

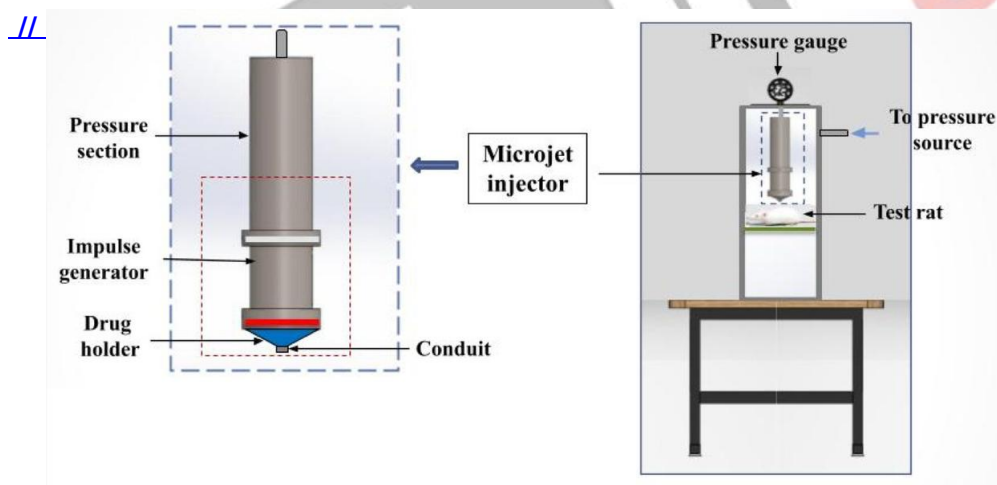


Needle-Free Shock Syringe

[Source: TH](#)

Researchers at **Indian Institute of Technology (IIT) Bombay** have developed a **shockwave-based, needle-free syringe** that ensures painless drug delivery, reducing skin damage and the risk of infection.

- The shock syringe uses **high-energy shockwaves** to deliver drugs through the skin **without the need for needles**, offering a painless alternative to traditional injections.
 - A shockwave is a **pressure wave** that moves faster than sound through a medium like air, water, or solids. It forms when an object or force causes a rapid pressure change, traveling through the surrounding environment.
 - The device consists of three sections: **driver, driven, and drug holder**, which create a **shockwave-driven microjet for drug delivery**.
- The shock syringe is designed with a **micro shock tube** that uses pressurized **nitrogen gas** to create a **microjet of liquid drug**, which travels faster than sound to penetrate the skin.
 - The shock syringe demonstrated effective delivery of drugs in rats, with deeper tissue penetration and minimal skin damage compared to regular needles.
- The shock syringe could speed up **immunization drives like [Mission Indradhanush \(MI\)](#)** and reduce bloodborne disease risks from needle-stick injuries.
 - It is cost-effective, designed for over 1000 uses with only nozzle replacements needed.



Read more: [Incovacc, Intranasal Covid-19 Vaccine](#)

Smart Classrooms Under the Smart Cities Mission

[Source: TH](#)

A study by the Indian Institute of Management, Bangalore, revealed that the [Smart Cities Mission \(SCM\)](#) has improved education quality through **smart classrooms**.

- **Smart Cities Mission:** It was launched in 2015 by the **Ministry of Housing and Urban Affairs** and aims to enhance infrastructure, quality of life, and sustainability in cities.
 - The '**SAAR**' (**Smart Cities and Academia towards Action and Research**) platform, launched in 2022, connects academia and government to document and **research urban initiatives under the SCM**.
- **SCM and Education:** The IIM Bangalore study shows that **smart classrooms** under the SCM **have increased enrolment by 22% across 19 cities** from 2015-16 to 2023-24.
 - 71 cities have implemented around 9,500 smart classrooms in around 2,400 government schools.
 - **Karnataka leads with 80 smart classroom projects**, followed by Rajasthan (53), Tamil Nadu (23), and Delhi (12). West Bengal has only two projects.
 - Teacher training has improved comfort with smart classrooms, especially in senior secondary schools.



SMART CITIES MISSION

About

- **Launched:** 2015
- **Nature:** Centrally Sponsored
- **Nodal Ministry:** Ministry of Housing & Urban Affairs
- **Implemented through:** Special Purpose Vehicles (SPVs) at city level
- **Mission Deadline:** Extended to June 2023
- **Coverage:** Developing 100 selected cities as Smart Cities

Six Fundamental Principles

- Citizen at the core
- More from Less
- Cooperative and competitive federalism
- Integration, innovation & sustainability
- Technology as means, not the goal
- Convergence

SMART SOLUTIONS

E-Governance and Citizen Services

- Public Information, Grievance Redressal
- Electronic Service Delivery
- Citizen Engagement
- Citizens-City's Eyes and Ears
- Video Crime Monitoring



Energy Management

- Smart Meters & Management
- Renewable Sources of Energy
- Energy Efficient & Green Buildings



Waste Management

- Waste to Energy & fuel
- Waste to Compost
- Waste Water Treatment
- Recycling and Reduction of Waste



Urban Mobility

- Smart Parking
- Intelligent Traffic Management
- Integrated Multi-Modal Transport



Water Management

- Smart Meters & Management
- Leakage Identification, Preventive Maintenance
- Water Quality Monitoring



Others

- Tele-Medicine & Tele Education
- Incubation/Trade Facilitation Centers
- Skill Development Centers



▪ 60% projects have been completed so far ▪

Challenges

- **Managing Finance:** Difficulty in mobilising funds, transferring them to SPVs, and using them efficiently
- **Urban Problems:** Like air pollution, road congestion & decline in public transport
- **Policy Issues:** Like hindrances in getting environment clearances
- **Data privacy and security**
- **Lack of Center-State Co-ordination**

Way Ahead

- **Decentralisation:** Planning at Municipal & state level for better implementation
- **Policy Issues:** Like red-tapism, environmental clearances need to be taken care of
- **PPP Model:** For better administrative & technological capabilities
- **Integrated Approach:** For holistic development of transportation, energy, housing
- **Promote Citizen Engagement**



Read more: [Smart Cities Mission](#)

Deep State and Its Impacts

For Prelims: [NGOs](#), [WTO](#), [Data Privacy](#), [CBI](#), [ED](#), [National Investigation Agency](#), [Freedom of Speech](#), [Tax Haven](#), [Foreign Contribution \(Regulation\) Act \(FCRA\)](#), [NSA](#), [Cybersecurity](#).

For Mains: Role of deep state in security and integrity of India.

[Source: HT](#)

Why in News?

Recently, the controversy over an alleged **transnational deep state** to destabilize governments in different countries raises **critical questions**.

What is a Deep State?

- **About:** It refers to a **shadowy hybrid network** of governmental, corporate, and non-governmental elites who **wield enormous power**, control policymaking, undermine elected politicians, and thwart the interests of common people.
 - Foreign governments **selectively pursue promotion of democracy, human rights, and liberal values** in certain countries **based on their interests**.
- **Background:** It derives its name from the Turkish term "**derin devlet**", which literally translates to "deep state" in English. In Turkey, it refers to **non-elected elements** dominating the democratically elected government.
 - In **Pakistan**, "deep state" refers to a government controlled by **powerful military leaders**.
- **Functioning of Deep State:**
 - **Regime Change:** Stephen Kinzer's book, **Overthrow**, chronicled a "**century of regime change**" missions carried out by the US on multiple continents. E.g., the removal of **Bangladesh's Sheikh Hasina regime** is being blamed on the American deep state.
 - **Think Tanks:** The use of **think tanks, NGOs, and biased media** create conditions for political changes favored by the governments. E.g., **Colour revolutions** in Georgia (2003), Ukraine (2004) and Kyrgyzstan (2005).
 - Former Pakistan Prime Minister **Imran Khan** accused foreign powers of **toppling his government**.
 - Colour revolutions organised **unarmed public uprising** aimed at discrediting and replacing a regime.
 - **Conflict and Wars:** Defense companies, such as **Lockheed Martin, Raytheon, Boeing, and Northrop Grumman** hugely benefit from supply of weapons, ammunition, and military technology.
 - Corporates pursue their **interest and plunge nations into wars** only to increase demand for their weaponry. E.g., **demand for weapons** by Ukraine due to the **Ukraine War**.
 - **Economic Influence:** Lobbying for **market access** and regulatory frameworks favorable to businesses of interested countries. E.g.,
 - Pressurising countries at **WTO trade negotiations** to **open their agricultural markets** to imported products.
 - After the **Soviet Union's** fall, former Soviet states and Latin American communist countries shifted from **state-run economies into a free-market economy**.
 - However, it **failed to generate desired results** and resulted in **shock therapy**.
 - Shock therapy is an **economic theory** that says that **sudden, dramatic changes** in national economic policy can turn a **state-controlled economy into a free-market economy**.
 - **Surveillance:** **Edward Snowden** revealed that the US's National Security Agency (NSA) carried out **surveillance** in developing countries **like in Asia and Africa**.
 - **Media and Narrative:** Reports of **Western media outlets** misrepresents certain issues in India (e.g., **religious intolerance, Kashmir**) to pressure the government on human rights.
 - **Amnesty International** accused the Indian government of adopting **discriminatory laws** against religious minorities.
 - **Cyber Influence:** Companies with influential **market dominance** like **Google and Facebook** influenced countries regulations on **data privacy and taxation**.

- **Civil Society Movements:** Funding civil society groups like **Greenpeace India** against India's **coal and energy projects** in the name of human rights, or climate change, their alleged involvement in farmers' movement.
 - An **Intelligence Bureau report** has accused "**foreign-funded**" NGOs such as **Greenpeace** to have negatively impacted **GDP** growth by **2-3%**.
- **Damaging International Image:** The countries with vested interest present **Indian ethnic people in devil roles** like villains in movies to frame a bad outlook.
 - Countries also make unsubstantiated allegations against other countries. E.g., **Canada** alleging **India's role** in killing of **Khalistani terrorists**.

Allegation of Deep State of India

- Pulitzer Prize winning journalist **Steve Coll** said that India has a form of **deep state**, mainly involving the **Indian Foreign Service** rather than intelligence agencies or the military.
- Journalist **Josy Joseph** in his book **The Silent Coup: A History of India's Deep State**, argues that there is "**a State within a State**" that biases against the **weaker sections** of society.
 - He also includes the **National Investigation Agency (NIA)** among the agencies allegedly running the deep state.
- However, such allegations have been rejected by the government which believes in **Panchsheel principles** and **Vasudhaiva Kutumbakam** (The World Is One Family).

How Deep State Influences Countries?

- **Political Philanthropy:** People with huge financial resources use NGOs as a facade like **Open Society Foundation (OSF)** and advocate for "**open societies,**" meaning a push for **regime changes**.
 - They **openly criticized** nations like **India, Russia, China, Israel, and Hungary**, accusing their leaders of fostering a narrative of **totalitarian regimes**.
- **Educational Initiatives:** Many NGOs offer scholarships and fellowships that ensures that those in positions of influence—**bureaucrats, journalists, and policymakers**—are **sympathetic** to their causes like **fake environmental activism** to disrupt economic growth.
- **Interference in Domestic Politics:** The **anti-incumbent sentiment** and criticism of a country's internal policies, particularly regarding **freedom of speech, religious rights, and governance**, have often been amplified by NGOs with vested interests.
- **Financial Leverage:** Deep state also influences **economic policies**. They are involved in major financial events, like **breaking the Bank of England** and contributing to the **Asian Financial Crisis**, using financial leverage to destabilize economies.
 - **Hindenburg Research** accused businesses in developing countries (India and China) of engaging in extensive **accounting fraud, stock price manipulation, and exploiting tax havens** to destabilise India's Stock market. E.g., Allegations against Adani group.
 - Hindenburg also engaged in the practice of **short-selling** i.e., a strategy where the firm takes a **position predicting the decline** of a company's stock price for making profits.

Way Forward

- **Stronger Regulation:** India needs to tighten oversight and enforce stringent regulations on foreign-funded NGOs through the **Foreign Contribution (Regulation) Act (FCRA)**.
 - **Nonprofit organizations (NPO)** also need to share their **receipt and payment accounts** with the government along with the audited accounts.
- **National Security Awareness:** Boost national security awareness to **counter foreign attempts** to influence domestic politics through **think tanks, media, and civil society** movements.
 - **NSA Ajit Doval** emphasized the importance of a **strong counter-narrative on social media** to safeguard the morale of **India's defense forces** and uphold national integrity.
- **Indigenous Think Tanks:** India should develop **indigenous think tanks and media** platforms

to promote national interests and prevent external entities from **monopolizing narratives**.

- **Diplomatic Engagement:** India should strengthen diplomatic ties with **like-minded countries and organizations** to build a network of allies and protect its political landscape from destabilizing efforts.
- **Data Sovereignty:** Strengthening India's **cybersecurity** and controlling its **digital spaces** is key to mitigating foreign influence, especially from tech giants like Google and Facebook.

Drishti Mains Question:

How does the concept of the 'deep state' influence the political and economic landscape? Discuss the strategies countries can adopt to counter such influence.

Mains

Q. Can Civil Society and Non-Governmental Organisations present an alternative model of public service delivery to benefit the common citizen? Discuss the challenges of this alternative model. (2021)

Ind-Aus Economic Cooperation and Trade Agreement

For Prelims: [India-Australia Economic Cooperation and Trade Agreement](#), [Most Favoured Nation](#), [Double taxation](#), [Quad](#), [Bilateral Investment Treaty](#)

For Mains: India-Australia Bilateral Relations and Economic Cooperation, India's Trade Policy and International Agreements

Source: [PIB](#)

Why in News?

The [India-Australia Economic Cooperation and Trade Agreement \(Ind-Aus ECTA\)](#) has completed two years, marking a period of significant growth in bilateral trade and economic cooperation.

- Both countries aim to build on this success with strengthened collaboration and ambitious targets, including reaching **AUD 100 billion in trade by 2030**.

What is the Ind-Aus ECTA?

- **About:** The Ind-Aus ECTA is a landmark trade deal between India and Australia, signed in April 2022, and ratified by both nations in November 2022.
 - The agreement aims to foster deeper **economic integration and enhance trade relations** by **reducing tariffs, promoting services exchange**, and boosting investment flows between the two countries.
- **Key Features of the Ind-Aus ECTA:**
 - **Tariff Reductions:** The agreement allows **Australian businesses to export over 85% of goods** to India tariff-free, with the figure rising to 90% by January 2026.
 - Conversely, **96% of imports from India** are now tariff-free, with this number increasing to 100% by 2026.

- This **tariff liberalization** is expected to benefit both nations by providing **cheaper raw materials**, enhancing global competitiveness, and reducing costs for consumers.
- **Access to Key Markets:** The ECTA secures **preferential market access for India to Australia's fast-growing market**, which has over 1.4 billion people.
 - For Australia, the agreement offers opportunities in India's **labor-intensive sectors**, including gems and jewelry, textiles, leather, furniture, food, and agriculture.
- **Services:** The agreement includes commitments in **135 sub-sectors** in services, benefiting industries like business services, communication, construction, and engineering.
 - India's contribution includes **market access to Australia in 103 sub-sectors** and **Most Favoured Nation (MFN) status in 31 sub-sectors**.
- **Pharmaceutical and IT Benefits:** The agreement fast-tracks approval of medicines and **eliminates double taxation in the IT sector**, giving India's IT companies a competitive edge and saving millions.
- **Job Creation and Skill Exchange:** The ECTA is expected to create 1 million jobs in India, with **benefits for Indian yoga teachers, chefs, and 100,000 students** through post-study work visas. This fosters skill exchange and employment opportunities in both countries.
- **Geopolitical Importance:** The ECTA strengthens India-Australia relations, deepening collaboration in strategic groups like the **Quad, Indo-Pacific Economic Framework for Prosperity (IPEF)**, and the **Supply Chain Resilience Initiative (SCRI)**, aligning economic and geopolitical interests.

How Has Bilateral Trade Evolved Under Ind-Aus ECTA?

- **Trade Surge: Bilateral merchandise trade** has more than doubled since the agreement came into effect. From **USD 12.2 billion in 2020-21**, trade surged to **USD 26 billion in 2022-23**.
 - Trade momentum remains strong, with India's exports to Australia growing by 14%.
 - In the first eight months of 2024, total merchandise bilateral trade reached USD 16.3 billion, reflecting a robust trade partnership.
- **Export and Import Utilization:** The **preferential import data exchange** between the two countries commenced in 2023, showcasing effective implementation.
 - Export utilization stands at 79%, while import utilization is slightly higher at 84%.
- **Sectoral Growth:** Key sectors such as **textiles, chemicals, and agriculture have benefited** significantly from the agreement.
 - There has been diversification in exports, with new products like **gold studded with diamonds** and turbojets gaining prominence.
- **Raw Materials:** India's imports of raw materials such as metalliferous ores, cotton, and wood have fueled its industries, highlighting the complementary nature of the trade partnership.

What is the Vision for the Future of India-Australia Economic Relations?

- **Comprehensive Economic Cooperation Agreement (CECA):** Building upon the success of the ECTA, the **India-Australia Comprehensive Economic Cooperation Agreement (CECA)** is now in progress.
 - With 10 formal rounds and multiple inter-sessional discussions completed, CECA aims to advance the trade relationship even further.
- **Trade Target:** Both nations have set an **ambitious target to increase trade to AUD 100 billion by 2030**. This goal demonstrates the shared commitment to deepening bilateral trade ties and fostering mutual prosperity.
- **Global Economic Impact:** With a focus on deeper economic integration, India and Australia are poised to strengthen their partnership and contribute to a more resilient, dynamic global economy.

Other Trade Agreements Between India and Australia

- **Double Taxation Avoidance Agreement (DTAA):** Enforced in 1991 to prevent double taxation of income earned in both countries, reducing tax burdens and facilitating smoother business operations.
- **Bilateral Investment Treaty (BIT):** The 1994 BIT was terminated by India in 2017. Both nations are exploring a new investment treaty to safeguard and promote bilateral investments.
- **Sector-Specific Agreements:** Multiple MoUs exist in areas like education, science and technology, defense, and agriculture, fostering collaboration and knowledge exchange.

MAJOR TRADE AGREEMENTS OF INDIA

Free Trade Agreement (FTA) With Neighbouring Countries

- ↳ India-Sri Lanka FTA
- ↳ India-Nepal Treaty of Trade
- ↳ India-Bhutan Agreement on Trade, Commerce, and Transit

A free trade agreement is a comprehensive deal between countries, offering preferential trade terms and tariff concessions, with a negative list excluding specific products and services.

Regional FTA's of India

- ↳ **India ASEAN Trade in Goods Agreement (11):** 10 ASEAN countries + India
- ↳ **South Asia Free Trade Agreement (7):** India, Pakistan, Nepal, Sri Lanka, Bangladesh, Bhutan, and the Maldives
- ↳ **Global System of Trade Preferences** (41 countries + India)

India's CECAs and CEPAs

CECA/CEPA is broader than FTAs, addressing regulatory, trade, and economic aspects comprehensively, with CEPA having the widest scope including services, investment, etc while CECA mainly focuses on tariff and TQR rates negotiation.

- ↳ CEPA with **UAE, South Korea, Japan**
- ↳ CECA with **Singapore, Malaysia**

Others:

- India-Australia Economic Cooperation and Trade Agreement (ECTA)
- India-Thailand Early Harvest Scheme (EHS)
- India-Mauritius Comprehensive Economic Cooperation and Partnership Agreement (CECPA)

An EHS precedes an FTA/CECA/CEPA, where negotiating countries select products for tariff liberalisation, paving way for broader trade agreements and fostering confidence.

Preferential Trade Agreements (PTAs)

Partners in a PTA grant preferential access to specific products by lowering duties on agreed tariff lines, maintaining a positive list of products eligible for reduced or zero tariffs.

- ↳ **Asia Pacific Trade Agreement (APTA):** Bangladesh, China, India, S. Korea, Lao PDR, Sri Lanka, and Mongolia
- ↳ **SAARC Preferential Trading Agreement (SAPTA):** Same as SAFTA
- ↳ **India-MERCOSUR PTA:** Brazil, Argentina, Uruguay, Paraguay and India
- ↳ India's PTA with **Chile, Afghanistan**



What are the Challenges in India-Australia Trade?

- **Export Competitiveness:** Despite complementary trade profiles, India's competitiveness in Australia remains low compared to global markets.
- **Focus on Other Markets:** India performs better in markets like Saudi Arabia, Kuwait, and Sri Lanka but lags in geographically distant eastern markets like Australia.
- **Non-Tariff Barriers (NTBs)** 32% of the NTBs India faces in Australia arise from **Sanitary and Phyto-Sanitary (SPS) measures**, particularly affecting agricultural produce.
 - The **World Trade Organization (WTO)**'s SPS Agreement ensures that **traded**

products between WTO members **do not spread pests and diseases**, and that **food products** do not contain harmful substances or pathogens.

- **Absence of a Comprehensive FTA:** Current agreements do not fully address issues like government procurement, digital trade, and rules of origin, leaving gaps in the trade framework.
 - Australia's upcoming federal elections in 2025 have slowed progress on the Comprehensive Economic Cooperation Agreement (CECA), delaying resolutions to trade challenges.

Way Forward

- **Leveraging Partnerships:** Deepen collaboration through strategic frameworks like the Quad, to bolster trade resilience. Enhance coordination on supply chain diversification to reduce dependency on single-source markets.
- **Finalization of CECA:** Expedite CECA negotiations to address gaps in government procurement, digital trade, rules of origin, and intellectual property for a more robust and inclusive trade framework.
- **Encourage Investment:** Finalize a new **Bilateral Investment Treaty (BIT)** to protect investments and foster innovation.
 - Tackle Non-Tariff Barriers (NTBs) by addressing SPS measures through Mutual Recognition Agreements and simplify compliance for exports.

Drishti Mains Question:

Assess the role of the Ind-Aus ECTA in enhancing India-Australia relations. How does this agreement align with India's strategic and economic priorities?

UPSC Civil Services Examination, Previous Year Questions (PYQs):

Q. Consider the following countries: (2018)

1. Australia
2. Canada
3. China
4. India
5. Japan
6. USA

Which of the above are among the 'free-trade partners' of ASEAN?

- (a) 1, 2, 4 and 5
- (b) 3, 4, 5 and 6
- (c) 1, 3, 4 and 5
- (d) 2, 3, 4 and 6

Ans: (c)

- The **Association of Southeast Asian Nations (ASEAN)** has free trade agreements with six partners, namely the People's Republic of China, Republic of Korea, Japan, India as well as Australia and New Zealand.

