1. The India-US 123 Agreement of 2007 could finally achieve its full potential

India-US 123 Agreement of 2007

Section 123 of the United States Atomic Energy Act of 1954, titled "Cooperation With Other Nations", establishes an agreement for cooperation as a prerequisite for nuclear deals between the US and any other nation. Such an agreement is called a 123 Agreement. To date, the U.S. has entered into roughly twenty-six 123 Agreements with 52 countries. Such an agreement was also signed with India. Subsequent to this agreement, India-US Nuclear took place.

Indo-US Nuclear Deal 2008

The most path-breaking part of Indo-US relationship was Indo-US nuclear deal. According to this deal, the United States will provide India access to nuclear fuel, reactor and technology subject to the waiver of Nuclear Suppliers Group.

India was required to ensure that the nuclear supplies would be used only for civilian purposes. Consequently, India separated its nuclear facilities into military and civilian. The civilian facilities used were put under IAEA inspections to prevent any diversion of nuclear supplies for military purposes. As a result, India ratified the 'Additional Protocol' with the International Atomic Energy Agency (IAEA) and civilian facilities were put under IAEA safeguards.

Roadblocks due to India's Legislative framework

Though the Nuclear deal took place, still there are many roadblocks which hampered the nuclear cooperation between the two countries.

Atomic Energy Act, 1962: This act allowed only to state-owned Nuclear Power Corporation of India Ltd (NPCIL), and some joint ventures between NPCIL and other state-owned companies such as NTPC Ltd and NALCO into nuclear power plant operations.

Civil Liability for Nuclear Damage Act, 2020: This act had sought to create a mechanism to compensate victims for a possible nuclear accident, and allocate liability and specify procedures for compensation. This act provided for the initial liability of nuclear operators in case of nuclear accident. However, the operators can further sue suppliers of nuclear reactors, if the accident took place due to fault of suppliers.

These provisions have been cited as an impediment by foreign players such as GE-Hitachi, Westinghouse, and the French nuclear company Areva (Framatome) to investing in India, primarily on the grounds that the legislation channelised operators' liability to equipment suppliers.

Proposed Changes in India's Legislative Framework

In the recent Union Budget, government has mentioned its intentions to take up amendments to the Atomic Energy Act, 1962 and the Civil Liability for Nuclear Damage Act, 2010 (CLNDA) for nuclear reactors.
The proposed changes to the Atomic Energy Act are aimed at opening the door wider to let the private sector into nuclear power plant operations, and to enable them to enter the Small Modular Reactor (SMR) sector as operators.

The proposed changes to CLNDA act seek to cap the liability of nuclear suppliers in case of an accident.

'810' roadblock in the US Laws
This '810' provision — Part 810 of Title 10, Code of Federal Regulations of the US Atomic Energy Act of 1954 — allows American nuclear power companies to export to countries such as India under some strict safeguards, but restricts them from manufacturing any nuclear equipment or performing any nuclear design work outside of the US.

This provision is a big hindrance for India's Small Modular Reactors (SMR) ambitions, since it wants to participate in manufacturing these reactors being built in India, and to co-produce the nuclear components for its domestic needs. An exception on 810 is, therefore, vital for India.

Why SMRs matter to India
SMRs are reactors with a capacity of 30MWe (megawatt electric) to 300 MWe per unit. India is seeking to heavily rely on SMRs for its future energy needs. Currently, two SMR projects have reached the operational stage globally. The Akademik Lomonosov floating power unit in Russia, which has two modules of 35 MWe, started commercial operation in May 2020. The other, a demonstration SMR project called HTR-PM in China that was grid-connected in December 2021, is reported to have started commercial operations in December 2023.

Multiple Western companies are in various stages of getting certifications for their own SMRs.

Relevance: GS Prelims & Mains Paper II; International Relations
Source: Indian Express and The Hindu

2. What are sovereign green bonds? Why is demand for such bonds weak in India?

Introduction
Like several emerging markets, India also turned to sovereign green bonds to help fund its transition to a low-carbon economy, but investor demand remains weak.

What are green bonds?
Green bonds are debt instruments issued by governments, corporations, and multilateral banks to raise funds for projects that reduce emissions or enhance climate resilience.

Issuers typically offer green bonds at lower yields than conventional bonds, assuring investors that the proceeds will be used exclusively for green investments. The difference in yield — known as the green premium, or greenium — determines the cost advantage of green bonds.

A higher greenium allows issuers to raise funds at lower costs, making green investments more attractive.

Investors in green bonds often seek stable, long-term returns, and may also have internal or external mandates to allocate a portion of their funds to green financing. Despite their potential, green bonds constitute a small part of the debt market and overall climate financing, as governments strengthen reporting practices and introduce incentives to attract investors.

Sovereign Green Bonds

Sovereign green bonds (SGrBs) are those that are issued by sovereign entities, like the Government of India, which formulated a framework for issuing such bonds in 2022. The framework defines "green projects" as those that encourage energy efficiency in resource utilisation, reduce carbon emissions, promote climate resilience, and improve natural ecosystems.

Utilisation of Funds

Since 2022-23, India has issued SGrBs eight times, and raised almost Rs 53,000 crore. Each year, the government uses roughly 50% of proceeds from SGrBs to fund production of energy efficient three-phase electric locomotives through the Ministry of Railways.

For 2024-25, the revised estimates for allocations to schemes eligible under SGrBs include Rs 12,600 crore for electric locomotive manufacturing, roughly Rs 8,000 crore for metro projects, Rs 4,607 crore for renewable energy projects, including the National Green Hydrogen Mission, and Rs 124 crore for afforestation under the National Mission for a Green India.

Why are investors not excited?

India's SGrB issues have struggled to gain traction due to muted investor demand, making it difficult for the government to secure a greenium. Despite efforts, including easing rules for foreign investors, auctions have seen limited participation, with bonds often devolving to primary dealers.

While globally greeniums have reached 7-8 basis points, in India it is often at just 2–3 basis points. This limits the expansion of SGrBs as a viable funding source.

A key challenge is liquidity. Small issue sizes and investors holding bonds until maturity have stifled secondary market trading, reducing their appeal. Additionally, India lacks a strong ecosystem of social impact funds and responsible investing mandates, which in other markets drive green bond demand.

Why does this matter?

The government's inability to raise adequate proceeds from SGrBs impacts funding for schemes eligible under it and increases pressure on general revenue to meet the shortfall.

Initially, the estimated funding requirement from SGrB proceeds for 2024-25 stood at Rs 32,061 crore. However, after unsuccessful attempts to sell SGrBs due to higher yields cited by investors, the revised estimate has been lowered to Rs 25,298 crore. As a result, allocation for

a scheme promoting grid-scale solar projects has been slashed from Rs 10,000 crore to Rs 1,300 crore.
The total expenditure in the current financial year will be made against expected proceeds amounting to Rs 21,697 crore, and to bridge the shortfall, roughly Rs 3,600 crore will be drawn from the government's general revenue.

What can be the way forward?
According to a recent World Bank report, emerging market sovereign issuers tend to issue more bonds that finance a combination of green and social projects compared to advanced market sovereign issuers, which overwhelmingly issue green bonds. In other words, bonds for projects that combine green and social projects, also known as sustainability bonds, could boost investor interest and increase proceeds from issues.

The report also noted that sovereigns take considerable time to prepare the post-issuance allocation and impact report, which impacts investor interest.

The Department of Economic Affairs, which oversees allocation of proceeds, hasn't yet published the allocation report for 2023-24.

To increase investor confidence, India can also partner with multilateral development banks to back its green bonds strategy with their credit ratings given that it does not have a very high rating itself.

Relevance: GS Prelims & Mains Paper III; Economics
Source: The Hindu