M.R. SRINIVASAN: PERSONALITY IN NEWS?

NEWS: M.R. Srinivasan, a key architect of India's nuclear programme, no more

WHAT'S IN THE NEWS?

Dr. M.R. Srinivasan, a pioneering figure in India's nuclear energy programme and former Atomic Energy Commission chairman, played a key role in developing 18 nuclear reactors and founding NPCIL. His legacy aligns with India's three-stage nuclear strategy aimed at clean energy and self-reliance, now progressing through fast breeder and thorium-based reactors.

Dr. M.R. Srinivasan: Life and Legacy

- Date of Birth:
  Born on 5th January 1930.
- Professional Journey and Milestones:
  - 1955: Joined the Department of Atomic Energy (DAE) and worked closely with Dr. Homi Bhabha, India's nuclear pioneer.
  - Contributed to the construction of India's first nuclear research reactor, Apsara.
  - 1959: Became the Principal Project Engineer for India's first atomic power station.
  - 1967: Served as the Chief Project Engineer of the Madras Atomic Power Station.
  - 1974: Took charge of the Power Projects Engineering Division, overseeing the design and construction of reactors.
  - 1984: Appointed Chairman of the Nuclear Power Board.
  - 1987: Appointed as Chairman of the Atomic Energy Commission (AEC) and Secretary of the Department of Atomic Energy (DAE).
  - He was the Founder-Chairman of the Nuclear Power Corporation of India Limited (NPCIL), under which 18 nuclear power reactors were developed.
- National Recognition and Contributions:
  - Padma Awards:

        - Padma Shri in 1984
        - Padma Bhushan in 1990
        - Padma Vibhushan in 2015
    - Served as a Member of the Planning Commission (1996–1998).
    - Served on the National Security Advisory Board during 2002–2004 and again from 2006–2008.

India's Nuclear Programme: Vision and Development

Strategic Vision

- Nuclear energy is central to India's goals of clean energy, strategic self-reliance, and technological advancement.
- Balances civil energy needs with national security objectives.

Institutional History

- The Atomic Energy Commission (AEC) was founded in 1948 under Dr. Homi Bhabha to guide India's nuclear development.
- The nuclear programme was designed as a three-stage strategy:

  Stage I – Pressurized Heavy Water Reactors (PHWRs):

    - Utilizes natural uranium as fuel and heavy water as moderator.
    - Forms the base of India's operational nuclear power system.

  Stage II – Fast Breeder Reactors (FBRs):

    - Uses plutonium generated from PHWRs to breed more fuel.
    - Converts fertile uranium-238 into plutonium-239.
    - Kalpakkam PFBR marks India's progress into this stage.

  Stage III – Advanced Thorium Reactors:

    - Leverages India's vast thorium reserves (21% of global).
    - Uses thorium to breed uranium-233, enabling a sustainable and indigenous fuel cycle.

Current Status of Nuclear Power in India (as of 2024)

- Operational Reactors:
  23 nuclear reactors across seven power stations are functional.
- Installed Capacity:
  Current capacity is 8,180 MW, a significant rise from 4,780 MW in 2014.
- Future Target:
  Planned increase to 22,480 MW by 2031–32.
- Electricity Distribution Policy:
    - 50% of electricity generated from nuclear plants is allocated to the host state.
    - 35% is shared with neighboring states.
    - 15% goes to the national grid.

Recent Developments and Expansion Plans

- Prototype Fast Breeder Reactor (PFBR), Kalpakkam:
    - Marks India's entry into Stage II of the nuclear programme.
    - Core-loading process has been initiated, a major milestone.
- New Projects and Approvals:
    - 10 new reactors have received approval.
    - Exploring private sector participation to support faster growth.
- Small Modular Reactors (BSMRs):
    - India is developing Bharat Small Modular Reactors, compact nuclear reactors aimed at distributed and scalable power generation.
- International Collaborations:
    - India has entered into nuclear cooperation agreements with:
        - Russia (Kudankulam reactors)
        - France (Jaitapur project)
        - United States (nuclear tech transfer and civil-nuclear cooperation under the 2008 Indo-US Nuclear Deal)

India's Global Position in Nuclear Energy

- India is recognized as a responsible nuclear power, especially post the NSG waiver in 2008, which allowed it to participate in global civil nuclear trade without being a signatory to the NPT.
- Focus remains on expanding clean energy while maintaining nuclear non-proliferation commitments.

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