

DAILY CURRENT AFFAIRS (DCA)

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UPGRADING INDIA'S BIOSECURITY IN THE AGE OF BIOTECHNOLOGY

Context

- Rapid advances in biotechnology have increased the risk of deliberate misuse of biological agents by state and non-state actors, making the strengthening of India's biosecurity framework a critical national security priority.

What is Biosecurity?

- Biosecurity refers to the set of **policies, practices, and institutional systems** designed to prevent the **intentional misuse of biological agents, toxins, or biotechnologies**.
- It covers** safeguarding laboratories handling dangerous pathogens, preventing unauthorised access to biological materials, and detecting and responding to deliberate disease outbreaks.
- Biosecurity extends beyond human health to **include animal and plant health**.
- Biosecurity differs from biosafety**, which focuses on preventing the accidental release of pathogens. A robust biosafety regime strengthens overall biosecurity.

Why Biosecurity Is Critical for India

- India's **large population and high population density** increase the potential impact of any biological incident.
- Heavy dependence on agriculture and livestock makes the country vulnerable to **agro-terrorism and transboundary animal diseases**.
- Rapid growth in biotechnology research increases the challenge of regulating **dual-use research** with civilian and military applications.
- The interest of **non-state actors in low-cost, high-impact biological agents** further compounds security risks.
 - Recently there have been reports of the alleged preparation of the toxin **Ricin** (derived from castor oil) for potential use in a terror attack.

India's Existing Biosecurity Architecture

- The Department of Biotechnology** oversees research governance and safety frameworks for labs.
- The National Centre for Disease Control** manages outbreak surveillance and response.
- The Department of Animal Husbandry and Dairying** monitors livestock biosecurity and transboundary diseases.

- The Plant Quarantine Organisation of India** regulates agricultural imports and exports.
- The National Disaster Management Authority** has issued detailed guidelines for the management of biological disasters.
- Key legal instruments include:**
 - The Environment (Protection) Act, 1986**, governing hazardous microorganisms and genetically modified organisms.
 - The Weapons of Mass Destruction and Their Delivery Systems (Prohibition of Unlawful Activities) Act, 2005**, which criminalises biological weapons.
 - The Biosafety Rules, 1989**, and guidelines issued in 2017 for recombinant DNA research and biocontainment.

International Measures

- Biological Weapons Convention (BWC):** It prohibits the development, production, acquisition, transfer, stockpiling and use of biological and toxin weapons.
 - It entered into force in **1975** and was the **first multilateral disarmament treaty** banning an entire category of **weapons of mass destruction (WMD)**.
- Australia Group:** The Australia Group is an informal forum of countries that seeks to prevent the proliferation of chemical and biological weapons.
 - It does so by harmonising export controls on dual-use materials, equipment, and technologies.

Global Best Practices

- The U.S. anchors its biosecurity framework under the **National Biodefense Strategy (2022-2028)** which integrates health, defence, and biotech oversight.
- China's Biosecurity Law (2021)** treats biotechnology and genetic data as matters of **national security**, mandating centralised control over research and material transfers.
- The United Kingdom's Biological Security Strategy (2023)** focuses on biosurveillance and rapid response.

Way Ahead

- India should establish a **comprehensive national biosecurity framework** with clear leadership and coordination mechanisms.

- **Legal and regulatory systems** should be updated to **regulate dual-use research** and synthetic biology.
- Investment in **genomic surveillance, microbial forensics, and early-warning systems** should be enhanced.

Source: TH

INDIA'S NEW GDP SERIES: FIXING DISCREPANCIES, UPDATING MEASUREMENT

Context

- The Ministry of Statistics and Programme Implementation (MoSPI) has released a discussion paper outlining major methodological changes in India's GDP estimation.

About

- In 2024, MoSPI has set up a 26-member Advisory Committee on National Accounts Statistics to decide the base year for GDP data.
 - ◆ **Biswanath Goldar** has been appointed as its chairman.
- For GDP, the new series is scheduled to be released on February 27, 2026 with financial year 2022-23 as base year.

About Gross Domestic Product (GDP)

- GDP is the **total monetary value of all final goods and services** produced within a **country's domestic territory** during a specific period (usually a quarter or a year).
- **Current base year** used 2011-12.
- **Released By:** National Statistical Office (NSO), Ministry of Statistics and Programme Implementation (MoSPI).
- **Calculation of GDP:** GDP is calculated using three main methods;
 - ◆ **The Expenditure Approach:** This method sums up all spending on final goods and services in the economy.
 - ◆ **The Income Approach:** This method sums all incomes earned by factors of production (labor, capital).
 - ◆ **The Production/Value-Added Approach:** This method adds up the value added by each industry at every stage of production.

What is Base Year?

- A base year is a **benchmark year** used for comparison in **economic and statistical calculations**.

- It provides a **reference point** against which current values of indicators like GDP, CPI, and IIP are measured to track real changes over time.
- **Significance:**
 - ◆ It allows us to **remove the effect of inflation** and see real growth.
 - ◆ Ensures that the data reflects the **current structure of the economy**, consumption patterns, and prices.

Need for the Change of the Base Year

- India's economy has undergone **structural changes due to digitisation**, formalisation, GST, and changing consumption patterns.
- Existing GDP estimates rely partly on **outdated surveys and static ratios**, limiting accuracy.
- **Persistent and volatile GDP discrepancies** have reduced transparency and interpretability of growth numbers.
 - ◆ GDP is estimated using both production and expenditure approaches, but differences in data sources, coverage gaps, valuation methods, and time lags often lead to mismatches.
 - ◆ Large discrepancies result in significant revisions to GDP estimates later, reducing predictability and confidence among policymakers, investors, and analysts.

Key Changes in the New GDP Series

- **Elimination of 'Discrepancies':** MoSPI plans to integrate **Supply and Use Tables (SUTs)** directly into annual GDP compilation.
 - ◆ Supply and use tables show how different goods and services are supplied by domestic industries and imports and how they are distributed between different intermediate or final uses, including exports.
 - ◆ This approach aims to limit discrepancies in early estimates and fully eliminate them in final estimates.
- **Use of Digital and Administrative Data:** Increased reliance on datasets such as;
 - ◆ e-Vahan (vehicle registrations)
 - ◆ GST and other administrative records
- **Updated Surveys as Data Backbone:** Key surveys feeding into the new series include;
 - ◆ **Household Consumption Expenditure Survey (HCES)** 2022-23 and 2023-24.
 - ◆ Updated surveys of formal and informal enterprises.

Challenges Ahead

- GDP estimation remains **methodologically complex**, even with improved tools.
- Integrating multiple administrative datasets poses **data quality and consistency challenges**.
- Ensuring timely availability of **reliable survey data is critical**.
- Transition to a new series may initially create **comparability issues** for long-term analysis.

Concluding remarks

- The revision of India's GDP series marks a step towards improving the accuracy, transparency, and credibility of national income statistics.
- By updating the base year, and eliminating discrepancies the new framework is better aligned with the realities of a rapidly formalising and digitising economy.

Source: IE

GLOBAL VALUE CHAIN DEVELOPMENT REPORT 2025

Context

- The **Global Value Chain Development Report 2025** has been released by the **World Trade Organization (WTO)**.

What is the Global Value Chain (GVC)?

- **A Global Value Chain (GVC) refers to** the full range of activities involved in producing a good or service, when these activities are spread across multiple countries.
- **These activities include:** Design & R&D, Sourcing of raw materials, Production and assembly, Logistics and distribution, Marketing, sales & after-sales services.
 - ◆ Each stage adds value, and different countries participate in different stages based on their comparative advantage.
- **Example:** A smartphone may be designed in the US, components manufactured in East Asia, assembled in Vietnam/India, and sold globally.

Major Findings of the Report

- **Recent Trends:** GVCs remain central to international trade, accounting for about **46.3% of global trade** in value-added terms, only slightly below the 2022 peak.

- ◆ Firms and governments are prioritizing resilience e.g., diversification of suppliers alongside efficiency.

- **India Specific Findings:** India, alongside the Philippines and several African economies, has strengthened its position in business-process and digital service exports.

- ◆ India has risen to become **part of the top 10 value adding economies** since the onset of the pandemic, with a share of **2.8% of global Domestic Value Added (DVA) in exports in 2024**.
- ◆ This reflects **India's growing role in digital trade and services** within global value chains.

- **Shifts in GVC Structure: Services** have outpaced goods in GVC participation, accounting for more than **one-third of value added** in manufacturing exports.

- **Regional Reconfiguration: Asia, Europe, and North America** remain dominant in GVC trade.

- **Reshoring and Regionalization Trends:** Major economies including China, the United States, and the European Union are actively reducing dependence on foreign value-added in domestic consumption.

- ◆ This reshoring trend reflects shifting priorities toward supply chain security and reduced reliance on external sources.

- **Electric Vehicle (EV) Value Chains:** The rise of EV production is reshaping automotive supply chains. China accounted for a large share of global EV output as of 2023.

- ◆ Critical minerals (e.g., lithium, cobalt) are central to EV supply, offering new opportunities for resource-rich developing economies, but also posing risks due to supply concentration.

- **Technological Change & GVCs:** Digitalization, automation, AI and advanced ICT are enabling finer fragmentation of production, lowering coordination costs and creating new resilient network structures.

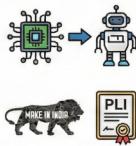
- ◆ Economies with strong absorptive capacity and infrastructure benefit most, while others risk being left behind.

IMPORTANCE OF GLOBAL VALUE CHAINS (GVCs) FOR INDIA



1. MANUFACTURING GROWTH

- GVC integration enables India to move from low-value assembly to higher-value manufacturing.
- Supports initiatives like Make in India and PLI schemes.



2. EXPORT EXPANSION

- Participation in GVCs increases export competitiveness without needing full domestic supply chains.
- Helps diversify exports beyond traditional sectors.



3. EMPLOYMENT GENERATION

- Labour-intensive GVC segments (electronics, textiles, footwear) can create large-scale jobs.
- Focuses on creating job opportunities across different skill levels.



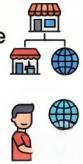
4. TECHNOLOGY AND SKILL TRANSFER

- Foreign firms bring technology, managerial practices, and standards, improving domestic capabilities.
- Facilitates knowledge sharing and innovation within the domestic industry.



5. MSME INTEGRATION

- GVCs provide opportunities for Indian MSMEs to become suppliers to global firms.
- Helps MSMEs to scale up and access international markets.



Challenges for India in GVC Integration

- Infrastructure and Logistics:** High logistics costs, port inefficiencies, and delays reduce competitiveness.
- Regulatory and Policy Uncertainty:** Frequent policy changes and compliance burden discourage long-term investment.
- Limited Trade Agreements:** India's relatively fewer FTAs limit preferential access to major markets.
- Skill and Technology Gaps:** Shortage of skilled labour in advanced manufacturing.
- Sustainability Barriers:** Carbon border measures and ESG norms may raise compliance costs for Indian exporters.

Recommendations

• For Policymakers:

- Promote digital and logistics infrastructure to broaden participation.
- Align climate and trade policies to reinforce environmental and competitiveness objectives.
- Strengthen trade finance access to close gaps for SMEs and developing economies.
- Encourage transparent and coordinated industrial policies that support resilience without undermining global cooperation.

• For Firms:

- Invest in digital tools, AI and automation to enhance resilience and adaptability.
- Diversify supply networks to balance efficiency with risk mitigation.
- Leverage regional networks where strategic advantages exist.

Source: WTO

NCAER REPORTS RISE IN SKILLED WORKFORCE

Context

- The National Council of Applied Economic Research (NCAER) released the report "India's Employment Prospects: Pathways to Jobs", Underlining the role of skilling and small enterprises as key drivers of job creation in the country.

Key Findings of the Report

- Employment Trends:** India's self-employment dominance is due to economic necessity rather than entrepreneurial dynamism as most of the small enterprises function at subsistence level.
- Workforce Composition:** India's workforce could benefit greatly from upskilling, particularly with the advent of new technologies and AI.
 - Medium-skilled jobs dominate employment growth, especially in services, whereas manufacturing remains low-skill intensive.

- **Increasing the skilled workforce share by:**
 - ◆ **9 percentage points** could generate 9.3 million jobs by 2030.
 - ◆ **12 percentage points** could raise employment in labour-intensive sectors by over 13% by 2030.
- **Role of Small Enterprises:** Productivity of India's smallest enterprises is central to the country's employment future.
 - ◆ Enterprises using digital technologies employ **78%** more workers than non-digital firms. A **1% increase** in access to credit raises the expected number of hired workers by **45%**.

What are the Challenges?

- **Informal enterprises** dominate India's economy, especially Own Account Enterprises (OAEs) that do not hire workers.
 - ◆ A 10% increase in GVA in informal enterprises can lead to a 4.5% rise in hired workers.
- **Low Coverage of Formal Training:** As of 2024, only **4.1%** of India's workforce had received formal vocational training.
- **Structural Problems in the Skilling System:**
 - ◆ Training courses are poorly aligned with industry needs.
 - ◆ Many training centres suffer from low seat utilisation.
 - ◆ Placement outcomes remain weak.
 - ◆ Limited coordination between industry, training providers and state governments.

Key government Initiatives



National Skill Development Corporation (NSDC)

- NSDC was established in **2008**, as a not-for-profit public limited company under section 25 of the Companies Act, 1956 (now **section 8 of the Companies Act, 2013**).
- It is a Public Private Partnership (PPP) enterprise working under the **Ministry of Skill Development & Entrepreneurship (MSDE)**, Government of India.
- NSDC aims to **promote skill development by catalyzing creation of large, quality and for-profit vocational institutions**.

Policy Recommendations Highlighted in the Report

- **Reforming the Skilling Ecosystem:**
 - ◆ Shift from supply-driven training to demand-aligned skilling.
 - ◆ Strengthen industry participation and placement-oriented outcomes.
 - ◆ Increase public investment in vocational education.
- **Demand-Side Employment Strategy:**
 - ◆ Prioritise labour-intensive manufacturing sectors such as textiles, garments, footwear, and food processing.
 - ◆ Align industrial incentives with employment multipliers rather than output alone.
- **Boosting Informal Sector Productivity:**
 - ◆ Expand access to formal credit for small and micro enterprises.
 - ◆ Promote digital adoption to improve productivity and hiring capacity.
 - ◆ Enable enterprise graduation from subsistence to growth-oriented models.

Source: AIR

NEWS IN SHORT

GULF OF OMAN

In News

- Iran seizes foreign oil tanker carrying 6 million litres of smuggled Diesel in the Gulf of Oman.

About Gulf of Oman

- The Gulf of Oman is the north-western arm of the Arabian Sea.
- It forms a vital maritime corridor connecting the Indian Ocean with the Persian Gulf through the **Strait of Hormuz**.

- Through the Strait of Hormuz, it provides access to the **Persian Gulf, making it vital for global oil and LNG trade.**



Source: TH

PM MODI RECEIVED ETHIOPIA'S HIGHEST CIVILIAN HONOUR

Context

- PM Modi was conferred with Ethiopia's highest award, '**The Great Honour Nishan of Ethiopia**', by his Ethiopian counterpart Abiy Ahmed Ali.

About Ethiopia

- Location:** Ethiopia is a landlocked country located in the **Horn of Africa**.
 - It shares borders with **Eritrea, Djibouti, Somalia, Kenya, South Sudan, and Sudan**.



- Geography:** The country has diverse topography, including the **Ethiopian Highlands**, the **Great Rift Valley**, and the **Danakil Depression** (one of the hottest places on Earth).
 - The Blue Nile** originates from **Lake Tana in Ethiopia**.
- Demography:** Ethiopia is the **second-most populous country** in Africa.
- Cultural Significance:** Ethiopia has its **own calendar**, which is seven years and around three months behind the Gregorian calendar.
 - Ethiopia is widely recognised as the **birthplace of coffee**.
- Archaeological Importance:** It is the **Cradle of Humankind**, with some of the oldest hominid fossils discovered here.

- "Lucy" (Dinkinesh)**, a 3.2-million-year-old hominid fossil, was found in Ethiopia.
- "Ardi"**, a 4.4-million-year-old early hominid skeleton, was also discovered in the country.

Source: DD News

ASPIRE SCHEME

In News

- The Ministry of Micro, Small and Medium Enterprises (MSME) is implementing the **ASPIRE scheme** to promote entrepreneurship and livelihood opportunities in rural areas.

About the Scheme

- Launch:** In 2015 by the Ministry of Micro, Small and Medium Enterprises.
- Aim:** To create an enabling ecosystem for job creation through skill development, incubation and support to micro-enterprises.
 - As of now, 109 Livelihood Business Incubators (LBIs) have been approved across the country.
- Key Components:**
 - Livelihood Business Incubators (LBIs):** Support agro-based ventures with grants up to 75 lakh (private) or 1 crore (government institutions) for training in food processing, handicrafts, and rural trades.
 - Technology Business Incubators (TBIs):** Focus on tech-driven rural innovation with similar funding.
 - Fund of Funds:** Managed by SIDBI with 200 crore corpus to back startups in agro-rural sectors.

Do you Know?

- Vendor Development Programmes** for SC/ST and women entrepreneurs are being organised under the Public Procurement Policy for MSMEs.
- The '**Yashasvini Campaign**' was launched in June 2024 to empower women entrepreneurs through awareness on formalisation, access to credit, capacity building and mentorship.
- The ministry is also implementing the **Prime Minister's Employment Generation Programme (PMEGP)**, a credit-linked subsidy scheme to generate self-employment opportunities through micro-enterprises.

Source: DD News

TRADE DEFICIT

Context

- India's **trade deficit** dropped by **more than 61%** in November 2025 to **\$6.6 billion**, due to **strong growth in merchandise exports** and a **fall in merchandise imports**.

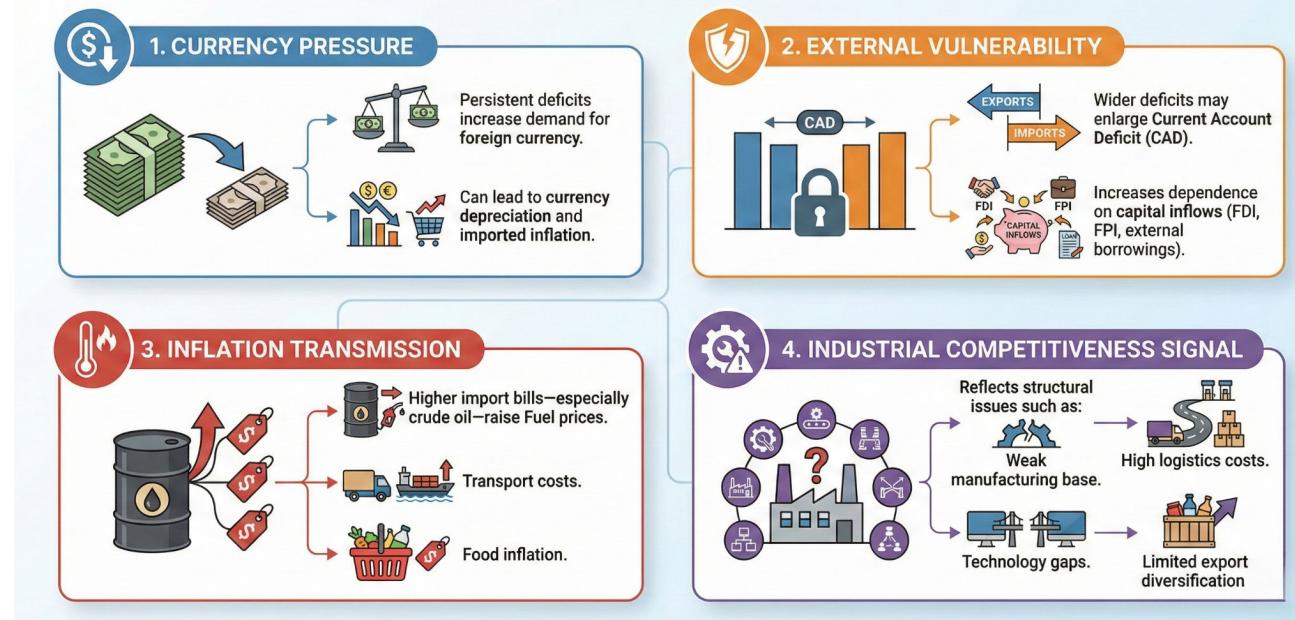
Trade Deficit

- Definition:** A trade deficit occurs when the value of a country's imports exceeds the value of its exports during a given period, leading to a negative Balance of Trade (BoT).
 - Balance of Trade (BoT) = Total Exports – Total Imports

Types of Trade Deficit:

- Merchandise (Goods) Trade Deficit:** Difference between exports and imports of physical goods.
- Services Trade Deficit / Surplus:** Difference between services exports (IT, tourism, finance) and services imports. India typically runs a services surplus.
- Bilateral Trade Deficit:** Trade deficit with a specific country (e.g., India–China trade deficit)
- Indicator of net external demand:** Shows whether a country is a net importer or exporter in global trade.

IMPLICATIONS OF TRADE DEFICIT



Source: TH

COMMODITY DERIVATIVES

Context

- A panel set up by Securities and Exchange Board of India (SEBI) will recommend easing curbs on commodity derivatives and suggest steps to make it more attractive to institutional investors in a final report to be submitted early next year.

What is a Commodity Derivative Market?

- The commodity derivatives market deals in financial contracts whose **value is derived from underlying physical commodities** such as crude oil, gold, silver, wheat, natural gas, copper, and aluminium.

- These contracts enable participants to **buy or sell a commodity at a predetermined price on a future date**, without necessarily engaging in physical delivery.
- The market serves two core functions;**
 - Hedging Price Risk:** Producers hedge against price falls by locking in future selling prices and consumers hedge against price rises by fixing future purchase prices.
 - Speculation:** Traders take positions based on anticipated price movements to earn profits. Speculative activity enhances market liquidity and efficiency.

Types of Commodity Derivatives

- **Futures Contracts:** A futures contract is a standardized agreement between two parties to **buy or sell an asset at a specific future date** for a predetermined price.
 - ◆ Both buyer and seller are obligated to execute the contract on the specified future date.
 - ◆ Investors pay only a margin (a fraction of the total value) upfront, not the full cost of the underlying asset.
- **Options Contracts:** An options contract **gives the buyer the right, but not the obligation**, to buy (call option) or sell (put option) an asset at a pre-set price before or on the contract's expiration date.
 - ◆ The buyer of the option has the flexibility to exercise the contract if it benefits them, or let it expire if not.
 - ◆ The **buyer pays a premium** for this right.
- **Forwards Contracts:** Forward contracts are privately negotiated agreements between two parties to buy or sell a commodity at a future date at an agreed price.
 - ◆ These contracts are not traded on exchanges and are customised in terms of quantity, quality, and delivery conditions.
- **Swaps:** Commodity swaps involve the exchange of cash flows between two parties based on commodity price movements.
 - ◆ They allow participants to hedge long-term price exposure without owning the physical commodity.

Source: BS

JUMPING GENES

In News

- Polar bears in Southern Greenland show rapid genetic changes linked to jumping genes that may help them survive warming Arctic conditions.

About Jumping Genes

- Jumping genes, scientifically called Transposable Elements (TEs), are DNA sequences that can move (transpose) from one location to another within the genome.
- They were discovered by **Barbara McClintock in maize (corn)**, for which she received the Nobel Prize (1983).
- In humans, they constitute 45% of the genome.
- Once considered "junk DNA," now known to have regulatory and evolutionary roles.

Source: Money Control

AH-64E APACHE ATTACK HELICOPTERS

Context

- The Indian Army received the **final batch of three AH-64E Apache attack helicopters**.

About

- The Apaches were contracted in **2020 under a \$600 million deal** with the **United States**.
- The AH-64E Apache is regarded as the **world's most advanced multi-role combat helicopter**.
 - ◆ It is equipped with cutting-edge avionics, sensors and weapon systems, and capable of operating in all weather and terrain conditions.

Source: TH

