

ROLE OF AVIATION SECTOR IN INDIAN ECONOMY

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ABSTRACT

The aviation sector has emerged as one of the fastest-growing industries in India and plays a crucial role in accelerating economic development. This paper examines the contribution of the Indian aviation industry to the national economy in terms of GDP growth, employment generation, tourism promotion, trade facilitation, and infrastructure development. The study highlights that the aviation sector contributes significantly to India's GDP and supports millions of direct and indirect jobs. The rapid growth of domestic air travel, rising disposable income, expansion of airport infrastructure, and government initiatives such as the UDAN scheme have further strengthened the sector's economic importance. The paper also analyzes the challenges faced by the industry, including high aviation fuel costs, regulatory complexities, infrastructure constraints, and the increasing incidence of aviation accidents. By reviewing major air accidents in India and their economic consequences, the study demonstrates how such incidents adversely affect investor confidence, insurance costs, passenger trust, and overall industry performance. The research emphasizes the need for robust safety mechanisms, effective regulatory oversight, and continued investments in infrastructure to ensure sustainable growth of the aviation sector.

Keywords: Aviation Sector¹, Indian Economy², Infrastructure Development³, GDP Contribution⁴, Tourism⁵, Employment Generation⁶, Air Transport⁷, Aviation Safety⁸, Infrastructure Development⁹.

1. INTRODUCTION

The Indian aviation sector is experiencing rapid growth and is on track to become the third-largest air passenger market globally. This growth is fuelled by a rising number of domestic air passengers, expanding airport infrastructure, and significant investments in the sector. The Indian government is also actively promoting regional connectivity through initiatives like UDAN. Air transport in India over a period of time has increased and so has the number of mishaps and emergencies. There is an imperative need to understand the causes of accidents. In addition to this to study the impact of such accidents on human life and financial losses in aviation industry. Additionally, there is need to suggest effective remedial measures. Directorate general of civil aviation (DGCA) is the regulatory body which deals with issues related to safety in aviation industry in India. Airport authority of India is responsible for planning, developing, and maintaining airport infrastructure, including runways, taxiways, terminal buildings, and parking areas. The Indian aviation industry has grown rapidly in the

recent years. There is an increase in the number of flights per day. Such a surge in the number of flights per day has led to spurt in the number of air accidents occurring each day. An elaborate study including planning and re-planning to avoid disasters is the part of study undertaken. Important issues human errors, defective equipment and inclement weather are included in the study undertaken. The Indian aviation sector is a significant contributor to the nation's economy, supporting millions of jobs and contributing a substantial amount to the GDP. It acts as a catalyst for growth in tourism, trade, and related industries like aircraft manufacturing and MRO (maintenance, repair, and overhaul). While the sector faces challenges like high fuel costs and complex regulations, it also holds significant growth potential with increased domestic air travel and infrastructure development.

2. CONTRIBUTIONS TO THE INDIAN ECONOMY:

- **GDP Contribution:** The aviation industry contributes \$53.6 billion annually, representing 1.5% of India's GDP.
- **Job Creation:** It supports approximately 7.7 million jobs, both directly and indirectly, across various related industries.
- **Tourism Booster:** Aviation is crucial for the tourism sector, which itself accounts for 6.5% of India's GDP and 8.9% of total employment.
- **Trade Facilitation:** Enhanced air connectivity through aviation improves India's global competitiveness, attracting investments and facilitating trade.
- **Growth in Related Industries:** The sector drives growth in areas like aircraft manufacturing, MRO, and airport infrastructure development.

Growth Drivers:

- **Growing Middle Class:** A rising middle class with increased disposable income is driving domestic air travel, especially on popular routes.
- **Infrastructure Development:** Expansion of airport infrastructure, including new airports and upgraded terminals, is facilitating increased air traffic.
- **Fleet Expansion:** Airlines are placing large aircraft orders to meet growing demand, further boosting the sector.

Challenges:

- **High Fuel Costs:** High taxes on Aviation Turbine Fuel (ATF) and fluctuating global fuel prices contribute to increased operating costs.
- **Complex Regulations:** The regulatory framework can be complex and lead to delays in approvals and operations.
- **Infrastructure Constraints:** While significant progress has been made, there is still a need for further development of airport infrastructure and capacity.

Future Outlook:

- **Continued Growth:** India's aviation sector is poised for continued growth, with projections of surpassing China in passenger traffic growth by 2026.
- **Potential for Underpenetrated Market:** Despite being the third-largest aviation market, India accounts for only 4% of global air traffic, indicating a large, untapped potential.
- **Strategic Reforms and Investments:** Strategic reforms, robust policy frameworks, and continued infrastructure investment will be crucial to unlocking the sector's full potential.

3. OVERVIEW

Aviation accidents in India can significantly impact the economy through various channels, including loss of life, damage to infrastructure, increased insurance costs, and a decline in investor confidence. The recent Air India crash in Ahmedabad, which resulted in over 240 fatalities, has already led to market declines, increased insurance premiums, and heightened scrutiny of the aviation sector. The incident highlights the need for robust safety mechanisms and regulatory oversight to prevent future tragedies and safeguard the industry's contribution to the Indian economy. Here's a more detailed breakdown:

1. Loss of Life and Human Suffering: Accidents, especially those involving passenger fatalities, cause immense human suffering and loss of life, impacting families and communities. The Ahmedabad crash, which included passengers, students, and local residents, serves as a stark reminder of the human cost of aviation incidents.

2. Economic Impact:

- **Stock Market Fluctuations:** Accidents can trigger sharp market declines, impacting airline stocks, aerospace suppliers, and related industries like travel platforms and hotels.
- **Increased Insurance Costs:** Aviation insurance premiums are likely to rise following accidents, especially if there is a perceived pattern of safety lapses, leading to higher operating costs for airlines.
- **Reduced Passenger Confidence:** Accidents can erode public trust in air travel, potentially leading to a decline in passenger numbers and revenue for airlines.
- **Potential Loss of Market Access:** If India's aviation safety record deteriorates, it could face restrictions on international routes or experience a decline in tourism and trade.

3. Impact on the Aviation Sector:

- **Flight Cancellations and Diversions:** Accidents can necessitate flight cancellations, diversions, and route adjustments, disrupt operations and cause financial losses for airlines.
- **Aircraft Grounding:** Safety concerns or investigations following accidents may lead to the grounding of aircraft, further impacting airline operations and revenue.

- **Increased Scrutiny and Regulatory Action:** Accidents often trigger increased scrutiny from regulatory bodies like the Directorate General of Civil Aviation (DGCA), potentially leading to stricter regulations and enforcement actions.
- **Investment Uncertainty:** A poor safety record can deter foreign investment in the Indian aviation sector and impact the willingness of domestic investors to support airlines.

4. Importance of Safety and Reform: The Air India crash serves as a wake-up call for the Indian aviation sector, highlighting the need for systemic reforms to prioritize safety and prevent future accidents. This includes strengthening regulatory mechanisms, improving safety oversight, promoting a culture of safety at all levels of the industry, and addressing issues related to pilot training, aircraft maintenance, and operational procedures. Strengthening the Aircraft Accident Investigation Bureau (AAIB) and ensuring transparency in investigations is also crucial for restoring public confidence. Addressing issues like pilot burnout, mental health support, and fair employment practices for airline staff is essential to improve overall safety and morale within the industry. In conclusion, aviation accidents in India have far-reaching consequences, extending beyond the immediate impact of loss of life and property to affect the broader economy and the future of the aviation sector. Prioritizing safety, implementing necessary reforms, and fostering a culture of safety are essential to mitigate the risks associated with air travel and ensure the continued contribution of the aviation industry to India's economic growth.

List of accidents and incidents on airliners in India

This **list of accidents and incidents on airliners in India** summarizes airline accidents that occurred within the territories of India, with information on airline company with flight number, date, and cause. This list is a subset of the **list of accidents and incidents involving airliners by location**. It is also available grouped

- by year as List of accidents and incidents involving commercial aircraft;
- by airline;
- by category.

Date	Accident/ incident Description	Causalities	Survivors
10 January 2026	India One Air Flight 102, a Cessna 208, made a forced landing near Rourkela while on approach.	01	05
12 June 2025	Air India Flight 171, a Boeing 787-8 Dreamliner en route to Gatwick, London carrying 230 passengers and 12 crew members, crashed in a building in a suburb of Ahmedabad less than a minute after takeoff from Ahmedabad Airport. The crash killed 241 people on board and 19 people on the ground; with a passenger on board as the only survivor. The exact cause is	241+19	01

	expected to be determined following the investigation. ^{[2][3]}		
7 August 2020	Air India Express Flight 1344, a Boeing 737-800 flying the Dubai-Kozhikode route overshot the runway on landing at Calicut International Airport breaking into four pieces. ^[citation needed]	18	172
22 May 2010	Air India Express Flight 812, a Boeing 737-800 flying the Dubai-Mangalore route overshot Runway 24 on landing at Mangalore International Airport killing 158 passengers on board. ^{[4][5][6][7]}	158	08
17 July 2000	Alliance Air Flight 7412, a Boeing 737-2A8 crashed in a residential estate of Patna after the pilot lost control of the aircraft and stalled. Deaths included 55 people aboard, along with 5 on the ground.	55+5	03
24 December 1999	Indian Airlines Flight 814 was hijacked by terrorists and flown to Kandahar, Afghanistan. One passenger was killed by the hijackers; the other 192 aboard survived. ^[8]	01	192
12 November 1996	1996 Charkhi Dadri mid-air collision , Saudi Arabian Airlines Flight 763 collided in mid-air with Kazakhstan Airlines Flight 1907. The cause was determined to be pilot error by the Kazakhstan Airlines pilot. All 349 people on board both planes were killed, making it the deadliest mid-air collision in history.	349	0
26 April 1993	Indian Airlines Flight 491 crashed into a truck at the end of the runway while taking off from Aurangabad, Maharashtra . The cause was both pilot error and the failure of the aviation administration to control highway traffic.	55	63
24 April 1993	Indian Airlines Flight 427 was hijacked by a terrorist who demanded passage to Afghanistan, but was denied overflight permission by Pakistani authorities and the pilot diverted to Amritsar . The hijacker was killed after security forces stormed the aircraft. ^[9]	01	140
10 April 1993	An Indian Airlines Boeing 737-2A8 en-route from Lucknow to Delhi was hijacked by four students of the Government Arts College, Lucknow claiming to be strapped with explosives. They demanded changes to the college's courses, cancellation of an award to a professor and postponement of exams. The	0	59

	hijackers were overpowered by passengers on return to the Lucknow Airport and subsequently arrested by the police. They were found to be only carrying a small knife. ^[10]		
27 March 1993	Indian Airlines Flight 439 was hijacked en-route from Delhi to Madras by a hijacker claiming to be strapped with explosives who forced the plane to land in Amritsar (after being denied landing permission in Lahore) and demanded political asylum in Pakistan. The hijacker subsequently surrendered and the explosive was found to be a disguised hair-dryer. ^[11]	0	203
22 January 1993	Indian Airlines Flight 810 en-route from Lucknow Airport to Delhi-Indira Gandhi International Airport was hijacked by a single individual and returned to Lucknow. The hijacker demanded the release of all individuals arrested after the Demolition of the Babri Masjid and for a temple be built at Ram Janmabhoomi where the Ram Mandir once stood. The hijacker surrendered to officials after negotiations and the bomb he carried was found to be phony. ^[12]	0	54
16 August 1991	Indian Airlines Flight 257 crashed on descent into Imphal due to pilot error, killing all 69 occupants.	69	
14 February 1990	Indian Airlines Flight 605 crashed on its final approach to Bangalore airport. The cause was pilot error.	92	
19 October 1988	Indian Airlines Flight 113 crashed on its final approach to Ahmedabad airport due to pilot error.	130	
14 August 1984	Indian Airlines Flight 421 , seven Sikh hijackers demanded an Indian Airlines jetliner flying from Delhi to Srinagar to be flown to the United Arab Emirates. The defense minister of the UAE negotiated the release of the passengers. It was related to the Sikh secessionist struggle in the Indian state of Punjab . ^[13]	0	74
5 July 1984	Indian Airlines Flight 405 , nine Sikhs belonging to the Khalistan movement forced an Airbus A300 on a domestic flight from Srinagar to Delhi with 254 passengers and 10 crew on board, to be flown to Lahore Airport in Pakistan . The demands (release of prisoners and money) of the hijackers were not met and they ultimately surrendered to Pakistani authorities on 6 July. ^[14]	0	264
20 August 1982	A lone Sikh militant, armed with a pistol and a hand grenade,	01	

	hijacked a Boeing 737 on a scheduled flight from Jodhpur to New Delhi carrying 69 persons. Indian security forces killed the hijacker and rescued all passengers. Peter Lamont , production designer working on the James Bond film Octopussy , was a passenger. ^[15]		
4 August 1982	An Indian Airlines flight from Delhi to Amritsar was hijacked en-route by a Sikh militant carrying a fake bomb. The hijacked plane landed at Amritsar (after being denied permission to land in Lahore, Pakistan). A police officer (disguised as a pilot) and some passengers overpowered the hijacker when his attention was diverted. ^[16]	0	All
21 June 1982	Air India Flight 403 crashed at Sahar International Airport in Bombay due to heavy weather. Two crew members and 15 passengers died; 94 survived.	17	94
26 November 1981	Air India Flight 224 from Salisbury, Rhodesia to Bombay was hijacked at Mahe Airport , Seychelles by mercenaries fleeing an abortive coup while on a refueling stop. The B707-300 (registration VT-DVB) was forced to fly to Durban. After freeing the 78 passengers and crew, the mercenaries surrendered. ^[17]	0	78
29 September 1981	Indian Airlines Flight 423 , a Boeing 737 operating a domestic flight from Delhi to Amritsar, was hijacked by Sikh extremists and forced to land in Lahore, Pakistan, where special forces stormed the aircraft; there were no fatalities. ^[18]	0	117
20 December 1978	Indian Airlines Flight 410 , Bholanath Pandey and Devendranath Pandey hijacked Indian Airlines flight IC-410. They demanded the immediate release of Indian National Congress party leader Indira Gandhi who was imprisoned at that time on the charges of fraud and misconduct. Later, they were awarded with party tickets for this act by the Indira Gandhi government in 1980 such that Devendra Nath Pandey rose to become a minister in the state government of Uttar Pradesh . This case was also mentioned by Jarnail Singh Bhindranwale to justify his claim regarding the hypocrisy of the Indian government during the Khalistan movement. ^[19]	0	132
1 January 1978	Air India Flight 855 crashed off the coast	213	

	of Bandra, Bombay , (now Mumbai) when the captain became spatially disoriented after the failure of one of the flight instruments in the cockpit. All 213 aboard were killed.		
12 October 1976	Indian Airlines Flight 171 crashed at Bombay following an in-flight fire caused by an uncontained engine failure, killing all 95 onboard.	95	
10 September 1976	An Indian Airlines Boeing 737 was hijacked from Palam Airport Delhi by a group of six militants from Jammu and Kashmir : Syed Abdul Hameed Dewani, Syed M Rafique, M Ahsan Rathore, Abdul Rashid Malik, Ghulam Rasool and Khawaja Ghulam Nabi Itoo. To refuel the plane, they took permission from CAA Lahore Airport in Pakistan to land and refuel. The hijackers were neutralized during breakfast after being served colorless tranquillizers with water. All six hijackers were taken in custody and the plane was returned to India with 83 passengers on board. ^[20]	0	83
31 May 1973	Indian Airlines Flight 440 crashed on approach to Palam Airport due to pilot error. 48 of 65 onboard died.	48	17
24 September 1972	Japan Airlines Flight 472 overran the runway after landing at the wrong airport; all 122 onboard survived.	0	122
14 June 1972	Japan Airlines Flight 471 crashed near Palam Airport, killing 82 of 87 onboard and three on the ground; Japan claimed that a false glide path signal caused the crash, while India claimed that the pilot disregarded let-down procedures.	82+3	05
9 December 1971	An Indian Airlines Avro aircraft (HS-748) crashed in the forests of Meghamalai . The flight was a round trip from Chennai to Trivandrum via Madurai. The crash resulted in the deaths of 31 out of the 40 passengers on board with 9 survivors. ^[21]	31	09
30 January 1971	1971 Indian Airlines hijacking , a domestic passenger flight was hijacked en-route from Srinagar to Jammu and flown to Lahore in Pakistan where the passengers/crew were released and the plane subsequently destroyed. ^[22]	0	32
19 September 1965	Gujarat Beechcraft incident - A civilian Beechcraft commuter plane was shot down by a Pakistan Air Force fighter, killing all eight on board.	08	0

28 July 1963	United Arab Airlines Flight 869 (1963) crashed off Bombay Airport, killing all 63 onboard. The cause was probably a loss of control in turbulence and bad weather.	63	0
7 July 1962	Alitalia Flight 771 crashed into a hill northeast of Mumbai while on approach. The accident was attributed to navigation error. All 94 aboard were killed.	94	
25 May 1958	1958 Dan-Air Avro York crash- An Avro York crashed at Gurgaon following an in-flight fire caused by engine failure, killing four of five onboard.	04	01
2 May 1953	BOAC Flight 783 de Havilland Comet jetliner registered G-ALYV and operated by British Overseas Airways Corporation, broke up mid-air and crashed after encountering a severe squall, shortly after taking off from Calcutta (now Kolkata), India.	43	0
12 July 1949	A KLM Lockheed Constellation, registered PH-TDF, crashed near Ghatkobar while attempting to land in bad weather, performing the New Delhi-Bombay leg of a scheduled service from Jakarta, Indonesia, to Amsterdam. All ten crewmembers and 35 passengers died, including the prominent U.S. journalist H.R. Knickerbocker. The accident was attributed to pilot error.	45	0
14 August 1943	A Stinson Model A of Tata National Airlines, registered VT-AQW, flew into a mountain near Lonavala, Maharashtra, while performing the Poona-Bombay leg of a scheduled service from Colombo to Karachi. Three crewmembers and three passengers died.	06	0
7 March 1938	An Air France Potez 62, registered F-ANQR, crashed following an in-flight fire outside Datia, Madhya Pradesh, while performing the Prayagraj (Allahabad)-Jodhpur leg of a scheduled service from Hanoi to Paris. The three crewmembers and four passengers were killed.	07	0

Source: Causes for incidents over Indian Airspace, 2013-2016^[1]

4. SIGNIFICANT CIVIL AVIATION ACCIDENTS IN INDIA

- **Nov 12, 1996:** Saudi Arabian Airlines & Kazakhstan Airlines collision (Charkhi Dadri) – 349 fatalities.
- **Jan 1, 1978:** Air India Flight 855 (Arabian Sea) – 213 fatalities.

- **May 22, 2010:** Air India Express Flight 812 (Mangalore) – 158 fatalities.
- **Oct 19, 1988:** Indian Airlines Flight 113 (Ahmedabad) – 130+ fatalities.
- **Feb 14, 1990:** Indian Airlines Flight 605 (Bangalore) – 92 fatalities.
- **Aug 16, 1991:** Indian Airlines Flight 257 (Imphal) – 69 fatalities.
- **July 17, 2000:** Alliance Air Flight 7412 (Patna) – 50+ fatalities.
- **June 21, 1982:** Air India Flight 403 (Bombay) – 17 fatalities.

Other Notable Incidents

- **Aug 7, 2020:** Air India Express Flight 1344 (Kozhikode) – Runway excursion.
- **April 1993:** Indian Airlines Flight 405 (Aurangabad).
- **March 1994:** Sahara India Airlines (Delhi).

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