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Pakistan's arms sales drive calls for India's attention

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

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

1. Background

- On 2 February, Pakistan's Chief of Defence Forces **Asim Munir** met Eastern Libyan leader **Khalifa Haftar i**n Rawalpindi.
- They reportedly finalised a **$4.6 billion arms deal** for Libya's Libyan National Army (LNA)- **Pakistan's largest defence export deal.**
- Libya has been unstable since the **2011 overthrow of Muammar Qadhafi**, with conflict between the **LNA** (Benghazi) and **Government of National Unity** (Tripoli).
- The deal signals Pakistan's growing role as a security provider in West Asia.

2. Pakistan's Expanding Defence Export Strategy

- **Libya deal: 16 JF-17 fighter jets** and **12 Super Mushak trainer aircraft**, to be delivered in **30 months**.
- JF-17 is produced with **Chinese assistance**, Russian engines and Turkish missiles.
- Pakistan is also negotiating a **$1.5 billion defence deal with Sudan**, possibly rising to $4 billion if JF-17 jets are included.
- Financing for these deals is reportedly **supported by UAE and Saudi Arabia.**
- Pakistan claims it has **exported JF-17 jets** to Azerbaijan, Myanmar and Nigeria, and offered them to Bangladesh.
- Combined current and potential deals may reach $13 billion.
- **Pakistan's annual defence production: $7 billion**, compared to India's $18 billion.
- Export strategy uses **Islamic solidarity, military ties, aggressive pricing**, and **direct involvement of the military in negotiations**

3. Constraints and Risks in Pakistan's Arms Push

- **Production capacity constraint:** JF-17 output is about **25 aircraft per year** for domestic use and exports.
- **Industrial dependency:** Aircraft assembled largely from foreign components.
- **Financial vulnerability:** Many deals depend on third-party financing.
- Legal and geopolitical risks:
  - **Libya and Sudan** are under **UN arms embargoes.**
  - **Gulf rivalry** (Saudi Arabia vs UAE) complicates deals.
  - Risk of Pakistani arms reaching both sides of the Sudan conflict.
- **Quality concerns**: Claims of combat success against India may later **expose product limitations.**
- **US factor:** Pakistan's role as a **channel for Chinese military technology** could face **American resistance.**

4. Strategic Implications for India

- Pakistan is positioning itself as a **net security provider to the Gulf**, strengthening regional influence.
- This may help Pakistan **offset India's stronger economic presence** in West Asia and regain strategic parity.
- Growing security ties with Gulf states could help Pakistan r**educe its negative image linked to terrorism** and financial irregularities.
- Expanded influence may also **embolden Rawalpindi's security posture toward India.**

5. India's Response:

- India's **defence exports reached $2.8 billion** in 2024-25, but it remains the **world's second-largest arms importer** and outside the top 25 exporters.
- India should:
  - **Expand defence exports** to neighbours and Global South.
  - **Use oil import leverage** to encourage Gulf partners to buy Indian weapons.
  - **Align aid programmes and credit lines** with defence sales.
  - Create a **dedicated defence export promotion organisation** with industry, experts, ministries and financiers.
  - **Promote products aggressively** and reduce bureaucratic barriers in defence export negotiation

India's need for a mandatory R&D disclosure standard

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

Mains: General Studies - 3
Achievements of Indians in science & technology; indigenization of technology and developing new technology.

1. Background

- George Akerlof's 1970 paper **"The Market for Lemons"** explains that **when buyers cannot distinguish quality, good products exit the market.**
- A similar problem affects **corporate R&D in India**, where innovation quality is difficult for investors to assess.
- **Corporate R&D intensity** in India is only **0.23% of GDP**, far below global peers.
- **Lack of transparent innovation information** in capital markets leads to **undervaluation and underproduction of innovation.**

2. Evidence on the Role of Transparency in R&D

- **Brown & Martinsson (2018)**: Better disclosure raises R&D intensity by **6-12% in OECD** economies and **3-14% globally.**
- **Transparency** pushes investment toward innovation rather than physical assets.
- **Shanghai Stock Exchange disclosure** rules increased innovation in non-state, high-tech and financially constrained firms (Liu, Ye & Liu, 2023).
- Disclosure also enable**s industry learning,** prompting weaker firms to **drop inferior projects and improve efficiency**.

3. Proposed Reform: Mandatory R&D Disclosure Framework

- Proposal: **Mandatory R&D and Technology Disclosure** Standard under Securities and Exchange Board of India's **Listing Obligations and Disclosure Requirements Regulations, (LODR) 2015**
- It **will not mandate R&D spending,** but require **structured innovation disclosures** across **five dimensions:**
  - **R&D expenditure** (capital and revenue, segment-level).
  - **Patent activity** (filings, grants, expirations, maintenance).
  - Technology workforce composition.
  - **Technology Readiness Level** (TRL) of major projects.
  - **Innovation turnover** (share of revenue from products launched in the past five years).
- **Implementation plan**: **voluntary disclosure for two years**, followed by mandatory compliance.

4. Expected Benefits of Mandatory R&D Disclosure

- **Reduces information asymmetry:** Investors can distinguish genuine innovation from superficial projects.
- **Lowers cost of capital:** Greater transparency increases investor confidence and stabilises share prices.

- **Strengthens market discipline:** Firms face pressure from investors and boards to improve innovation performance.
- **Improves innovation productivity:** OECD (2021 Intangibles Report) shows transparency leads to more patents and **better outcomes per unit of R&D spending.**
- **Non-distortionary policy tool:** It **does not impose spending targets,** fiscal costs, or sectoral bias, but **allows markets to allocate capital efficiently**

On India's fighter jet acquisitions

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

Mains: General Studies - 3
Various Security forces and agencies and their mandate.

1. Rafale Deal and Technology Transfer Constraints

- India cleared procurement of **114 Rafale fighter jets** from Dassault Aviation worth **₹3.25 lakh crore**.
- **18 aircraft will be delivered fully built** and ready to use from the manufacturer; **96 will be manufactured in India**.
- Indigenous content target: **30% initially**, rising to **60%**.
- France committed to **technology transfer**, but **denied access to critical source codes** (radar & electronic warfare systems).
- Without source codes:
  - India cannot freely integrate **indigenous weapons and sensors**.
  - Every modification requires **foreign approval and payments**.
- This limits the operational autonomy of IAF's **'Golden Arrows' squadron**.

2. Strategic Context: Squadron Gaps and Geopolitical Balancing

- IAF currently operates **29 squadrons** vs authorised **42**.
- **MiG-21 retired in 2025** after 62 years of service.
- Comparative strength:
  - Pakistan:25 squadrons
  - China:65 squadrons
- **Operation Sindoor (May 2025)** exposed vulnerabilities in high-intensity air combat.
- Russia reportedly offered greater **source code access** in discussions over the Sukhoi Su-57.
- However:
  - Russia faces **sanctions constraints**.
  - **Engine transition** (AL-41F1 to Izdeliye 30) raises reliability concerns.
- India is close to a **$3 billion deal** to export Sukhoi Su-30MKI jets to Armenia.
- The Armenian version will use India's own **Uttam AESA radar** and **Astra missiles**.
- This shows that India is moving from just **assembling foreign aircraft under licence** to **modifying and exporting them with its own technology.**
- India buys defence equipment from **multiple countries**,**France, Russia, Israel, and the United States**,so **no single supplier can dominate**, giving India **stronger bargaining power**.

3. Defence Industrial Ecosystem: Progress and Gaps

- Defence Budget 2026–27: **₹7.85 lakh crore** (15% increase).
- Capital outlay: **₹2.19 lakh crore**, with **75% reserved for domestic procurement**.
- Defence production reached **₹1.51 lakh crore (FY 2024–25)**.
- Private sector share: **23%**.

However:

- India usually adds only **25–35% of local content** in defence production, mainly in **basic parts like the aircraft structure**
- Limited control over **mission systems & avionics**.
- MSMEs lack:
  - Certification depth
  - Advanced materials capability
  - Long-cycle capital access
- Aerospace requires **AI-driven design, simulation, and advanced manufacturing skills**.
- **Talent shortage** in high-end aerospace engineering.

4. Path to Strategic Autonomy

- The real determinant of power in modern warfare is **software-defined capability**, not just platforms.

Key requirements for autonomy:

- **Double R&D intensity** (current allocation: ₹29,100 crore).
- Develop a **strong network of smaller component and parts suppliers** (Tier-2 and Tier-3) to support the defence industry.
- Secure **source code access** or develop indigenous architecture.
- Invest in **high-end technical human capital**.

Indigenous programmes like:

- HAL Tejas Mk2
- Advanced Medium Combat Aircraft are crucial because they accumulate **intellectual property ownership** over time.

What are the AI Impact Casebooks released in the AI Summit 2026?

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1.Context

- At the India AI Impact Summit 2026**, AI Impact Casebooks were released showing real-time AI use cases** helping farmers, students, patients, women, and persons with disabilities in the Global South.
- They **highlight AI as a tool to improve access and services.**

2. AI for Persons with Disabilities

- **PathPal converts text and currency into instant audio for visually impaired users**, even offline.
- **SMARTON turns complex documents into audio** and supports 15,000+ users in schools and NGOs.
- **Shruti AI converts spoken language into real-time Indian Sign Language** for the deaf.
- **Vaani AI helps people with autism or speech impairments communicate using AI-based prompts** and intent prediction.
- **Pheezee is an AI wearable that tracks muscle activity and joint movement** to support stroke and amputation recovery.

3. AI Boosting Small Farmers' Earnings

- **Precision farming tools like MapMyCrop use satellite data** and AI to **predict the best harvest time,** increasing sugarcane yields by up to 57%.
- **Chemistry-Aware Crop Yield Prediction detects hidden soil issues using AI,** reducing nitrogen use by 28% while boosting productivity.
- Voice-based platforms like **MahaVISTAAR and FarmAdvice provide expert advice in local languages,** helping small farmers manage pests and weather risks.

4. AI for Women Empowerment

- **NyayaSakhi-SWATI helps survivors of domestic violence** understand their legal rights, remedies, and case timelines.
- **AtenIA (Peru) promotes girls' participation in STEM** through AI mentoring, increasing interest from 9% to 76%.
- **YASHODA AI trains rural women to identify digital threats** like deepfakes and financial scams.
- **MetsaQ provides voice-based farm advisories and improves women's financial inclusion,** raising credit access from 11% to 34%.

5. AI in Healthcare

- **Nayanamritham 2.0** uses AI for diabetic retinopathy screening.
- **Cough Against TB (CATB)** is an AI tool that detects possible TB cases by analyzing cough sounds.
- **AyurVAID D-RISK** enables non-invasive diabetes screening.
- **Virtual Cardiac Twin creates a 3D heart model** for surgery planning.

6.AI as an Education Partner

- **BharatGen Yojaka uses AI to assess spoken language** while keeping teachers in the loop.
- **Chimple helps teachers create curriculum-based learning games** in local languages using AI.
- **QwiXGenie provides AI tutoring for coding and technical skills** in smaller cities.
- **PadhAI uses speech recognition to evaluate reading fluency** and give instant feedback.

7.Conclusion

- The **AI Impact Casebooks show that artificial intelligence is moving beyond experimentation** to real-world impact.
- By **improving inclusion, productivity, healthcare access, and educational outcomes,** AI is becoming a practical tool for sustainable and equitable development in the Global South.

KEYWORDS

Gulf Cooperation Council (GCC)

- The Gulf Cooperation Council (GCC) is a **regional political and economic alliance established in 1981.**
- It includes **six member countries: Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, and the United Arab Emirates (UAE).**
- The main objective of the GCC is to **promote economic, security, cultural, and social cooperation among its members.**
- It was **formed in response to rising regional instability, especially after the Iranian Revolution (1979) and the Iran–Iraq War (1980–1988).**
- The **headquarters of the GCC is located in Riyadh, Saudi Arabia.**

Druzhba Pipeline

- The **Druzhba Pipeline** (meaning **"friendship"** in English) is a major **crude oil pipeline** that transports oil from **Russia to Eastern Europe**, passing through **Ukraine**.
- Built during the **Soviet era**, it is one of **Russia's most important oil transport routes**.
- It carries crude oil from **West Siberia** to European countries such as **Belarus, Germany, Hungary, Poland, Slovakia, the Czech Republic, and Ukraine**.
- At its peak, the pipeline transported **over 1 million barrels of oil per day**, accounting for **more than 1% of global oil supply**,according to Russian oil pipeline monopoly Transneft.
- Following **Russia's full-scale invasion of Ukraine in 2022**, most **European Union countries stopped importing Russian oil** through the pipeline.
- Recently, **Ukraine accused Russia of damaging the pipeline with drones**, while **Russia, Hungary, and Slovakia accused Ukraine of delaying repair work for political reasons**.