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# India's Nuclear Churning for *Viksit Bharat*

India's nuclear programme and policy has been anchored on the twin objectives of meeting country's needs for clean energy and ensuring credible deterrence for national security. Parliament recently passed The Sustainable Harnessing and Advancement Nuclear Energy for Transforming India (SHANTI) Bill. It is against this backdrop that this article aims to put in perspective the evolution of India's nuclear policy and programme in response to changing needs of the time. In the first segment, the article looks back at India's nuclear policy and programme in the historical context including the Peaceful Nuclear Explosion (PNE) in 1974, Pokhran-II nuclear tests of 1998 and the India-US Civil Nuclear Agreement. The second segment of the article delineates the salience of the SHANTI Bill which has been enacted into an Act with the assent of the President of India.

If India's nuclear doctrine is the text, then it needs to be seen in its historical context. India as an independent nation was born in the backdrop of Second World War. In 1941, Japan had attacked the Pearl harbour in Hawaii in the West Pacific, which brought the US into the Second World War. Four year later in 1945, USA dropped atom bomb on Hiroshima and Nagasaki exposing the world to death and devastation and in 1947 India was born in this backdrop of nuclear brinkmanship fighting against colonialism and imperialism. India had seen the suffering and human misery caused by nuclear armament. But then there was also the issue of atom for peace, for development. So one couldn't ignore development of nuclear energy. India's nuclear doctrine has been in synch with the philosophy of non-violence which means that non-violence doesn't meant that you need to be weak, rather you need to be strong enough to deter your adversary.

In 1947, when India emerged as a free country to take its rightful place in the comity of nations, the nuclear age had already dawn. This required the building up of national strength through country's own resources, skills and creativity and the dedication of the people. The creation of the Department of Atomic Energy and the Atomic Energy Commission were such initiatives to meet the future energy needs of the country. The Atomic Energy Act was also enacted in 1948, which has been amended from time to time. At a time when nuclear technology was denied to India, eminent nuclear scientists like Homi J Bhabha indigenously developed nuclear technology.

In 1974, India demonstrated its nuclear capabilities by conducting a Peaceful Nuclear Explosion (PNE) in Pokhran, Rajasthan. However, this event was not utilized to formally declare the nation a recognised nuclear power. Consequently, the Nuclear Suppliers Group (NSG), an international nuclear export control body, subjected India to restrictive sanctions.

It was against this background that the NDA government under Prime Minister Shri Atal Bihari Vajpayee, India decided to conduct the underground nuclear explosion in Aril 1998. India did three tests between 11-13 April, 1998. The then Prime Minister, late Shri Atal Bihari Vajpayee while laying the on the table of the House on "Evolution of India's Nuclear Policy" on 27 May 1998 after India's nuclear tests in Pokhran on 11-13 May informed the House that India subscribes to the principle of equal and legitimate security interests of the nations and consider it a sovereign right. He said, "At the same time our leaders recognised early

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that nuclear technology offers tremendous potential for economic development especially for developing countries who are endeavouring to leap across the technology gaps created by long years of colonial exploitation. This thinking was reflected in the enactment of Atomic Energy Act of 1948, within a year of our independence."

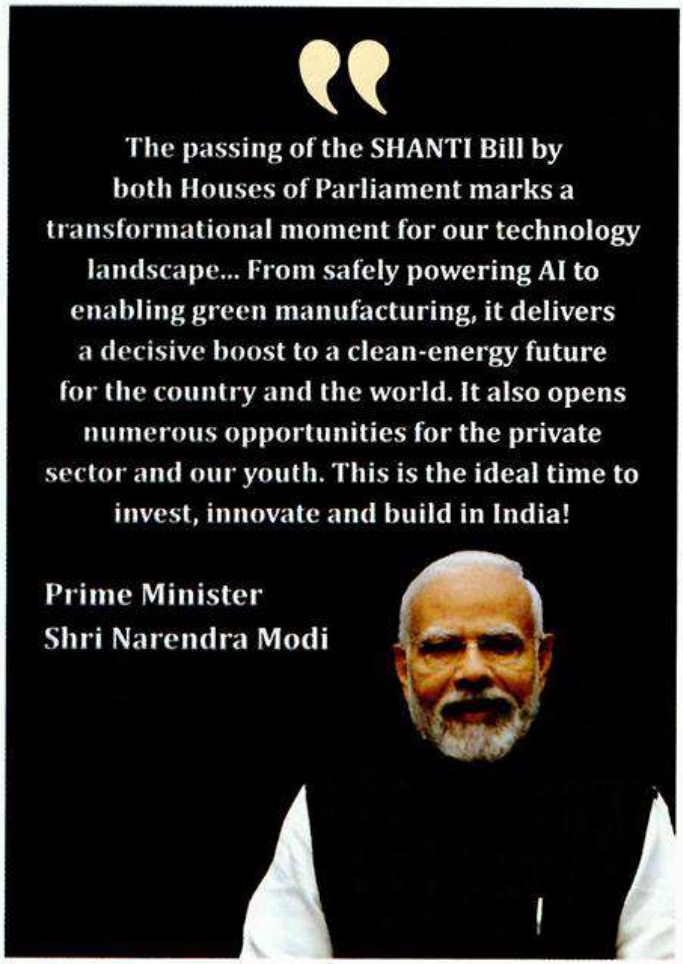
In a letter to President Bill Clinton which was published in New York Times published on 13 May 1998, Prime Minister Vajpayee explained the rationale for the underground nuclear test. He wrote, "We have an overt nuclear state on our border, a state which committed armed aggression against India in 1962. Although our relations with that country have improved in the last decade or so, an atmosphere of distrust persists mainly due to the unresolved border problem. To add to the distrust that country has materially helped another neighbour ours to become a covert nuclear test."

A milestone in the relationship between the two countries was Indo-US Nuclear Deal announced by President George W Bush in July 2005. The deal, called 123 Agreement, was formally signed by both sides. The Nuclear Deal envisaged to enable India to import nuclear reactors from France, Russia, Canada and other countries. It was also argued that the deal would enable India to have access to nuclear fuels from these countries. It had two broad objectives-meeting India's strategic objective and providing energy security.

A great challenge for the Indo-US nuclear deal was the Separation Plan which the two sides negotiated between August 2005 and February 2006. India had a total of twenty-two nuclear plants in 2005. The Civil Liability for Nuclear Liability Damage (CLND) Act 2010, a legislation was enacted by Parliament to ensure a speedy compensation mechanism for victims in case of a nuclear accident.

Yet another milestone in India's quest for clean energy is the passing of The Sustainable Harnessing and Advancement of Nuclear Energy for Transforming India by Indian Parliament in December last year.

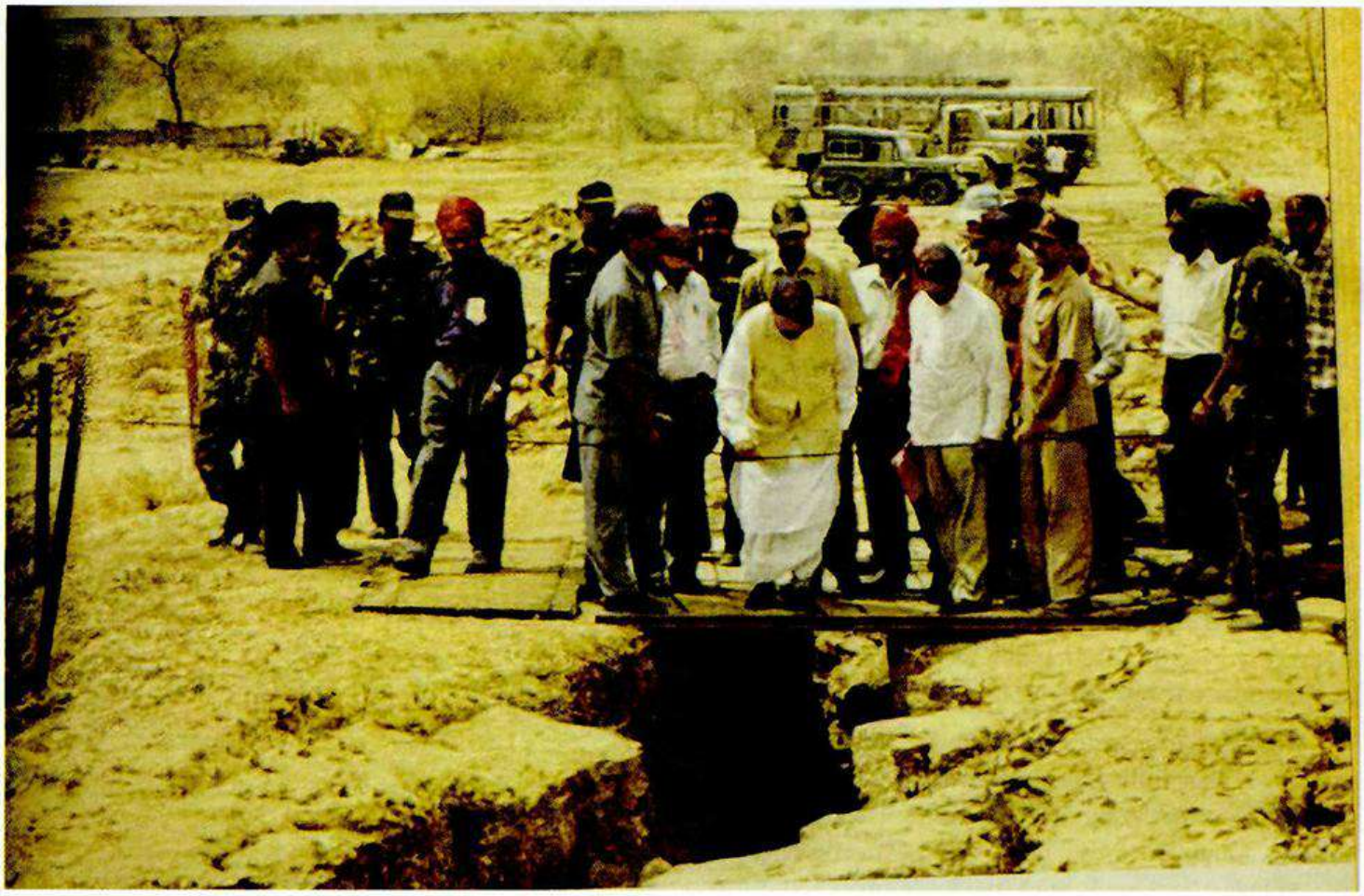
India's 100 GW nuclear-by-2047 target under the Nuclear Energy Mission for Viksit Bharat is anchored in the twin imperatives of long-term energy security and decarbonisation, providing reliable baseload power to complement renewables while advancing the net-zero-by-2070 commitment. It also reflects a strategic push for technological self-reliance, through indigenous PHWRs, SMRs, and fast breeder reactors




leveraging India's thorium reserves, reducing energy-import dependence as the economy scales toward Viksit Bharat.

The Act aims at augmenting clean energy from atomic fission. Atomic energy doesn't produce greenhouse gases. With India arriving on the world stage as de-facto nuclear weapon state, another national need which was equally important, was the rapid deployment of nuclear energy. While India had realised its strategic strength, deployment of nuclear power for electricity generation needed acceleration. More importantly, considering the massive energy needs of the country to support development and the threat of climate change looming large over the world as a whole, it is evident that fast growth of nuclear energy deployment is a strategic necessity. The passing of the SHANTI Bill is a reflection of resilience and dynamism of Indian Parliament to rise to the occasion and respond to the changing needs of the time to realise the lofty goals of *Viksit Bharat* as envisioned by Prime Minister Shri Narendra Modi.

Accordingly, to the objects and reasons of the Act, India has set an ambitious target to achieve energy independence with a roadmap for decarbonisation



*Former Prime Minister Shri Atal Bihari Vajpayee at Pokhran*

of the economy by 2070 and to achieve 100 Giga Watt of nuclear power capacity by 2047. To achieve this goal, it is imperative to enact a new legislation to harness the full potential of India's nuclear energy and indigenous resources through active involvement of both the public and private sectors. It further seeks to leverage the contribution of domestic nuclear energy for augmenting the global nuclear energy ecosystem.

Some of the salient features of the Act are : The act provides for harnessing the potential of nuclear energy through active involvement of both public and private sectors and to leverage the participation of the domestic industry to contribute to and benefit from the global nuclear energy ecosystem including research, technology, manufacturing, finance insurance and skill development.

The Act further envisages certain sensitive nuclear fuel-cycle activities are reserved exclusively for the Central Government or its wholly owned institutions. These include enrichment or isotopic separation of prescribed or radioactive substances (unless otherwise notified), management of spent fuel such as reprocessing, recycling, radionuclide separation, and high level waste handling, production and upgradation of heavy water, and any other facilities or activities specifically notified by the Government.

The Act acknowledges India's excellent record in nuclear safety and radiation safety needs to be sustained through enhanced legal and regulatory framework for ensuring continued excellence keeping pace with the large-scale expansion of nuclear power programme, rapidly emerging. It underscores Artificial Intelligence enabled nuclear and radiation technologies and other radiation applications.

It further establishes a structured system for granting, suspending, or cancelling licenses and safety authorizations for nuclear energy production and use. The Act establishes a graded liability framework. Under this framework, the limits on operator liability are detailed according to the type and characteristics of the nuclear installation.

The SHANTI Act is arguably a landmark legislation in India's nuclear journey. It bolsters the legal framework and empowers institutional oversight and creates the edifice for a more efficient innovative and secure nuclear ecosystem. ❑