
Prelims Exam Topics

ASTRA MISSILE

Context:

India and Indonesia reached a significant milestone by signing a deal for the supply of the Astra Mk 1 'beyond-visual-range air-to-air missiles' (BVRAAM).

About Astra Missile

- Astra is an **indigenously developed Beyond-Visual-Range Air-to-Air Missile (BVRAAM)** designed by the **Defence Research and Development Organisation (DRDO)**.
- It is developed to engage and destroy enemy aircraft at long ranges, beyond the pilot's visual range.
- **Speed:** Up to **Mach 4.5**.

Variants

- **Astra Mk-1**
 - Range: **80–110 km**
 - Operational altitude: Up to **20 km**
 - Integrated with the **Su-30MKI** and planned for **Tejas Mk-1A** and **Rafale** fighters.
- **Astra Mk-2**
 - Range: Around **200 km**
 - Equipped with a **dual-pulse solid rocket motor** for improved long-range performance.
- **Astra Mk-3 (Gandiva)**
 - Expected range: **Over 350 km**.
 - Powered by a **Solid Fuel Ducted Ramjet (SFDR)** engine.

PINAKA LONG RANGE GUIDED ROCKET

Context:

DRDO successfully validated the **Pinaka LRGR-120** at its user-specified **minimum range of 60 km** at Chandipur, Odisha.

About Pinaka LRGR-120

- The **Pinaka Long Range Guided Rocket** is an **indigenously developed precision-guided artillery rocket** designed by the **Defence Research and Development Organisation (DRDO)** for the **Pinaka Multi-Barrel Rocket Launcher (MBRL)**.
- **Range: 60–120 km.**
- **Launch Platform:** Fired from the **existing in-service Pinaka launcher**, allowing different Pinaka variants to be launched from the same platform.
- **Guidance: Inertial Navigation System (INS)** with satellite-aided guidance for high-precision strikes.
- Validation of the **60 km minimum range** eliminates operational "dead zones," allowing the same rocket to engage targets throughout the **60–120 km range**.

PATRIOT AIR DEFENCE SYSTEM

Context:

During the **NATO Summit**, **US President Donald Trump** announced that the **United States** would allow **Ukraine** to manufacture **Patriot air-defence missiles** under licence.

About Patriot Air Defence System

- The **MIM-104 Patriot (Phased Array Tracking Radar for Intercept on Target)** is a **mobile, long-range Surface-to-Air Missile (SAM)** system used by the **United States Army** and several allied countries for **integrated air and missile defence**.
- The system is primarily developed by **RTX Corporation** (formerly Raytheon), while the **PAC-3 interceptor missile** is manufactured by **Lockheed Martin**.
- **Radar:** Legacy Patriot batteries use a **sectoral phased-array radar** (about **120° coverage**).
- **Range:** Varies by missile type, up to 160 km for aircraft and up to 35 km for ballistic missiles

Interceptor Variants

- **PAC-2:** Uses a **blast-fragmentation warhead** and is primarily designed to destroy **aircraft and cruise missiles**.
- **PAC-3 / PAC-3 MSE:** Employs **hit-to-kill technology**, destroying **tactical ballistic missiles** through direct kinetic impact.

LNG REGASIFICATION CAPACITY IN INDIA

Context:

According to the **International Gas Union (IGU) World LNG Report**, India surpassed **Spain** in 2025 to become the **fourth-largest LNG regasification market** globally.

About LNG Regasification

- **Liquefied Natural Gas (LNG)** is natural gas cooled to about **-162°C** to convert it into liquid form for easier storage and transportation. **Regasification** is the process of converting LNG back into its gaseous state at import terminals before supplying it through the natural gas pipeline network.
- The **Dahej LNG Terminal (17.5 MTPA)** is India's largest regasification terminal and the **sixth largest globally**.
- According to the **International Energy Agency (IEA)**, India's natural gas demand is projected to increase by **nearly 60% by 2030**.

EURASIAN LYNX

Context:

The **Eurasian Lynx** has been photographed for the **first time in Sikkim**.

About Eurasian Lynx

- The **Eurasian Lynx** is a **medium-sized wild cat** and the **largest species of lynx**.
- Distributed across **Western Europe, Russia, Central Asia, and the Himalayan region**.
- Inhabits **temperate, boreal, and mixed forests**, alpine meadows, rocky terrains, and the **Tibetan Plateau**.
- In India, it occurs mainly in the **higher Himalayan regions**.
- **Behaviour:** Solitary, mainly **crepuscular** (active at dawn and dusk) and nocturnal.

Conservation Status

- **IUCN Red List:** Least Concern (LC).
- **CITES Status:** Appendix II
- **WPA status:** Schedule I

PM-SETU SCHEME

Context:

The **Union Government** has approved the nationwide rollout of the **Pradhan Mantri Skilling and Employability Transformation through Upgraded ITIs (PM-SETU)** scheme.

About PM-SETU Scheme

- **PM-SETU** is a **Centrally Sponsored Scheme** launched by the **Ministry of Skill Development and Entrepreneurship (MSDE)** in **2025**.
- **Objective:** To modernize **Industrial Training Institutes (ITIs)** into industry-oriented skill development centres that equip youth with skills for emerging employment opportunities.
- **Upgrades 1,000 Government ITIs through a Hub-and-Spoke model, comprising 200 Hub ITIs and 800 Spoke ITIs.**
- Establishment of **Special Purpose Vehicles (SPVs)** for cluster management and industry participation.
- Financial support linked to institutional performance, with co-financing from the **Asian Development Bank (ADB)** and the **World Bank**.

DESIGNATED REPOSITORY

Context:

The **Natural History Museum (NHM)** of **Mizoram University** has been notified as India's **21st Designated Repository** under the **Biological Diversity Act, 2002**.

About Designated Repository

- A **Designated Repository** is an institution notified by the **Central Government**, on the recommendation of the **National Biodiversity Authority (NBA)**, to **collect, preserve, maintain, and authenticate biological resources**.
- It serves as an official repository for biological specimens used in **research, conservation, and access and benefit-sharing (ABS)** under the **Biological Diversity Act, 2002**.

Natural History Museum (NHM), Mizoram University

- Established in **2022** at **Mizoram University, Aizawl**.
- Located within the **Indo-Burma Biodiversity Hotspot**, one of the world's richest biodiversity regions.

CREDIT–DEPOSIT GAP

Context:

The gap between **bank credit growth** and **deposit growth** has widened in recent months, raising concerns over the sustainability of bank lending and liquidity. Banks are increasingly relying on **term deposits** and **Certificates of Deposit (CDs)** to fund loan growth.

About Credit–Deposit Gap

- The **Credit–Deposit Gap** refers to the difference between the growth rate of **bank loans (credit)** and **bank deposits**.
- The **Credit–Deposit (CD) Ratio** measures the proportion of a bank's deposits that are deployed as loans.
- A **high CD ratio** indicates aggressive lending and may lead to liquidity stress if deposit growth remains weak.

Certificate of Deposit (CD): A **short-term money market instrument** issued by banks to raise funds from institutional and corporate investors.

VACCINE-DERIVED POLIOVIRUS (VDPV)

Context:

A **vaccine-derived poliovirus (VDPV)** was detected in a **sewage sample in Ghaziabad**, prompting intensified surveillance and vaccination drives. The detection **does not affect India's polio-free status**, as only the presence of **wild poliovirus** can change that.

About Poliovirus

- **Poliomyelitis (Polio)** is a highly infectious viral disease caused by the **poliovirus**, primarily affecting children under five years of age.
- It spreads mainly through the **faecal-oral route** via contaminated food or water.
- The virus can invade the **nervous system**, leading to **permanent paralysis** in severe cases.
- There is **no cure** for polio; it is **preventable through vaccination**.
- **Vaccine-Derived Poliovirus** is a rare strain that originates from the **weakened live virus** used in the **Oral Polio Vaccine (OPV)**.
- India was certified **polio-free** by the **World Health Organization (WHO)** in **2014**. The **last case of wild poliovirus** in India was reported in **2011**.

Mains Exam Topics

THE INDIAN DIASPORA IN AUSTRALIA: A PILLAR OF INDIA–AUSTRALIA RELATIONS

Context:

The Indian diaspora has become **Australia's largest overseas-born community**, overtaking the England-born population for the first time, reinforcing its role as a key pillar of the **India–Australia**

Comprehensive Strategic Partnership.

Why is the Indian Diaspora Significant for India–Australia Relations?

- **Socio-Cultural Capital and Public Diplomacy:** The diaspora promotes mutual understanding through shared democratic values, multiculturalism, and cultural exchanges, strengthening India's soft power.
 - E.g., The relationship has evolved from the "**3 Cs**" (**Cricket, Curry, Commonwealth**) to the "**4 Ds**"—**Democracy, Defence, Diaspora, and Dosti**, supported by festivals such as **Diwali** and the **International Day of Yoga**.
- **Economic and Technology Partnership:** The Indian diaspora strengthens economic integration by contributing skilled talent, facilitating investment, and supporting innovation-led cooperation.
 - E.g., Indian professionals play a key role in **IT, healthcare, research, start-ups**, and the **India–Australia Critical and Emerging Technology Partnership**.
- **Political Constituency and Strategic Trust:** A growing Indian-origin community has emerged as an influential political constituency, encouraging bipartisan support for stronger India–Australia relations.
- **Talent Mobility and Knowledge Partnership:** Educational exchanges and skilled migration create long-term institutional linkages, strengthening human capital and innovation ecosystems.
 - E.g., The **Australia–India Economic Cooperation and Trade Agreement (ECTA)** and the **Migration and Mobility Partnership Arrangement (MMPA)** facilitate student and professional mobility.
- **Strategic Indo-Pacific Partnership:** The diaspora reinforces broader strategic cooperation by fostering long-term institutional, business, and societal linkages that support a stable Indo-Pacific.

What Are the Major Challenges Facing the Indian Diaspora and Bilateral Relations?

- **Extremism:** Political and ideological divisions originating outside Australia can spill over into diaspora communities, creating diplomatic sensitivities and law-and-order challenges.
 - E.g., Incidents involving **Khalistani extremism**, temple vandalism, and politically motivated protests have periodically affected India–Australia diplomatic engagement.
- **Migration Policy Uncertainty:** The bilateral relationship remains disproportionately dependent on education-led migration, making people-to-people ties vulnerable to Australia's evolving immigration and visa policies.
 - E.g., Australia's efforts to reduce **Net Overseas Migration (NOM)** through stricter **Genuine Student (GS)** assessments and higher financial requirements have constrained Indian student mobility.
- **Skill Recognition and Underemployment:** Despite high educational attainment, many Indian professionals face delays in the recognition of qualifications, leading to underemployment and inefficient utilisation of skilled human capital.
 - E.g., Australia's "**Activate Australia's Skills**" report estimates that over **253,000 skilled migrants** are underemployed, including around **50,000 engineers** and **16,000 nurses**.
- **Socio-Political Friction and Social Cohesion:** Housing shortages, rising living costs, and infrastructure pressures have fuelled anti-immigration sentiment, occasionally affecting the safety and integration of the Indian community.
 - Nationalist campaigns such as "**March for Australia**" and rising anti-immigration rhetoric have increasingly targeted the Indian community, alongside periodic incidents of racial discrimination and hate crimes.
- **Institutional Gaps in Diaspora Governance:** A uniform approach to diaspora engagement overlooks the distinct needs and capacities of different migrant groups, reducing the effectiveness of bilateral policies and partnerships.
 - The **Lowy Institute's *Beyond the Model Minority*** report highlights that while initiatives like the **Maitri Grants** primarily benefit established professionals and businesses, temporary Indian students continue to face challenges such as **wage theft, housing insecurity, and workplace exploitation**, underscoring the need for differentiated diaspora engagement.

How Can India and Australia Strengthen Diaspora-Led Partnership?

- **Promote Cultural Cohesion and Community Integration:** Strengthen grassroots initiatives that foster multicultural harmony, counter misinformation, and improve the social integration of the Indian diaspora.
 - E.g., Expand community outreach programmes, multicultural festivals, and anti-racism initiatives supported through Maitri Grants and local government partnerships.
- **Institutionalise Diaspora Diplomacy:** Create structured mechanisms to integrate diaspora expertise into bilateral policymaking, business, academia, and strategic dialogue.
 - E.g., Strengthen Track 1.5 Dialogues, and leverage platforms such as the India Chair at the Lowy Institute for policy engagement.
- **Strengthen Talent Mobility and Skill Recognition:** Facilitate seamless movement of students and professionals by harmonising qualification recognition and expanding mobility pathways.
 - E.g., Operationalise the Taskforce on Education Qualifications Recognition, expand the MATES (Mobility Arrangement for Talented Early-professionals Scheme), and accelerate mutual recognition of professional credentials to reduce brain waste.
- **Leverage the Diaspora for Economic and Technology Partnerships:** Mobilise diaspora networks to deepen investment, innovation, and technology collaboration in priority sectors.
 - E.g., Strengthen start-up partnerships in critical minerals, clean energy, AI, fintech, and critical technologies, while accelerating negotiations for the Comprehensive Economic Cooperation Agreement (CECA).
- **Deepen Strategic and Indo-Pacific Cooperation:** Recognise the diaspora as the human ballast that strengthens political trust and societal support for long-term strategic cooperation.
 - E.g., Leverage strong people-to-people ties to reinforce cooperation under the Quad.