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India Conducts First Jet Landing Using Indigenous GAGAN System

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WHY IN NEWS

On June 27, 2026, the Directorate General of Civil Aviation (DGCA) conducted India's first satellite-based-augmentation (<https://ujyari.com/vocab/augmentation/>)-system approach on a jet aircraft, an IndiGo Airbus A320, at Udaipur airport using the indigenous GAGAN system.

This made IndiGo the first airline in India to land a jet aircraft using GAGAN with a Localiser Performance with Vertical Guidance (LPV) approach, a significant step for the safety and connectivity of smaller regional airports.

WHAT IS GAGAN?

GAGAN (GPS Aided GEO Augmented Navigation) is India's indigenous **Satellite-Based Augmentation System (SBAS)** for civil aviation. It was jointly developed by the **Indian Space Research Organisation (ISRO)** and the **Airports Authority of India (AAI)**.

An SBAS improves the accuracy, integrity and availability of satellite navigation signals (such as GPS) using a network of ground reference stations and geostationary satellites. This makes the position information reliable enough for precision aircraft approaches and landings.

India in an Exclusive Club

India is among the few nations with its own operational SBAS, and is the first in the Asia-Pacific region to develop one. The global SBAS systems are listed below.

SYSTEM	REGION / COUNTRY	OPERATOR
GAGAN	India (first in Asia-Pacific)	ISRO + AAI
WAAS	United States	FAA
MSAS	Japan	JCAB
EGNOS	Europe	ESA / EU

WHY LPV APPROACHES MATTER

GAGAN enables **LPV (Localiser Performance with Vertical Guidance)** precision approaches. An LPV approach gives pilots both horizontal (lateral) and vertical guidance during the final descent, similar to a conventional Instrument Landing System (ILS), but without the need for expensive ground-based ILS equipment at every airport.

This is transformative for smaller airports that lack an ILS. Using only satellite signals, aircraft can make safe, precise approaches even in poor visibility, directly supporting India’s regional connectivity scheme **UDAN (Ude Desh ka Aam Naagrik)** and improving safety at Tier-2 and Tier-3 airfields.

ANALYSIS AND WAY FORWARD

The Udaipur jet landing demonstrates that GAGAN has matured from a navigation aid into an operational tool for commercial jet operations. The strategic value is twofold: it reduces dependence on costly ground infrastructure and reduces reliance on foreign navigation systems, strengthening India’s aviation self-reliance under Atmanirbhar Bharat.

The way forward lies in scaling up GAGAN-based LPV approaches across the network of regional airports, mandating GAGAN-capable avionics in newer fleets, and extending GAGAN’s benefits to non-aviation sectors such as railways, agriculture, disaster management and precision timing. Wider adoption will help unlock the full economic potential of the indigenous system.

UPSC RELEVANCE

GS Paper 3 (Science and Technology): Indigenisation (<https://ujivari.com/vocab/indigenisation/>) of technology; achievements of Indians in science and technology; space applications.

Prelims pointers:

- GAGAN = GPS Aided GEO Augmented Navigation; an SBAS developed jointly by ISRO and AAI.
- First jet (IndiGo A320) GAGAN landing on June 27, 2026, at Udaipur airport; conducted by the DGCA.

- India is the first country in the Asia-Pacific region with its own SBAS.
- Other SBAS: WAAS (USA), MSAS (Japan), EGNOS (Europe).
- LPV = Localiser Performance with Vertical Guidance; supports the UDAN scheme.

Mains question: “Indigenous satellite-based augmentation systems like GAGAN can transform regional air connectivity and reduce dependence on foreign navigation infrastructure. Discuss.” (15 marks, 250 words)

FACTS CORNER

FACTS CORNER, KNOWLEDGEPEDIA

GAGAN: GPS Aided GEO Augmented Navigation, India’s indigenous Satellite-Based Augmentation System (SBAS).

Developed by: ISRO (Indian Space Research Organisation) and the Airports Authority of India (AAI).

Milestone: First jet aircraft (IndiGo Airbus A320) landing using GAGAN, on June 27, 2026, at Udaipur airport, conducted by the DGCA.

First in Asia-Pacific to have its own SBAS; peers are WAAS (USA), MSAS (Japan), EGNOS (Europe).

LPV: Localiser Performance with Vertical Guidance, gives both lateral and vertical guidance without ground-based ILS.

Benefit: Precision approaches at airports without ILS, boosting safety and the UDAN regional connectivity scheme.

Sources: Airports Authority of India (<https://www.aai.aero/>), ISRO (<https://www.isro.gov.in/>), DGCA (<https://www.dgca.gov.in/>)

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