

GS I

SYLLABUS: URBANISATION PROBLEMS AND REMEDIES.

SMART CITIES

THE HINDU, PG.NO: 10.

News: "22% rise in enrolment after smart classroom initiative."

Components of a Smart City:

- **Smart Governance:** E-Governance and transparency.
- **Smart Infrastructure:** Integrated utilities like smart water, electricity, and waste management systems.
- **Smart Mobility:** Intelligent traffic management and eco-friendly transportation.
- **Smart Economy:** Promoting innovation, entrepreneurship, and digital platforms.
- **Smart Environment:** Focus on green spaces, renewable energy, and sustainable urban ecosystems.

Smart City Mission:

- Launched in 2015 by the **Ministry of Housing and Urban Affairs (MoHUA)**.
- A **centrally sponsored program** aimed at transforming 100 selected cities across India.
- **At city level:** A **Special Purpose Vehicle (SPV)** created for the purpose implements the mission.
- Focused on **Area Based Development (ABD)**.

Progress of Smart City Mission:

- As of 2024, **over 8,000 projects worth ₹1.6 lakh crore** have been initiated, with **more than 90% completed across 100 cities**. Seventeen cities have achieved 100% project completion.
- **Achievements:**
 - **Integrated Command and Control Centres:** in Bhopal, Pune, Nagpur to monitor services such as traffic control, safety, and disaster management in real-time.
 - **Public Safety and Security:** Over 80,000 CCTV surveillance cameras have been installed in 100 Smart Cities, aiding in crime monitoring.
 - **Water Supply:** almost 10,000 km of the water supply system are being monitored through SCADA, reducing non-revenue water and leakages.
 - **Education:** ~8,000 smart classrooms and 40 digital libraries have been developed.
 - **Health:** ~200 e-health centers and clinics have been developed, and health ATMs also have been installed.
 - **Waste Management & Cleanliness:** Indore, consistently ranks highest in the Swachh Survekshan cleanliness rankings due to smart waste segregation, door-to-door collection, and real-time monitoring of waste vehicles.
 - **Urban Mobility Solutions:** Ahmedabad (Gujarat) and Pune (Maharashtra) have invested in Intelligent Traffic Management Systems (ITMS), e-bus fleets, and bicycle sharing etc.

Implementation challenges:

- **Issues with Urban Local Bodies (ULBs):**
 - Many ULBs face **low tax bases and high debt**, limiting their ability to raise capital.
 - Many smaller **ULBs lack the technical expertise** to manage large-scale infrastructure and tech-driven projects — **NITI Aayog 2021**.
- **Delayed fund disbursement by central and state govts** as noted by Parliamentary Standing Committee (2022–23).

- **Conflicts in Coordination:** Eg. Urban local bodies and special purpose vehicles created for the implementation of mission.
- **Technology gaps:** ICT Infrastructure in Tier-2 and Tier-3 cities struggle with stable internet connectivity and robust IT architecture.
- **Digital divide:** Residents' limited familiarity with e-governance tools can undermine the effectiveness of online services and citizen apps.
- **Land Acquisition conflicts:** Greenfield development and large-scale ABD require significant land parcels.
- **Operation & Maintenance Costs:** High-tech solutions (e.g., sensors, advanced CCTV) demand continuous funding for upgrades and maintenance.

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PYQs

GS I 2016: With a brief background of quality of urban life in India, introduce the objectives and strategy of the 'Smart City Programme'.

TECHNOLOGY

PRE-CONTEXT

SHOCK SYRINGE

THE HINDU, PG.NO: 10.

News: "IIT-Bombay team makes needle-free 'shock syringe' for painless injections."

About Shock Syringe:

- Unlike syringes with needles, the shock syringe does not rely on piercing the skin with a sharp tip.
- Instead, **it uses high-energy pressure waves** (shock waves) that can travel faster than the speed of sound **to pierce the skin**.
- **Pressurised nitrogen gas** is applied to the shock syringe that is the driver section of the micro shock tube part.
- The entire process of delivering drugs using a shock syringe is rapid and gentle.

Advantages:

- Pain-free injections.
- It could make immunisation drives quicker and more efficient for both children and adults.
- It could prevent the occurrence of blood-borne diseases caused by needle-stick injuries.
- Shock syringes are designed to perform multiple drug delivery shots.

Limitations:

- **Not all medications can be effectively delivered** through shock wave technology.
- High-intensity shock waves can potentially cause tissue damage if not administered correctly.

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GS III

SYLLABUS: ISSUES RELATING TO GROWTH.

CURRENT ACCOUNT DEFICIT

THE HINDU, PG.NO: 11.

News: "Current account deficit eased in Q2 but may double in Q3."

"India's CAD reflects our heavy reliance on imports like crude oil and gold, but also underscores the untapped potential of our export sectors."

Factors affecting Current Account Deficit

Merchandise Trade Deficit:

Impact of oil prices:

- India is **third largest oil importer(2023)**. In 2018, India's CAD widened to 2.1% of GDP primarily due to surge in global crude oil prices.

Domestic economic growth and rising imports:

- During **2008-10 Indian economy expanded rapidly**, which increased demand for capital goods leading to CAD to 4% of GDP in 2011.

Gold imports:

- India is one of the largest importer of gold. Any reduction in import duties on gold will surge its imports widening CAD — **2024 August**.

Remittances or Private Transfers:

- India is **world's largest recipient of remittances**, their significant contribution in 2019, reduced CAD to 1% of GDP.

Services and Tourism exports:

- During **periods of 2005-10**, services exports from India's IT sector helped balance the CAD. Even merchandise trade deficits were high.

Foreign investments:

- During **period of 2014-16**, India became one of the top investment destination for FDI globally. Helped CAD to stand at 1% of GDP in 2015.

Exchange Rate depreciation:

- During **Taper Tantrum 2013**, Indian rupee depreciated significantly losing 15% of its value against USD. This widened CAD to almost 5% in 2013.

Geopolitical risks impact on exports:

- Due to **COVID-19**, India experienced **first CAD surplus in over a decade**, due to sharp drop in both Indian exports and imports in 2020.
- Slowdown of major economies** Eg. China, USA etc.
- Adoption of tariffs and non tariffs barriers** by countries adopting 'active industrial policies' after pandemic.
- New trade walls like:** EU's Carbon Border Adjustment Mechanism and Deforestation rules.

"Trade Deficit should not be a mater of concern for a developing economy with high growth and to the extent there are no foreign exchange reserves issue."

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ECONOMY

PRE-CONTEXT

EXCHANGE RATE

THE HINDU, PG.NO: 11.

News: "Rupee Rattle: Currency hits fresh record low of 85.48/\$."

About Exchange Rate:

Evolution:

- Par Value system till 1971:** Govt. Fixes external value.
- Pegged Regime 1971-1992:** Rupee was pegged to US dollar.
- LERMS (1991- 1993):** Partial Convertibility.
- Floating Exchange Rate since 1993:**
 - India delinked itself from Fixed exchange Rate system & made it **floating exchange rate**.
 - Although exchange rate is **market determined**, **RBI can intervene as stabiliser**.
 - Mr. Manmohan Singh was the finance minister.

Types:

Nominal Effective Exchange Rate (REER):

- NEER **measures the strength of a country's currency against a weighted average of several other currencies**.
- If India's NEER increases**, it means the Indian Rupee has strengthened against the basket of other currencies, **making imports cheaper and exports more expensive**.
- Increase in NEER indicates appreciation of country's currency.

Real Effective Exchange Rate (REER):

- Values of NEER is **adjusted to inflation**. This provides a more accurate picture of a country's currency competitiveness.
- Increase in REER indicates real appreciation of country's currency.

Factors influencing Exchange Rate:

- Interest Rates:** The RBI's interest rate decisions significantly influence the INR. Higher rates tend to attract foreign portfolio investment (FPI), strengthening the INR.
- Inflation:** Persistent inflation in India can erode the INR's value.
- Economic Growth:** India's robust GDP growth has generally supported the INR, making it attractive for foreign investors.
- Political Stability:** Relative political stability in India has been conducive to foreign investment.
- FDI & FPI:** High levels of FDI and FPI inflows have appreciated the INR, while any capital flight can exert downward pressure.

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BIODIVERSITY

PRE-CONTEXT

CAPTIVE ELEPHANTS

THE HINDU, PG.NO: 7.

News: "Rules that still manacle the captive elephant."

Context: Ministry of Environment, Forests and Climate Change(MoEFCC) published the Captive Elephant (Transfer or Transport) Rules in March 2024.

Issues with Rules:

• Commodification of elephants:

- For instance, rules states that when an owner is no longer able to maintain an elephant, the **ownership of that elephant may be transferred**.
- However, there is **no obligation** for this transfer/ exchange to be non-commercial.
- An **elephant being "gifted"** to a Delhi temple by a private owner in Assam.
- Rules that recognises the **birth of calves in captivity**, allowing them to be **legally classified as owned captive elephants** leading to further exploitation.

• Microchip misuse:

- Most captive elephants in India were microchipped as part of a 2002 initiative by **Project Elephant** to track them.
- These **microchips, retrieved from an elephant after its death**, are inserted into a wild elephant to legalise its capture.

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Thank you!