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SPECIAL FOR UPSC & GPSC EXAMINATION

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Page 01: GS 2 : International Relations

On June 13, 2025, Israel launched a large-scale and unprecedented strike on Iran, targeting nuclear and military facilities, including the killing of senior Iranian military leadership. In retaliation, Iran fired dozens of missiles into Israel, escalating tensions between two long-time adversaries into open conflict.

Key Developments:

• Israeli Offensive:

- Israel launched airstrikes and used drones (reportedly placed earlier inside Iran) to hit nearly 100 strategic targets. These included the Natanz nuclear facility and missile launchers near Tehran. Mossad and Israeli Air Force coordinated the operation with around 200 aircraft.

• High-Profile Casualties:

- The attack killed top Iranian military figures:
- Gen. Mohammad Bagheri (armed forces chief),
- Gen. Hossein Salami (head of Revolutionary Guard),
- Gen. Amir Ali Hajizadeh (ballistic missile program head).

• Iran's Retaliation:

- Iran launched a wave of missiles and drones targeting Israeli cities like Tel Aviv and Jerusalem, triggering air raid sirens and structural damage. Civilian evacuation to bomb shelters was ordered by the Israeli government.

• Global Response:

- The U.S. had prior knowledge; precautionary evacuations were carried out in Iraq.
- Iran requested an emergency UNSC meeting.
- UN's IAEA had just censured Iran over nuclear non-compliance.
- International leaders called for restraint, fearing regional spillover.

Israel hits Iran nuclear sites, top military leaders, Tehran sends missiles in retaliation

Associated Press
DUBAI

Israel launched a blistering attack on the heart of Iran's nuclear and military structure on Friday, deploying warplanes and drones smuggled into the country to target key facilities and kill top Generals and scientists – a barrage it said was necessary before its adversary got any closer to building an atomic weapon.

Iran quickly retaliated, sending a swarm of drones at Israel as Supreme Leader Ayatollah Ali Khamenei warned of “severe punishment”. Later on Friday night, air raid sirens sounded across Israel following an Iranian missile attack. The rumble of explosions could be heard throughout Jerusalem, and Israeli TV stations showed plumes of smoke rising in Tel Aviv after an apparent missile strike. There were no immediate reports of casualties.

The Army said dozens of missiles were launched and has ordered residents across the country to move into bomb shelters.

Israel's firefighting service said its teams were responding to several “major” incidents resulting from an Iranian missile attack, including efforts to rescue people trapped in a high-rise building.

“Firefighting crews are handling several major incidents, mainly in the Dan region” around Tel Aviv, a statement said, adding that “firefighters are working in a high-rise building to rescue trapped individuals and extinguish a fire, as well as responding to two additional destruction sites.”

Iran had been censured by the UN's atomic watchdog on Thursday for not



Evolving crisis: Firefighters extinguish a fire in a building in Tehran after Israeli attack on Iran on Friday. GETTY IMAGES

Modi conveys India's stand of peace to Israel

NEW DELHI

Prime Minister Narendra Modi called for “early restoration of peace” and conveyed the Indian position in a phone call with Israeli PM Benjamin Netanyahu on Friday. » **PAGE 3**

Fresh conflict may impact oil supply to India

NEW DELHI

Israel's attack on Iran pose significant risks to India in terms of curtailed supplies of oil and a 40-50% increase in the export costs, according to trade experts. » **PAGE 11**

complying with obligations meant to prevent it from developing a nuclear weapon.

Israel's military said about 200 aircraft were involved in the initial attack on about 100 targets. Its Mossad spy agency positioned explosive drones and precision weapons inside Iran ahead of time, and used them to target Iranian air defences and missile launchers near Tehran, according to two security officials.

'U.S. was aware'

Israel had told the Trump administration in U.S. that the large-scale attacks were coming, officials said.

On Wednesday, the U.S. pulled some American diplomats from Iraq's capital and offered voluntary evacuations for the families of U.S. troops in the

wider region. Countries in the region condemned Israel's attack, while leaders around the globe called for de-escalation. Iran asked for an emergency meeting of the UN Security Council.

Among the key sites Israel attacked was Iran's main nuclear enrichment facility at Natanz.

Among those killed were three of Iran's top military leaders: one who oversaw the entire armed forces, Gen. Mohammad Bagheri; one who led the paramilitary Revolutionary Guard, Gen. Hossein Salami; and the head of the Guard's ballistic missile programme, Gen. Amir Ali Hajizadeh.

(With AFP inputs)

EDITORIAL

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Strategic & Security Implications:

- **Nuclear Non-Proliferation at Risk:**
 - The direct targeting of Iran's nuclear facility signals that Israel perceives Iran to be close to weaponisation.
 - Undermines the already fragile Joint Comprehensive Plan of Action (JCPOA), and possibly emboldens Iran to militarise its program fully.
- **Destabilisation of West Asia:**
 - The confrontation risks pulling the region into a wider conflict, potentially involving proxy groups like Hezbollah (Lebanon) and Hamas (Gaza).
 - Countries like Iraq, Syria, and the Gulf states may be inadvertently drawn in due to their geostrategic positions.

Global Economic Fallout:

- Oil prices may surge due to fears over supply disruption in the Persian Gulf.
- Global markets may experience uncertainty due to escalated tensions in a nuclear-sensitive zone.
- U.S. Strategic Dilemma:
 - The U.S. may struggle to balance support for Israel with avoiding full-scale war in the region.
- Regional military bases and troops are at risk, requiring tactical repositioning and diplomatic recalibration.
- Diplomatic Fallout:
 - Israel's unilateral action, especially targeting nuclear infrastructure, may draw criticism for violating international norms.
- UNSC may witness renewed polarization among P5 members over West Asia.

Way Forward:

- **De-escalation through Multilateral Dialogue:** UN and major powers (EU, Russia, China) must push both nations toward diplomatic resolution and nuclear verification.
- **Reinforcing Non-Proliferation Regimes:** Strengthening IAEA's mandate and reinvigorating JCPOA or similar treaties is critical.
- **India's Stand:** India should call for restraint and reiterate its long-standing position against nuclear weapons proliferation and support peaceful resolution.
- This crisis underscores the fragility of peace in West Asia and the urgent need for a robust international framework to address nuclear threats, state-sponsored retaliation, and the growing use of drones in strategic strikes.

UPSC Mains Practice Question

Ques : "The recent Israel-Iran military confrontation exposes the limitations of global nuclear non-proliferation regimes." Discuss in the context of the evolving West Asian security architecture. **(250 words)**

Page 02: GS 2 : Social Justice

A joint pilot study by ChildFund India and the Karnataka State Commission for Protection of Child Rights (KSCPCR) titled "Online Risks of Children: Focus on Online Sexual Exploitation and Abuse of Children" has brought attention to the rising threat of online sexual exploitation and abuse (OSEAC) of children in Karnataka. The study recommends integrating digital literacy and online safety into school curricula from the primary level to safeguard children in the digital age.

Make digital literacy part of curriculum to curb online child sexual abuse: study

The Hindu Bureau
BENGALURU

A pilot study on online sexual exploitation and abuse of children in Karnataka has recommended that digital literacy and online safety should be a compulsory part of the school curriculum, starting from the primary level.

Protecting children from online risks requires the concerted efforts of parents, educators, policy-makers, and communities, said the study jointly conducted by ChildFund India and Karnataka State Commission for Protection of

Open communication between parents and children about online risks should be encouraged, says the study

Child Rights (KSCPCR).

A report on the study titled "Online Risks of Children: Focus on Online Sexual Exploitation and Abuse of Children" was released by Legislative Council Chairman Basavaraj Horati in Bengaluru on Friday.

"This report is a comprehensive effort to understand the digital experienc-

es of children in Karnataka, capturing insights from children themselves, as well as from parents, teachers, and child protection stakeholders," said KSCPCR chairperson K. Naganna Gowda.

Objectives of the study

The major objectives of this study were to investigate the nature and prevalence of 'Online Sexual Exploitation and Abuse of Children' (OSEAC) in Karnataka by estimating the prevalence of OSEAC among children aged 8 to 18 years. Overall, 903 school going children were

covered under the study.

The study noted that the COVID-19 pandemic significantly increased children's exposure to online risks, underscoring the urgent need for corrective measures. Parental supervision, teacher training, and digital literacy emerged as critical areas for prevention and mitigating risks. However, underreporting and societal stigma continue to pose significant challenges.

Open communication between parents and children about online risks and safe behavior should be encouraged, it added.

Key Highlights of the Study:

- **Scope and Coverage:**

- The study surveyed 903 school-going children between the ages of 8 to 18 in Karnataka, engaging with children, parents, teachers, and child protection stakeholders.

- **Major Findings:**

- The COVID-19 pandemic significantly increased children's online exposure, leading to higher vulnerability to exploitation.
- Underreporting of abuse is widespread due to social stigma, fear, and lack of awareness.

- Parental supervision, teacher training, and digital literacy were identified as the most effective preventive measures.
- **Core Recommendations:**
 - Make digital literacy and cyber safety compulsory in school curricula.
 - Promote open communication between parents and children.
 - Strengthen capacity-building of educators and school systems to recognize and report OSEAC.

Issues and Implications:

- **Child Safety in the Digital Age:**
 - Children are increasingly accessing the internet for education, entertainment, and social interaction, often unsupervised.
 - Lack of awareness about online predators, privacy risks, and grooming techniques makes children soft targets for exploitation.
- **Gaps in Education Policy:**
 - The current school curriculum does not adequately address digital ethics, cyber hygiene, or online behavioural safety.
 - The New Education Policy (NEP) 2020 highlights digital learning but lacks a robust framework for digital risk education.
- **Need for Multi-Stakeholder Action:**
 - Parents, schools, technology companies, law enforcement, and civil society must collaborate to build a safer digital ecosystem.
 - Clear reporting mechanisms, child-friendly redressal systems, and community awareness are essential.
- **Social Stigma and Silence:**
 - Cultural taboos around discussing sexuality and abuse often deter victims from speaking up.
 - Empowering children with knowledge and resilience is crucial to overcome these barriers.
- **Ethical and Legal Dimensions:**
 - The Protection of Children from Sexual Offences (POCSO) Act must be enforced more effectively in the context of online crimes.
 - Tech platforms must be held accountable for content moderation and user safety.

Conclusion:

- The study serves as a critical wake-up call to urgently reform school education and digital governance policies. In an increasingly online world, protecting children from exploitation requires not just surveillance and laws, but education, awareness, and empathy. Institutionalizing digital safety education from an early age is no longer optional but a foundational need for safeguarding child rights and building a secure digital society.

UPSC Mains Practice Question

Ques: "Digital literacy is no longer a luxury but a child protection imperative." In the context of increasing online sexual exploitation of children, critically evaluate the need to integrate online safety education into the school curriculum. (250 words)

Page : 11 :GS 3 : Indian Economy

The recent escalation between Israel and Iran, marked by military strikes and counterattacks, has led to an immediate global spike in oil and gold prices. For India, a major oil importer and export-driven economy, the conflict poses significant economic risks, particularly through disruption in energy supply chains, inflationary pressures, and elevated export logistics costs.

Israel-Iran conflict may impact oil supply to India, spike export costs

Global oil prices jumped about 8% in a single day, sparking fears that a sustained escalation could push inflation in India, which imports about 80% of its oil requirement; shutting off Suez Canal and Red Sea will cost Indian exports dearer

T.C.A. Sharad Raghavan
NEW DELHI

Israel's attack on Iran and heightened tensions in the area pose significant risks to India in terms of curtailed supplies of oil and a 40-50% increase in the export costs, according to analysts and trade experts.

Global oil prices jumped about 8% in a single day, sparking fears that a sustained escalation could push inflation in India up, since it imports about 80% of its oil requirement.

"The ongoing Iran-Israel conflict is likely to pose risks to oil supply even though India does not directly import large volumes of oil from Iran," Amit Kumar, partner and Energy & Renewables In-

Slippery slope

The Iran-Israel conflict may pose risks to oil supply even though India does not directly import large volumes from Iran

- About 20% of global oil passes via Strait of Hormuz located between Iran and the Arabian Peninsula
- Any disruption around the Strait of Hormuz may hit oil shipments from Iraq, Saudi Arabia and UAE, the key suppliers to India
- Disruptions in this area could also significantly hurt India's exports in terms of time as well as costs



dustry leader at Grant Thornton Bharat told *The Hindu*. "India imports over 80% of its crude oil needs. Hence, even if direct imports from Iran are minimal, global price spikes due to conflict will raise crude oil import costs."

Further, Mr. Kumar said that around 20% of global oil passes through the

Strait of Hormuz, which is located between Iran to the north and the Arabian Peninsula to the south.

"Any disruption around the Strait of Hormuz may affect oil shipments from Iraq, Saudi Arabia, and the UAE who are key suppliers for India," he added.

Disruptions in this area could also significantly

hurt India's exports in terms of time as well as costs, according to Pankaj Chadha, chairman of the Engineering Exports Promotion Council of India.

"The escalation of the conflict in the Middle East once again closes access to the Suez Canal and the Red Sea, which will have huge cost and time escalation for Indian exports," Mr. Chadda told *The Hindu*.

"Going around the Cape of Good Hope will add about 15-20 days per ship and \$500-1,000 per container, which effectively works out to a 40-50% increase in costs," he added.

Impact on prices

While oil prices immediately surged following Israel's attack, they are expected to settle back

down, said Norbert Rücker, head of Economics and Next Generation Research at Julius Baer. "Our best guess is that this latest conflict eruption follows the usual pattern, with prices rising temporarily before returning to previous levels," Mr. Rücker said.

Gold prices, too, surged to above ₹1 lakh per 10 grams following the attack. "In times of conflict and uncertainty, gold remains the go-to hedge for both institutional and retail investors," said Amit Jain, co-founder of Ashika Global Family Office Services.

"What we're witnessing isn't just a knee-jerk reaction. It's a continuation of a broader structural uptrend driven by central bank accumulation and long-term inflationary concerns."

Key Developments:

- **Oil Prices Surge:**
 - Crude oil prices surged by nearly 8% in a single day due to conflict fears, despite India not directly importing significant volumes from Iran.
- **Strategic Chokepoints at Risk:**
 - The Strait of Hormuz, through which nearly 20% of global oil supply passes, lies between Iran and Gulf states like Saudi Arabia and UAE – major suppliers to India. Any disruption could severely affect India's oil imports.
- **Export Route Disruption:**
 - The closure or threat to the Suez Canal and Red Sea corridor, due to increased military activity, may force Indian exports to reroute via the Cape of Good Hope, adding 15–20 days to shipping time and increasing freight costs by 40–50%.
- **Surge in Gold Prices:**
 - Amid geopolitical uncertainty, gold has emerged as a hedge, crossing ₹1 lakh per 10 grams. This is partly driven by global central banks' accumulation and investor hedging against inflation.

Economic Implications for India:

- **Energy Security Risks:**
 - India imports over 80% of its crude oil requirements.
 - Price volatility threatens the country's import bill and trade balance.
 - Subsidy burdens and fuel price controls could strain fiscal policy if prices remain high.
- **Inflationary Pressures:**
 - A sustained rise in crude prices would affect transportation, manufacturing, and food prices.
 - This may force the RBI to reconsider its accommodative monetary stance.
- **External Sector Vulnerability:**
 - Export sectors (especially engineering and textile) face cost escalation and delivery delays.
 - Higher current account deficit and depreciation pressure on the rupee may follow.
- **Strategic and Diplomatic Dimensions:**
 - India must balance ties between Iran, Israel, and Gulf nations while ensuring continued oil flow.
 - May require diplomatic engagement with shipping nations and multilateral forums to maintain maritime security.

Conclusion:

- The Israel-Iran conflict exemplifies how geopolitical shocks can ripple into economic vulnerabilities for energy-dependent countries like India. Beyond short-term oil price spikes, the disruption of maritime trade routes and inflationary risks demand proactive diplomatic engagement and economic resilience planning. Strengthening domestic energy alternatives, diversifying import sources, and ensuring trade route security are essential steps for India in managing such external shocks.

UPSC Mains Practice Question

Ques: "India's heavy dependence on imported crude oil makes it highly vulnerable to global geopolitical shocks." Analyse in the context of the recent Israel-Iran conflict. (150 Words)

Page 08 : GS 3 : Economy

On June 13, 2025, Israel launched a large-scale military operation targeting Iran's nuclear infrastructure, ballistic missile sites, and high-ranking military officials. This marks Israel's most direct and forceful strike on Iranian soil since the 1979 Islamic Revolution. The attack represents a turning point in the long-simmering hostility between the two regional powers and reshapes the strategic balance in West Asia.

Why Israel attacked Iran's nuclear facilities

NEWS ANALYSIS

Stanly Johny

Israel has been preparing for this for years. It had carried out several clandestine attacks inside Iran, including the 2020 assassination of Mohsen Fakhri-zadeh, the father of Iranian nuclear programme. It took the war directly to Iran in April 2014, by bombing the Iranian embassy in Damascus.

All the while, Israel argued that Iran's nuclear and ballistic missile programmes were "an existential threat". And on June 13, Israel carried out a massive attack in Iran, targeting the country's nuclear facilities, ballistic missile sites, the residences of its top Generals and more than two dozen nuclear scientists. The Israeli attack, which lasted for hours, is the heaviest military blow to the Islamic Republic since the revolution.

While Israel has long wanted to carry out a direct attack in Iran, both international pressure and Iran's regional deterrence stopped it from doing so. Past American Presidents, who supported Israel's militarism against Hamas or

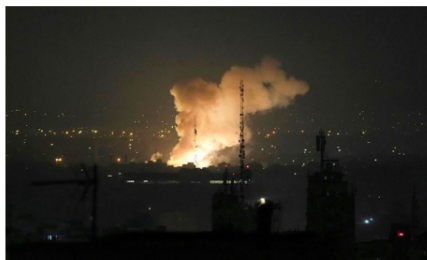
Hezbollah, vetoed Israeli plans to attack Iranian nuclear facilities. But both the regional and international scenes are different now.

Rolling back the axis

After the October 7, 2023 attack by Hamas, Israel launched a mini regional war – against Hamas in Gaza, against Hezbollah in Lebanon and aimed at weakening the regime of Bashar al Assad in Syria. Hamas was forced to reinvent itself as an insurgency and Hezbollah's militant infrastructure has been degraded. But the single development that altered the balance of power in West Asia was the fall of Assad in Syria in December 2024.

Mr. Assad's Syria was a critical link between Hezbollah and Tehran. With Assad gone and the militias weakened, the much feared axis of resistance, which has been Iran's forward defence since the early 1980s, has been hollowed out. Ever since, Israel has dramatically stepped up plans to attack Iran.

In October 2024, following an Iranian ballistic missile attack, Israel carried out an hours-long operation inside Iran, reportedly taking out many Iranian



Unprecedented onslaught: Smoke rises in Tehran on Friday after Israel's wave of air strikes targeted several sites across Iran. AP

missile defence systems. The strike left Iran's nuclear facilities vulnerable for future attacks. So if Israel's mini regional war weakened Iran's deterrence, the October 2024 attack turned Tehran's domestic defence more vulnerable. Israelis saw this as a historic opportunity. They wanted to act before Iran rebuilds its domestic and regional capabilities. All it wanted was a greenlight from Washington.

Trump's entry

When Mr. Trump became President, he offered talks to the Iranians. There were reports in American media, which Mr. Trump himself confirmed later, that he "waved off" an Israeli plan to attack Iran in May

because he wanted "to give diplomacy a chance". But Mr. Trump's plan was to put Iran in a box and force it to sign up on a deal that Washington proposed. The U.S. and Israel want Iran to give up its entire nuclear programme. The Iranians were ready to roll back the programme, like they did in 2015, but not to give it up. Mr. Trump said last week that he was "less confident" of reaching an agreement with Iran. Then came the Israeli attack.

A strategy seemed to have emerged from Mr. Trump's Truth Social post on Friday evening. Mr. Trump said he gave Iran "chance after chance" to make a deal. He said the next round of attacks are "already planned" and urged the Iranians to make

a deal quickly, "before there is nothing left". Steve Witkoff, Mr. Trump's West Asia envoy, says he is still ready to meet the Iranians in Muscat on Sunday. The U.S. and Israel appear to be in sync here. Israel attacked Natanz, leaving out Fordow and Isfahan for now. Mr. Trump says the only way to prevent further attacks is for Iran to take his deal. Mr. Trump is using Israel's attacks as an added layer of pressure on Iran. As *Axios* reported, Trump knew about Israel plans all along, even when he publicly raised concern about an Israeli attack.

Tough choices

Iran is in a difficult position. If it walks away from the talks and launches more attacks on Israel, there would be further Israeli strikes, plunging Iran and the region into an uncertain terrain. If Tehran accepts the U.S. deal under duress and agrees to shut down all nuclear plants, it would be a humiliating surrender which could come with political costs. The third option before Iran is to escalate the war dramatically to make the U.S. feel the pain. But such an outcome could drag the U.S. directly into the war.

Background and Buildup:

- **Historical Antagonism:**

- Israel has long viewed Iran's nuclear and missile programs as an "existential threat." In previous years, it conducted covert assassinations of Iranian nuclear scientists and cyberattacks (e.g.,

Stuxnet). However, overt direct attacks were avoided due to international diplomatic pressure and Iran's regional deterrence.

- **Collapse of Iran's 'Axis of Resistance':**

- Iran's strategic depth in West Asia relied on alliances with Hezbollah, Syria (under Bashar al-Assad), and Hamas. However, recent Israeli offensives weakened Hezbollah and Hamas, while the fall of Assad's regime in December 2024 dealt a severe blow to Iran's regional leverage.

- **Vulnerability and Timing:**

- The October 2024 Israeli operation had already degraded Iran's missile defense systems. With Iran yet to recover, Israel viewed this as a "historic opportunity" to strike before Iran could reassert its regional and domestic military posture.

US-Israel Strategic Alignment:

- **Trump's Return to Power:**

- The return of Donald Trump to the U.S. presidency shifted the diplomatic calculus. Though initially seeking talks with Iran, Trump ultimately aligned with Israel's hardline stance.

- **Deal Under Duress:**

- Trump appears to be using Israeli strikes as leverage to compel Iran into accepting a U.S.-dictated nuclear deal, one more stringent than the 2015 Joint Comprehensive Plan of Action (JCPOA). While Iran may be willing to scale back its program, it is unwilling to completely dismantle it under pressure.

- **Public Messaging:**

- Trump's social media posts suggest that further strikes are planned unless Iran capitulates. This points to a coordinated pressure campaign where military force is used to achieve diplomatic objectives.

Strategic and Diplomatic Implications:

- **Risk of Regional War:**

- Iran is faced with difficult choices: retaliate and risk escalation, surrender diplomatically and lose face, or intensify the conflict to involve the U.S. directly.
- Any escalation could engulf the Gulf region and affect global energy supply routes.

- **Impact on Nuclear Non-Proliferation:**

- The attack undermines multilateral mechanisms like the IAEA and the NPT framework.
- If Iran is attacked while under international monitoring, it may lose faith in diplomacy and pursue nuclear weapons as a deterrent.

- **Shift in West Asian Balance:**

- With Syria, Hezbollah, and Hamas weakened, Iran's strategic buffer has eroded.
- Israel may feel emboldened to act unilaterally, changing regional security dynamics.

- **India's Concerns:**

- Escalation in West Asia may disrupt oil supply routes (via the Strait of Hormuz), threaten economic stability, and create diplomatic dilemmas due to India's balanced relations with Iran, Israel, and Gulf countries.

Conclusion:

- Israel's strike on Iran marks a dramatic escalation with far-reaching regional and global implications. What was once covert hostility has now entered overt conflict, driven by strategic calculations and diplomatic brinkmanship. For countries like India, the situation demands calibrated diplomacy, energy contingency planning, and reaffirmation of the need for multilateral conflict resolution mechanisms to prevent further destabilization in West Asia.

UPSC Mains Practice Question

Ques: "Israel's strike on Iran's nuclear infrastructure marks a shift from covert deterrence to overt military assertion." Discuss the implications of this shift on regional stability in West Asia. **(250 words)**

In News: Black Box

- A black box is a small device that records flight data and cockpit audio, helping investigators understand the events leading up to an aircraft incident or crash.
- After a Gatwick-bound Air India plane(AI171) crash, the search for the flight's black box continues, which is crucial equipment to find out what happened moments before the disaster.



About Black Box

- It is a small machine that records information about an aircraft during its flight.
- This bright orange or yellow rectangular box is crafted to withstand explosions, fire, water pressure, and high-speed crashes.
- It was discovered by Australian scientist David Warren, it is used to discover the cause of a plane crash.
- Most aircraft are required to be equipped with two black boxes - the cockpit voice recorder (CVR) and the flight data recorder (FDR) - that record the information about a flight and help reconstruct the events leading to an aircraft accident.
- The CVR records radio transmissions and other sounds in the cockpit, such as conversations between the pilots and engine noises.

- The flight data recorder records more than 80 different types of information, such as altitude, airspeed, flight heading, vertical acceleration, pitch, roll, autopilot status, etc.
- The recording devices are stored inside a unit that is generally made out of strong substances such as steel or titanium and are also insulated from factors such as extreme heat, cold or wetness.
- To protect these black boxes, they are equipped towards the tail end of the aircraft, where the impact of a crash is usually the least

UPSC PrelimsPractice Question

Ques:In the context of civil aviation, what is a "Black Box"?

- A) A device used to control the altitude of aircraft
- B) A system that prevents air traffic collisions
- C) A flight recorder that stores cockpit and flight data
- D) A radar system used for detecting other aircraft

Ans : C)

Page : 08 Editorial Analysis

The rot starts at the top of the aviation ladder

There is a version of Murphy's law which says that "if there is a possibility of several things going wrong, the one that will cause the most damage will be the one to go wrong".

The fiery end to Air India flight AI171 at Ahmedabad, Gujarat, on June 12, 2025, just after its departure for London Gatwick, is a rude wake-up call – one that has been sounded for several years. But the Ministry of Civil Aviation (MoCA), the judiciary, the statutory body the Directorate General of Civil Aviation (DGCA), the Airports Authority of India (AAI) and all airlines in India have been turning a blind eye to the need to ensuring stringent training and safety standards. Sound bites such as the one about India being the fastest growing aviation system have all come to nothing due to years of corruption and political manipulation in the system. A major failure in India is the complete lack of accountability. Other than pilots being blamed, no one else has been held accountable. The rot starts at the top of the aviation ladder.

Downward slide

After every major crash, beginning with the Indian Airlines Airbus A320 crash (IC605) in Bangalore on February 14, 1990, followed by an Alliance Air Boeing 737 crash (CD7412) at Patna on July 17, 2000, an Air India Express crash (IX-812) in Mangaluru on May 22, 2010 and another Air India Express crash at Kozhikode (IX1344) on August 7, 2020, the aviation authorities have been lulled into complacency. The crash of the Air India Boeing 787 at Ahmedabad is another accident in the chain. Meanwhile, the same set of people continue to be at their desks even as safety and training have been on a downward slide over the years. The lack of accountability and the inaction have cost the lives of hundreds of passengers.

Take the case of the Union Minister of Civil Aviation. After every crash, the first statement made is to defend the safety standards of airports in India even when there are blatant violations of International Civil Aviation Organization (ICAO) standards. It is no exaggeration to say that accident investigators are picked and chosen on the basis of who will toe the line and place the blame squarely on pilots. There have been violations in the Ahmedabad accident. We have had the DGCA issuing a statement that is in clear violation of ICAO standards – naming the pilots who were involved in the crash. No other country would mention the names of the crew even in the final report. We need professionals to head the DGCA and the AAI, and not bureaucrats and persons who seek publicity in these crucial



Captain A. (Mohan) Ranganathan

is a former airline instructor pilot and aviation safety adviser. He is also a former member of the Civil Aviation Safety Advisory Council (CASAC), India

The air crash in Ahmedabad is a wake-up call, and aviation officials and airlines in India need to ensure stringent training and safe flight operations

organisations and positions. India has one of the weakest judicial systems as far as aviation safety is concerned. After the crash in Mangaluru, a public interest litigation was filed that listed irrefutable data and safety violations by the MoCA, the DGCA, the AAI and Air India. A Bench of the Supreme Court of India swept this aside by passing on the case file to the MoCA to check whether this was a valid case.

This was a move that hammered the last nail in the coffin of aviation safety. Apart from the last crash, at Kozhikode, there have been so many accidents and serious incidents, but things carry on without any accountability. The loss of over 300 lives in Ahmedabad (the passengers and also local residents) should shake the people in the system who are in slumber. Even the Pakistan Supreme Court comes down very hard on its aviation regulator and airlines.

Reading the visual evidence

The video recordings and images of the Ahmedabad accident that are out on social media are the only sources of information available at this moment. The take-off captured on CCTV at Ahmedabad airport has led to more information. There is much speculation about the flaps of the aircraft not having been configured for take-off. All modern Boeing aircraft, which includes the Boeing 787, have take-off configuration warnings and no pilot would attempt a take-off if all conditions are not met. There is also much commentary floating around about this flight having taken off from an intersection. Data from a leading flight data provider clearly shows that the crew used the full length of the runway, from the beginning. The initial part of the CCTV footage from the airport clearly shows the growth of a fair amount of grass along the sides of the runway. The southwest monsoon has arrived, but monsoon preparation mandates the mowing of grass at airports to less than three inches before the rains arrive. This will aid in reducing insects and worms which would otherwise attract bird life. Ahmedabad has a history of bird menace in the airport area.

The initial take-off acceleration of the Air India plane appears normal until lift off. Going by the statement of the sole passenger/survivor and also a video grab quoting a person during a television interview, a loud thud has been reported about 30 seconds after lift off. It is quite possible that birds flying close to the runway in search of worms and insects may have got sucked into the powerful aircraft engines and caused a compressor stall at the point of rotation. The lift off and initial climb appear shallow before the nose is raised high. But the climb rate is very

shallow due to possible partial thrust loss as a result of bird ingestion in both engines. Thereafter, the nose is raised and the aircraft appears to descend slowly with a high nose angle. The aircraft appears to have stalled and the impact on the building with the tail section intact, points to a stall. The Digital Flight Data Recorder and Cockpit Voice Recorder will give us the clear picture.

The second reason that may have caused the partial thrust loss could be Foreign Object Damage such as what happened to the Air France Concorde flight (AF4590) on July 25, 2000 while on a flight from Charles De Gaulle airport in Paris to New York. The crash was caused by a metallic strip that had fallen from a flight that had taken off minutes earlier. It was lying on the runway and punctured the wheel of the Air France plane. Fragments from the exploding tyre hit the fuel tank, causing a leak and fire. All lives were lost with some fatalities on the ground. It would be worthwhile checking whether something similar happened to the Air India flight. The most intriguing part of the video is of the aircraft's landing gear extended throughout the climb till the final moments. If there had been bird ingestions in both engines, the loud noise may have been due to a compressor stall, which could have created what is called the startle effect.

The DGCA's statement which mentions the names of the pilots and their experience levels, also says that the captain was line training captain. Was this a training flight? And was the copilot at the controls? In such a situation, the change of controls and the partial loss of thrust could have been overwhelming and may have been a reason for the crew to miss landing gear retraction. If the gears had been raised, the drag would have not been present and the aircraft would have had a better climb gradient to clear the obstacles on the ground.

Focus areas in the investigation

With global aviation bodies such as the National Transportation Safety Board from the United States, and the Air Accidents Investigation Branch from the United Kingdom now a part of the crash investigation, the officials should also look at obstacles in the take-off funnel. The building which the aircraft crashed into was multi-storied (one plus five floors, according to a report). Having a seventy-foot structure so close to the take-off path should be investigated. This should also be a lesson for authorities in India not to issue no objection certifications for construction activity by caving in to political pressure.

Whether we will learn lessons from this tragedy is the big question.

Paper 02: Governance

UPSC Mains Practice Question: The rot in Indian aviation safety lies in the absence of institutional accountability and professional leadership." Critically examine the challenges in India's civil aviation regulatory structure. (250 words)

Context :

- The Air India AI171 crash in Ahmedabad has exposed deep-rooted structural flaws in India's civil aviation safety ecosystem. While the immediate cause is under technical investigation, aviation experts like Captain A. Mohan Ranganathan point to long-standing issues such as poor training standards, weak regulatory oversight, and political interference.
- The tragedy, which resulted in the deaths of over 300 people including passengers and local residents, reflects systemic neglect and institutional complacency.

Key Concerns Raised in the Analysis:

- **Lack of Institutional Accountability:**
 - Despite multiple fatal air crashes since 1990, India's civil aviation authorities have repeatedly failed to implement systemic reforms. Blame is typically placed on pilots, while senior officials in the DGCA, MoCA, and AAI continue without facing consequences.
- **Degradation of Safety Culture:**
 - The commentary reveals a deterioration in professional training, enforcement of ICAO norms, and aviation audit transparency. Statements defending airport safety are often released without ground validation.
- **Violation of International Norms:**
 - The DGCA prematurely named pilots involved in the crash, which violates ICAO standards of confidentiality during ongoing investigations — a move unheard of in global aviation systems.
- **Infrastructure and Bird Hazard Risks:**
 - The video evidence suggests possible bird ingestion due to untrimmed grass attracting bird activity near the runway. Ahmedabad airport is known for bird hazards, yet monsoon preparations were reportedly inadequate.

Speculated Contributing Factors:

- Possible bird strike leading to compressor stall in both engines.
- Aircraft took off using full runway but failed to retract landing gear, increasing drag and reducing climb performance.
- Building close to the takeoff path (a five-storey hostel block) raises questions about unauthorized or poorly regulated construction near aviation zones.
- Possibility of foreign object debris (FOD) on the runway, similar to the Air France Concorde crash in 2000.
- **Misuse of Training Flights:**
- The DGCA statement hinted at a line-training scenario. If true, critical decisions during a partial thrust situation may have been complicated by role-sharing between trainee and trainer, affecting response time.

Systemic Issues Identified:

- **Regulatory Capture and Political Interference:**
 - Aviation institutions are often led by bureaucrats rather than trained professionals.
 - Safety concerns are routinely brushed aside for political or commercial convenience.
- **Judicial Apathy in Aviation Safety:**
 - A Supreme Court bench dismissed a PIL after the Mangaluru crash by forwarding it back to MoCA, raising concerns about institutional checks and balances.
- **Lack of Independent Investigative Framework:**
 - Accident probes are susceptible to internal bias, especially when the investigators are part of the same institutional structure being probed.
- **Urban Development Mismanagement:**
 - Issuance of No Objection Certificates (NOCs) for high-rise buildings near air corridors reflects regulatory compromise.

Conclusion:

- The Air India AI171 crash is not merely an accident but a result of cumulative negligence across multiple institutions. As India aspires to become a global aviation hub, this tragedy should serve as a turning point to overhaul the regulatory framework, professionalize aviation leadership, and enforce accountability at the highest levels. Without systemic reform, the fastest-growing aviation sector may become the most unsafe one.