US–Pakistan AMRAAM Missile Deal

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1. Background of the Deal

- The **United States** has confirmed the **supply of AIM-120 AMRAAM missiles** to **Pakistan**.
- The announcement follows **Pakistan Prime Minister Shehbaz Sharif's visit to Washington**.
- The deal is part of a **new phase in defence cooperation** between the two countries.
- It involves an **expanded contract** with **Raytheon**, the US-based defence manufacturer.
- **Contract Value:** Over **$2.51 billion**.
- **Completion Timeline:** Expected by **May 2030**.
- **Variants Included:** AIM-120 **C8** and **D3** (latest and most advanced versions).

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2. What Is the AIM-120 AMRAAM Missile?

- **Full Form:** *Advanced Medium-Range Air-to-Air Missile (AMRAAM)*.
- **Type:** Beyond Visual Range (BVR) **air-to-air missile**.
- **Developed by: United States** (Raytheon).
- **Operational Since: 1991** (development started in the late 1970s–1980s).
- **Speed:** Nearly **Mach 4** (~4 times the speed of sound).
- **Guidance System:**
    - *Fire-and-forget* technology – after launch, no need for pilot guidance.
    - *Active radar homing* – missile carries its own radar to track targets.
- **Capabilities:**
    - Engages targets at long ranges (up to **160 km** under ideal conditions).
    - Operates effectively in **all weather conditions**.
    - High **accuracy**, **range**, and **resistance to jamming** (especially in C8 and D3 variants).

3. Key Features of the Latest Versions (C8 and D3)

- **Extended range** and **improved propulsion system**.
- **Enhanced electronic counter-countermeasures (ECCM)** to overcome jamming.
- **Compact design**, allowing more missiles to be carried on aircraft.
- Better integration with **modern fighter aircraft radars** and avionics.

4. Global Users of AMRAAM

- Used by **40+ countries** globally.
- **Major Operators:** USA, UK, Japan, Germany, Australia, Norway, and now **Pakistan**.
- **Compatible Aircraft:**
    - US: **F-15, F-16, F/A-18, F-22, F-35**
    - Europe: **Eurofighter Typhoon, Saab Gripen**
    - Pakistan: **F-16 Fighting Falcon**

5. Limitations of AMRAAM

- **Range variability:** Actual combat range may be lower than 160 km due to:
    - Altitude of launch
    - Target manoeuvrability
    - Electronic warfare and countermeasures
- **High cost:** Expensive to produce and maintain; reserved for **critical missions**, not routine patrols.
- **Dependency on radar data:** Effectiveness depends on radar lock and data-link quality.

6. India’s Equivalent: The Astra Missile

- **Developed by: DRDO (Defence Research and Development**

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Organisation), India.

- **Type:** Beyond Visual Range (BVR) air-to-air missile.
- **Range: 80–110 km**.
- **Speed:** Over **Mach 4**.
- **Guidance System:**
    - *Inertial navigation system + active radar homing*.
- **Compatible Aircraft: Su-30MKI**, **Tejas**, and future integration with **Mirage-2000** and **MiG-29**.
- **Significance:**
    - Boosts **indigenous defence capability**.
    - Reduces **dependence on foreign arms**.
    - Aligns with **Atmanirbhar Bharat** in defence production.

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7. Strategic Significance of the Deal

For Pakistan

- Strengthens **air combat and interception capabilities**.
- Enhances **deterrence** against regional adversaries (especially India).
- Reflects efforts to **diversify defence partnerships**, not rely solely on **China**.
- Supports **maintenance and upgrade** of its **F-16 fleet**.

For the United States

- **Revives defence ties** with Pakistan after a long lull post-2011 (Osama bin Laden episode).
- Helps **maintain leverage** over Pakistan’s military establishment.
- Part of **regional balancing strategy** — managing ties with both **India and Pakistan**.
- Strengthens **counterterrorism and strategic influence** in South Asia amid **China’s growing role**.

For India

- Raises concerns over **regional security balance**.
- India views US arms supply to Pakistan as **strategically sensitive**, despite the Indo-US partnership.
- However, India's focus on **indigenous missile programs** (like Astra and SFDR-based Astra Mk2) provides a counterbalance.

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8. Broader Geopolitical Context

- Comes amid **growing US-China competition** in South Asia.
- Pakistan seeks to **reduce dependency on China's defence sector** (esp. under CPEC framework).
- The US uses such deals to **retain influence** in Islamabad, even while **deepening ties with New Delhi** through platforms like:
    - **Quad (with India, Japan, Australia, US)**
    - **iCET (Initiative on Critical and Emerging Technologies)**.

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9. Prelims Pointers

Feature	AIM-120 AMRAAM	Astra Missile
Origin	United States	India (DRDO)
Type	BVR Air-to-Air	BVR Air-to-Air
Speed	~Mach 4	~Mach 4+
Range	Up to 160 km	80–110 km
Guidance	Active radar homing	Inertial + Active radar
Compatible Aircraft	F-15, F-16, F-35, Typhoon	Su-30MKI, Tejas
Status	Operational in 40+ countries	Indigenous, inducted in IAF

10. UPSC Mains Relevance

GS Paper 2 – International Relations

- Topic: *India and its neighbourhood relations*
- Keywords: *US-Pakistan Defence Cooperation, Strategic Balance, Arms Diplomacy, South Asia Security.*

Possible Question:

"Discuss the strategic implications of renewed US-Pakistan defence cooperation

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for India’s security and regional stability in South Asia.”

GS Paper 3 – Internal Security / Defence

- *Role of indigenous defence production in maintaining strategic autonomy (Astra missile case study).*

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11. Summary for Quick Revision

- **US–Pakistan deal:** $2.51 billion for AIM-120 C8/D3 missiles.
- **Enhances Pakistan’s air combat capability.**
- **US aims** to maintain influence in Pakistan amid China’s rise.
- **India counters** with indigenous Astra missile development.
- **Implication:** Renewed great-power competition shaping South Asian defence dynamics.

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