

SHANTI Act and Nuclear Expansion

Prelims: General Studies Paper - 1
Economic and Social Development-Sustainable Development, Poverty, Inclusion, Demographics, Social Sector Initiatives, etc.

Mains: General Studies - 3
Infrastructure: Energy, Ports, Roads, Airports, Railways etc.

1. Context: Long Tenure and Constitutional Question

- In the **2025–26 Budget**, Nirmala Sitharaman announced increasing nuclear capacity from **8,180 MW to 100 GW by 2047**.
- The **SHANTI Act (Sustainable Harnessing and Advancement of Nuclear Energy for Transforming India), 2025** was introduced and passed to transform the nuclear sector.
- It ends the monopoly of the **Department of Atomic Energy (DAE)** and allows **private and foreign participation**.
- It grants statutory status to the **Atomic Energy Regulatory Board (AERB)**.
- It repeals and replaces the **Atomic Energy Act, 1962** and the **Civil Liability for Nuclear Damage Act, 2010 (CLNDA)**.
- The reform aims to create a **liberalised, investment-friendly nuclear energy framework**.

2. Drivers of Nuclear Expansion

- Per capita electricity generation: **1,418 kWh** vs China (7,097), USA (12,701), OECD (above 8,000).
- Per capita energy use: **7,893 kWh**, but only **~20% electricity-based**.
- Installed capacity (June 2025): **476 GW**; about 50% non-fossil.
- Renewables: **227 GW** (solar 111, wind 51, hydro 48, bioenergy 12, micro-hydel 5).
- Nuclear: **8.8 GW**; Thermal: **240 GW**.

- Generation (2024–25): **1,824 TWh(tera-watt-hours)** → Thermal **75%**, Renewables **22%**, Nuclear **3%**.
- Renewables face **intermittency, storage issues, and 40 GW stalled projects**.
- Nuclear is essential for **baseload power, Net Zero 2070, and Viksit Bharat 2047**.

3. India's Nuclear Status and Expansion Options

- India's first reactor was commissioned at **Tarapur in 1969**.
- Currently, Nuclear Power Corporation of India Limited operates **24 reactors** with **8,780 MW capacity**.
- Reactor types include
 - ➔ **BWR (Boiling Water Reactors) Tarapur,**
 - ➔ **VVER (pressurised water reactor or PWR) Kudankulam**
 - ➔ **PHWRs(Pressurised Heavy Water Reactors) (majority).**
- Indigenous PHWR design evolved from **220 MW to 540 MW and 700 MW**.
- Cost of 700 MW PHWR: **\$2 million per MW** (globally competitive).
- To add ~90 GW, investment of **\$200 billion (~₹18 lakh crore)** is required.
- DAE annual budget: **₹24,000-26,000 crore**.
- 10 PHWR (700 MW) reactors approved in 2017 (fleet mode) but pending implementation.
- Proposed projects:
 - ➔ **Jaitapur:** six reactors of 1,650 MW
 - ➔ **Mithi Virdi & Kovvada:** six reactors of 1,000 MW each
- Imported designs may cost **>\$5 million per MW**.
- Govt allocated **₹20,000 crore** for SMRs (5 MW, 55 MW, 200 MW) to be developed by **2033**.
- Captive power plants in industries account for **around 90 GW**, mostly fossil fuel-based.

A **captive power plant**, also called **autoproducer or embedded generation**, is an electricity generation facility used and managed by an industrial or commercial energy user for their **own energy consumption**.

- Nuclear can replace captive plants in sectors like **steel, cement, petrochemicals, paper, data centres**.

4. Implementation Strategy, Challenges and Way Forward

- Strategy: **indigenisation, R&D, scaling PHWRs**.
- Need to localise imported tech (China benchmark: < **\$2 million/MW**).
- Focus R&D: **SMRs(Small Modular Reactors), molten salt reactors, thorium, HALEU (High Assay Low Enriched Uranium)**.
- Modular **220 MW PHWR** can reduce construction time to **~40 months**.
- Challenges: **high upfront cost**, need for **financing models and private capital**.
- Regulatory clarity needed on **tariffs, liability, insurance, waste, fuel ownership**.
- Separation of **civilian vs strategic nuclear activities** required.
- Reform **exclusion zone norms**; ensure strong **AERB regulation**.

The World Trade Organization is flailing

Prelims: General Studies Paper - 1
Current events of national and international importance

Mains: General Studies - 2
Important International institutions, agencies and fora- their structure, mandate

1. Crisis in Global Trade Multilateralism

- **Trade multilateralism** has been under severe stress since **World War II**.
- The **United States’ unilateral actions** threaten key principles like **Most-Favoured Nation (MFN)**.

- The **WTO’s 14th Ministerial Conference (MC14)** held in **Yaoundé (March 2026)** was expected to **restore confidence in a rules-based global trade system** that prevents **dominance by powerful countries**.
- However, **MC14 failed to achieve this goal**.
- It is **concerning that the 166-member WTO failed to reach consensus even on issuing a ministerial declaration outlining future actions**.

2. Breakdown of Key Moratoriums

- Since **1998**, WTO members had agreed **not to impose customs duties on e-commerce transactions** to keep digital trade free, and this moratorium was **renewed every two years**.
- However, at **MC14**, countries **failed to reach consensus to extend it**, so the moratorium **expired on March 31**.
- This may:
 - ➔ Increase **government revenue** (developing countries)
 - ➔ But raise **costs for consumers and businesses**
- A separate **E-commerce Agreement (66 countries)** bans such tariffs → creates **dual legal frameworks**.
- The **second moratorium (since 1995)** stopped countries from filing **non-violation complaints under TRIPS**.
- Such complaints allow countries to challenge measures that **reduce expected benefits**, even if they are **not illegal**.
- Developing countries fear their **public health laws** could be targeted by developed nations claiming harm to **intellectual property rights**.
- However, such cases are **unlikely to succeed**, as past examples show **all similar complaints have failed**.

3. Plurilateral Agreements and WTO Deadlock

- The proposed **Investment Facilitation for Development (IFD)** failed due to **India’s opposition**.
- India’s concerns:
 - ➔ Lack of **legal safeguards**
 - ➔ Need for **inclusive (not exclusive) agreements**
- This reflects a **legislative crisis in WTO**, unable to frame rules for **modern trade challenges**.

Investment Facilitation for Development (IFD) -

The **Investment Facilitation for Development (IFD) Agreement** sets **common guidelines** to help **WTO members** improve their **investment and business environment**, making it easier for investors to **invest, operate, and expand their activities**.

4. Lack of Reform Roadmap & Future Risks

- No clear **roadmap for WTO reforms**.
- Key issues unresolved:
 - **Reviving the stalled appellate function of the WTO's dispute settlement system has been postponed.**
 - **Protection of MFN & special and differential treatment**
- Risk of rising **U.S. unilateralism**
- Increasing trend of **countries creating trade rules outside WTO**.
- Suggested solution:
 - Promote **plurilateral agreements with legal safeguards**
 - **India should lead reforms** with strong political commitment

The executive office without a limit

Prelims: General Studies Paper - 1
 Indian Polity and Governance-Constitution, Political System, Panchayati Raj, Public Policy, Rights Issues, etc.

Mains: General Studies - 2
 Indian Constitution—historical underpinnings, evolution, features, amendments, significant provisions and basic structure.

1. Context: Long Tenure and Constitutional Question

- On **March 22, 2026**, Narendra Modi completed **8,931 days in elected executive office**.
- This includes tenure as **Chief Minister of Gujarat (Oct 7, 2001 – May 21, 2014)** and **three terms as Prime Minister**.
- He surpassed Pawan Kumar Chamling of Sikkim (8,930 days).

- Raises a key constitutional issue: **India has no limit on tenure of executive offices like PM/CM**.
- Unlike many democracies, India relies on **parliamentary accountability rather than term limits**

2. Constitutional Design and Its Evolution

- B. R. Ambedkar (Nov 4, 1948 speech) justified no term limits based on:
 - **Daily accountability:** Through questions, adjournment motions, no-confidence motions.
 - **Periodic accountability:** Through elections.
- Argued **legislative confidence acts as a continuous check**, making term limits unnecessary.
- However, the **52nd Constitutional Amendment (1985)** introduced the **Tenth Schedule (anti-defection law)**.
- In **Kihoto Hollohan v. Zachillhu**, SC upheld it.
- Consequences:
 - Legislators voting against party whip risk disqualification.
 - No-confidence motions weakened when ruling party has majority.
- Lack of **intra-party democracy** further strengthens leadership control

3. Comparative and Structural Concerns

Many democracies impose term limits:

- USA (22nd Amendment, 1951 after Franklin D. Roosevelt served 4 terms)
- Countries like **South Korea, Brazil, Colombia, Indonesia**.

Comparative insight:

- Scholars like Tom Ginsburg, James Melton, Zachary Elkins show **leaders often extend tenure via institutional means**; democratic decline is gradual.

Presidential irony:

- Indian Presidents follow **informal two-term convention**.
- Based on **Ivor Jennings test** (in The Law and the Constitution)

- ⊖ Precedent exists
- ⊖ Actors feel bound by the rule
- ⊖ There is a reason for the rule.
- Yet PM/CM (real executive power) face **no such constraint**.

Elections alone may be insufficient due to advantages like:

- Control over **appointments (EC, judiciary, regulators)**
- Influence on **information ecosystem**
- Ability to **shape policies electorally over time**

4. Challenges and Reforms

- Core issue: **Parliamentary accountability weakened by anti-defection law.**
- **State-level concern:** Long tenures of leaders like
 - ⊖ Jyoti Basu (West Bengal)
 - ⊖ Naveen Patnaik (Odisha)
 - ⊖ Pinarayi Vijayan (Kerala)
- Suggested reforms:
 - ⊖ Exempt confidence motions from anti-defection law.
 - ⊖ Consider **constitutional amendment for term limits** (with scope for return after a gap).

Why did Iran war not affect China's energy security so far?

Prelims: General Studies Paper - 1
Current events of national and international importance

Mains: General Studies - 2
Effect of policies and politics of developed and developing countries on India's interests, Indian diaspora.

1.Context

- **India faced LPG shortage and fuel panic** due to the Israel-United States-Iran conflict.
- China did not face similar early disruptions.
- China has built stronger energy security through diversification, reserves, and policy planning.
- China's **efforts to tackle pollution, and strategic global status concerns** have helped shield it from immediate crisis impacts.

2.China's Strategy to Overcome the Malacca Dilemma

- China built **large Strategic Petroleum Reserves (SPR) to store oil and reduce immediate dependence** on imports.
- It **secured long-term oil contracts** to ensure steady supply even during disruptions.
- **China developed oil and gas pipelines from Central Asia and Russia**, bypassing the Strait of Malacca.
- **Around 20% of its crude imports now come through pipelines**, including significant supply from Russia.
- It **diversified supply sources through investments in regions like Africa and strengthened ties** with energy-rich countries, reducing reliance on vulnerable sea routes.

3.China's Climate and Energy Strategies

- China **formed the BASIC bloc (Brazil, South Africa, India, China)** to protect developing countries' carbon space.
- It **secured tech cooperation through the US-China Ten-Year Framework for Energy and Environment Cooperation.**
- This helped its growth in renewables and supported the Paris Agreement.
- **China remains the largest coal consumer**, facing criticism.
- It is pushing energy transition and pollution control through policy targets.

4.How EVs Helped Lower China's Oil Demand?

- **China promoted electric vehicles through tax concessions, mandates, and policy incentives**, making EVs more attractive than petrol/diesel cars.
- Its **large middle-class market** enabled mass adoption of EVs.
- **Strong manufacturing scale and domestic demand made EVs affordable** and widely available.
- As EV usage increased, **dependence on petrol and diesel declined**, reducing China's oil imports.

5.Is Economic Slowdown a Factor in China's Energy Demand?

- China's economic slowdown (around 4.5% growth target for 2026) has **reduced overall energy consumption**.
- **Weak construction activity has lowered demand in energy-intensive sectors** like cement and steel.
- **China's role as the "world's factory" is gradually declining**, reducing industrial energy use.
- Overall, slower growth has indirectly helped lower energy and oil demand.

KEYWORDS

Benchmark Issuance Strategy (BIS) for State Development Loans

- The Reserve Bank of India has launched a **pilot Benchmark Issuance Strategy (BIS) for State Development Loans (SDLs)** to improve the efficiency of state bond markets.
- State Development Loans (SDLs) are bonds **issued by State Governments to raise funds for budgetary needs, auctioned by the Reserve Bank of India, and typically offer slightly higher interest rates than central government securities**.
- Andhra Pradesh, Bihar, Chhattisgarh, Kerala, Madhya Pradesh, Maharashtra, Rajasthan, Telangana, and Uttar Pradesh will participate in the pilot phase.
- It will **issue SDLs in standardized maturity buckets like 5, 10, or 30 years** instead of random tenors.
- This aims to **reduce market fragmentation, where too many small and varied bond issues** make trading difficult.
- Overall, it helps better price discovery, ensuring fair valuation of state bonds while lowering borrowing costs over time.

SHANTI Act (Sustainable Harnessing and Advancement of Nuclear Energy for Transforming India)

- The **SHANTI Act, 2025** replaces earlier nuclear laws to modernise India's framework and support future energy needs like AI and semiconductor growth.

- It allows **private sector participation**, enabling companies and individuals to build and operate nuclear plants under strict government control of sensitive areas.
- The Act reforms liability by aligning with global norms under the **International Atomic Energy Agency (CSC framework)**, fixing operator liability, limiting supplier liability, and creating a Nuclear Liability Fund.
- It strengthens regulation by **granting statutory status to the Atomic Energy Regulatory Board (AERB)**, improving independence and safety oversight with powers of inspection and enforcement.
- A **multi-layer dispute resolution system** is introduced, and innovation is promoted by easing licensing for research and supporting patents in nuclear technology.

Places in News

Strait of Malacca



- The Strait of Malacca **connects the Andaman Sea (part of the Indian Ocean) with the South China Sea (Pacific Ocean)** and lies between Sumatra and Peninsular Malaysia.
- It is **one of the world's busiest and most important shipping lanes**, serving as a key link between the Indian and Pacific Oceans.
- The **strait is about 890 km long, relatively shallow (around 25 m deep)**.

- Historically, it derives its name from the Malacca Sultanate, which dominated the region from the 15th to early 16th century.
- Strategically, **it is a major chokepoint, with about 60% of India's maritime trade** and significant Chinese energy imports passing through it.

