interstellar conditions, which manifest in space weather from time to time.

SMILE is not the first space mission meant to study the magnetosphere. Past missions like the Swarm and Cluster by the European Space Agency (ESA) have also vastly improved our understanding of this region in space and the processes that happen here.

What sets SMILE apart is that it will, in real-time, be able to capture X-ray images of how the Earth's magnetosphere instinctively reacts and protects the Earth from numerous incoming solar emissions and charged particles. Unlike previous missions, it will also get a full view of the interactions happening in the magnetosphere.

The mission

SMILE is designed to get answers to what happens when a stream of solar wind interacts with Earth's magnetic shield and the magnetic glitches occurring on the dark side of Earth. It will help solar physicists better understand space weather.

It will also help physicists forecast any impending solar storm or likely perturbations to space weather. This is vital for the safety of our space-based assets, like satellites and satellite-based communication, GPS, navigation systems and airline operations, as well as uninterrupted operations of space stations and astronaut safety.

The forecasts happen even now, thanks to satellites installed in space for this purpose, but SMILE is expected to significantly improve the accuracy and effectiveness of these forecasts. Unlike our current assets, SMILE is designed to obtain a full view of the interaction and much richer data from them.

It will be positioned at about 1.21 lakh km above Earth's north pole and be able to observe the edge of the magnetosphere in its entirety. SMILE weighs about 2,600 kg and has a mission life of about three years.

The four onboard instruments will operate both on X-ray and ultraviolet wavelengths of the electromagnetic spectrum. The mission is carrying four scientific instruments, weighing 70 kg in total. All these payloads will use remote sensing and make in situ (on site) observations along the near-Earth regions.

ESA has developed the Soft X-ray Imager (SXI), whereas the Chinese team has developed the other three payloads — Magnetometer, Light Ion Analyser (LIA) and Ultraviolet aurora Imager (UVI).

European countries Austria, Belgium, Denmark, France, Germany, Italy, Luxembourg, the Netherlands, Norway, Spain, Switzerland and the UK have worked with the Chinese on this mission. While the Chinese and European space agencies have worked together in the past, this is the first time that they are sending a joint mission to space.

<https://indianexpress.com/article/explained/explained-sci-tech/smile-mission-earth-magnetosphere-solar-storms-10695581/>

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From Pokhran -I to Pokhran-II: India's nuclear journey

Source: The Statesman, Dt. 19 May 2026

A 107-metre-deep shaft was dug, and a nuclear device of 1.25-metre diameter, placed on a hexagonal metallic tripod, was lowered to the bottom and packed securely by post-midnight on 17-18 May 1974.

While the team of scientists spent that eventful night sleepless, giving final touches to the history-making task, in New Delhi, late Prime Minister Indira Gandhi, who herself was monitoring the entire affair, was also more or less in the same state of mind. Waiting for the good news, she sat by the telephone in her chamber early in the morning, a revisit to memory lane reflects.

Finally, in Pokhran at around 8:05 am on 18 May 1974, nuclear scientist Dr Pranab R Dastidar pressed the firing button of the 1400-kg plutonium implosion fission device, to the jubilation of the team of India's top scientists, who had been working in Pokhran throughout the night to script a golden chapter in the history of nuclear science.

The earth shook with tremors and a deafening explosion made a loud announcement of India's prowess, enabling the country to join the elite group of five nuclear-powered nations — the US, the UK, Russia, France and China.

However, people from different walks of life interpreted the happenings at the army field range differently. While local residents in areas adjoining the army field firing range mistook it for a strong earthquake, the scientists monitoring the seismic instruments burst into joy at the grand success of Operation Smiling Buddha.

Confirming the success and precision of the test blast, at around 8:10 am Dr Raja Ramanna, Director of India Nuclear Program, telephoned Mrs Gandhi to convey the historic message: "The Buddha has smiled."

This is how the news broke to the world. Prior to this, the intended for peace, had remained strictly confined to the Prime Minister, around 75 selected top scientists, and senior army brass throughout the entire span of the project from inception and research to coordination and preparation which took almost six to seven years.

Earlier, the foundation for India's capacity-building in nuclear science and energy had begun with the formation of the Nuclear Energy Commission in 1948, strengthened in phases and focused on the development of nuclear power plants. The aspiration to work on a nuclear device emerged after Indira Gandhi became Prime Minister in 1966.

The political and strategic handling of the post "Buddha Smiled" situation gave India's nuclear power programme the desired boost and accelerated the further evolution of the agenda.

This received further recognition when then Prime Minister Atal Bihari Vajpayee once again surprised the world in May 1998, turning the "Buddha's Smile" into a "jolly laugh" by triggering five more nuclear tests under Pokhran-II.

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The Tribune
The Statesman
ਪੰਜਾਬ ਕੇਸਰੀ ਜਨਸਤਾ
The Hindu
The Economic Times
Press Information Bureau
The Indian Express
The Times of India
Hindustan Times
नवभारत टाइम्स
दैनिक जागरण
The Asian Age
The Pioneer