DISCLAIMER

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ABOUT US

WHITE BLACK LEGAL is an open access, peer-reviewed and refereed journal provide dedicated to express views on topical legal issues, thereby generating a cross current of ideas on emerging matters. This platform shall also ignite the initiative and desire of young law students to contribute in the field of law. The erudite response of legal luminaries shall be solicited to enable readers to explore challenges that lie before law makers, lawyers and the society at large, in the event of the ever changing social, economic and technological scenario.

With this thought, we hereby present to you

IMPACT OF PLANE CRASHES ON GLOBAL AVIATION SAFETY POLICIES: TRAGEDY TO LEGAL REFORM

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Abstract

With modern aviation, security is unthinkable. Still, with air traffic increasing and avionics growing in complexity, the room for error keeps shrinking. A single momentary slip- up in routine inspection or servicing— whether it is the failure to notice a crack, the faulty sensor, or the delay in servicing—can mushroom into an out- and-out catastrophe in minutes.

The past has revealed time and again that most plane crashes have been attributed to technical malfunctions that could have been avoided with better inspections. The inability to find mechanical faults within the engines of commercial airliners, for example, has resulted in tragic crashes, not just in lives lost but also in the erosion of public confidence in air safety.

This increasing concern highlights the requirement for more stringent compliance with maintenance procedures, application of sophisticated diagnostic tools, and continuous training of ground engineers and maintenance staff. In the aviation industry, there are no second opportunities—one minute miscalculation on the ground can result in a fatal disaster in the air.

"You don't concentrate on risks. You concentrate on results. No risk is too great to prevent the necessary job from getting done."- Chuck Yeager

Introduction

The aviation industry began in 1903 when the Wright brothers launched the first aircraft capable of fully powered, controlled, and sustained flight. Their achievement marked a turning point in transportation and technology. The use of airplanes gained serious momentum during the First World War, where aircraft became essential tools for surveillance and combat. In the

years that followed, aviation shifted from military use to civilian travel, gradually developing into a practical mode of international transportation.

The role of aircraft expanded significantly during the Second World War, a period marked by rapid technological innovation. One of the most significant advancements was the introduction of jet propulsion. In 1939, Germany unveiled the Henkel He 178—the first aircraft to fly using a jet engine—paving the way for high-speed air travel and ushering in a new era of aviation. Nearly 62 months during and after World War II, from July 1940 to August 1945, saw the production of about 300,000 airplanes.

To this day, airplanes remain one of the most widely used modes of transportation for commuting across cities, countries, and continents. Technological advancements in aviation—ranging from improved aerodynamics and fuel efficiency to sophisticated automated systems and interconnected air traffic control—have significantly enhanced performance, comfort, and global connectivity.

The story of aviation is remarkable not just for its groundbreaking advancements, but also for the sobering tragedies that have shaped its progress. Although flying has become the safest way to travel, each major airplane disaster is a reminder that safety in the skies has been hard-won.

Every catastrophic airline accident sets off rigorous investigations and often triggers major changes—whether in training, equipment, protocols, or regulations. For instance, lessons learned from infamous incidents like the Tenerife collision in 1977 or the 1985 crash of Japan Airlines Flight 123 have led airlines to adopt better communication practices and new safety measures for cockpit crews worldwide.

Advances in technology often follow in the wake of tragedy as well. Thorough crash inquiries have pushed for stronger aircraft designs, cutting-edge flight recorders, more reliable maintenance routines, and superior weather detection systems.

Regulators like the FAA and EASA constantly update and fine-tune international standards in response to what goes wrong, working hard to address both old risks and emerging threats.

Finally, every serious accident leaves an imprint on how the public feels about flying. Even though such events are rare, they motivate airlines and governments to constantly evaluate and strengthen safety procedures to maintain travelers' trust.

In short, while every air disaster is a deep loss, each one has also contributed to making today's air travel safer than ever before. The lessons learned ensure that passengers' safety remains the absolute priority across the aviation industry.

Comparative Study of Major Aviation Disasters, Regulatory Responses, and Evolving Safety Reforms[1]

Year	Accident (Location)	Description	Key Government/Regulator Measures	Evolution and Change Over Time
1956	Grand Canyon Collision (USA)	Two commercial aircraft collided mid-air; 128 killed.	- Expanded air traffic control (ATC) workforce - Modernized radar ATC systems - Federal funding for ATC upgrades - Created FAA (1958)	Shift from procedural to radar-based ATC; federal oversight institutionalized. Provided template for modern aviation regulation globally.
1973	Indian Airlines Flight 440 (New Delhi, India)	Crash during approach in poor weather; 48 killed.	- Strengthened approach procedures and equipped airports with better landing aids (ILS) - Upgraded weather forecasting and pilot briefing processes	Emphasis on meteorological awareness and instrument landing systems in India.
1977	Tenerife Airport Disaster (Canary	Two Boeing 747s collided on the runway in fog; 583 killed.	- Standardized cockpit phraseology - Designated English as aviation's official language	Global reforms in pilot communications; focus on human factors; universal language adoption.

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[1]   13   famous   airplane   crashes   that   changed   aviation   safety.   (n.d.).   :-
https://www.popularmechanics.com/flight/g73/the-most- famous-airplane-crashes/

Year	Flight	Cause	Measures	Impact
	Islands, Spain)		- Upgraded runway lighting and ground radar (ASDE)	
1978	Indian Airlines Flight 403 (Bangalore, India)	Crash on takeoff due to technical failure; 196 killed.	- Revised maintenance protocols - Improved emergency response drills across Indian airports	Led to regular incident reviews and standardized maintenance practices in India.
1989	United Airlines Flight 232 (USA)	Engine failure led to loss of hydraulics; crash landing; 111 killed, many survived.	- Required redundant hydraulic circuits - Added differential-thrust training for pilots	Shift to design redundancy and scenario- based crew training worldwide.
1993	Indian Airlines Flight 491 (Aurangabad, India)	Aircraft hit a truck during takeoff; 55 died.	- Implemented stricter runwayincursion protocols - Separated vehicle and aircraft access at airports	Enhanced airport ground safety and obstacle clearance in India.
1996	ValuJet Flight 592 (USA)	Cargo fire from illegal oxygen generators; 110 killed.	- Banned certain hazardous materials - Required fire-resistant cargo holds - Strengthened oversight of outsourced maintenance	Major change towards tighter hazardous materials regulation; similar measures adopted internationally.
1998	Swissair Flight 111 (Near Halifax, Canada)	In-flight fire due to faulty insulation; 229 killed.	- Banned flammable insulation - Tightened wiring inspections and maintenance	Focus on fire safety in aircraft design and retrofitting.
			- Enhanced fire detection/suppression systems	

2001	9/11 Attacks (USA)	Four hijacked airliners destroyed; 2,977 killed.	- Established TSA - Reinforced cockpit doors - Instituted behavior-based screening C intelligence sharing	Security shifted from reactive to threat-based; replicated globally, including India (BCAS reforms).
2010	Air India Express Flight 812 (Mangalore, India)	Overrun and crash; 158 killed.	- Required Runway End Safety Areas (RESA) - Improved crew resource management training - Mandated stricter crew fatigue rules	India focused on airport design and incident analysis; procedural and regulatory tightening followed.
2014	MH370 (Malaysia)	Aircraft disappearance; 239 missing.	- ICAO's GADSS (15-min position updates) - Accelerated ADS-B tracking globally	Transition to real-time global aircraft tracking, adopted in India as well.
2015	Germanwings Flight 9525 (French Alps)	Deliberate crash by co-pilot; 150 killed.	- Mandatory psychological screening for pilots - Enforced two-Person cockpit rule	Heightened mental health monitoring; similar policies rolled out in India.
2020	Air India Express Flight 1344 (Kozhikode, India)	Aircraft overran tabletop runway; 21 killed.	- Raised RESA standards - Upgraded runway safety audits and operator accountability - Emphasized no-blame accident investigations	Ongoing emphasis on transparent, system-focused investigations and infrastructure modernization in India.

Framework of Modern Aviation Safety

Today's approach to aviation safety goes well beyond simply reacting to accidents after they occur. Instead, it follows a forward-thinking, risk-focused model that blends strong regulations,

impartial investigations, ongoing attention to human factors, resilient physical infrastructure, and truly independent oversight. Let's explore each essential part of this comprehensive safety system.

1. Strong Regulatory Oversight

Safety in aviation[2] is grounded firmly in regulations, set both nationally and internationally, that cover every stage of an aircraft's lifecycle and all aspects of flight operations.

- Regulatory Requirements:

  Aircraft must meet strict standards throughout their design, production, upkeep, and retirement. Pilots and crews must obtain proper licenses, complete specific proficiency checks, and undergo regular simulator training to stay sharp.

  Aerodromes also need certification based on factors like runway quality, strength, and obstacle restrictions to ensure safe ground operations.

- India's Regulatory Setup:

  In India, two main agencies share safety responsibilities. The Directorate General of Civil Aviation (DGCA) handles technical rules, audits airlines and maintenance providers, and grants operational certificates. The Bureau of Civil Aviation Security (BCAS) focuses on protecting civil aviation from unlawful acts, overseeing passenger and baggage screening, and performing security assessments. Both function under the Central Government's authority, aligning India's rules with global standards set by bodies like the ICAO.

2. Transparent, "No-Blame" Investigations

Learning from incidents requires honest, system-oriented investigations that avoid blaming individuals unfairly.

- Investigation Approach:

  The Aircraft Accidents Investigation Bureau (AAIB) uses a "no-blame" policy which legally separates their technical findings from law enforcement or legal prosecutions. This encourages openness and helps uncover both human and systemic factors behind incidents.

- Examples in Practice:

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[2] Issues. (2022, July 1). *Improving air safety: Long-term challenges*. Issues in Science and Technology. https://issues.org/oster/

Reviews of accidents such as the 2020 Kozhikode runway excursion revealed infrastructure weaknesses and crew coordination issues. The 2010 Mangaluru overrun pointed to insufficient safety areas and inadequate pilot go-around training. The 1993 Aurangabad runway incursion emphasized the need for better ground radar and clear taxiway markings.

3. Ongoing Training and Human Factors Management

Because human performance plays a pivotal role in aviation safety[3], continuous training and fatigue management are critical.

- Managing Fatigue:

   Strict Flight Duty Time Limitations (FDTL) set maximum working hours and mandatory rest periods to reduce fatigue, a factor involved in a notable rise in recent incidents. Regulators ensure airlines monitor crew schedules and encourage self-reporting of tiredness.

- Enhanced Training:

   Pilots regularly practice high-fidelity simulations covering emergencies like engine failures and severe weather. Cockpit Resource Management (CRM) training promotes clear communication and teamwork among pilots. Similarly, air traffic controllers receive comprehensive certification that includes stress management and monitoring increasingly automated systems.

4. Resilient Infrastructure and Safety Systems

Physical assets and operational systems must be designed and maintained to minimize risks proactively.

- Runway End Safety Areas (RESA):

   Safety zones beyond the ends of runways, typically between 90 to 240 meters, help prevent accidents resulting from overruns or undershoots—an improvement implemented after incidents like Kozhikode. These zones undergo regular checks to ensure they meet standards for slope, surface friction, and obstacle clearance.

- Controlling Surrounding Environment:

   Zoning laws restrict construction, tall trees, and other obstacles near aerodromes to

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[3] Undefined, & Editor, I. (2025, July 21). Relooking into Indian Aviation Safety. INSIGHTS IAS - Simplifying UPSC IAS Exam Preparation. https://www.insightsonindia.com/2025/07/21/relooking-into-indian-aviation-safety/

protect aircraft during landing and takeoff. Governments also handle compensation when landowners are affected by these restrictions, ensuring safety without unfairly penalizing communities.

5. Independent Oversight and Accountability

For safety oversight to be truly effective, it must be free from conflicts of interest and external pressures.

- Autonomy in Governance:

  There are ongoing proposals to elevate the DGCA and AAIB to autonomous organizations governed by parliamentary statutes, similar to railway accident bodies, to eliminate conflicts arising from ministry oversight. Establishing a Flight Safety Ombudsman could offer passengers and crew a neutral authority to address safety concerns, issue binding recommendations, and guarantee transparency in follow-up actions.

6. Proactive and Preventive Safety Culture[4]

The ultimate goal is to anticipate and prevent hazards before they cause incidents, rather than reacting after the fact.

- Data-Driven Risk Management:

  Large databases like ICAO's ADREP, FAA's ASIAS, and EASA's Safety Review collect global safety data for analysis. Emerging AI-powered tools process sensor inputs in real-time to predict equipment failures and schedule maintenance proactively.

- Advanced Tracking Systems:

  Technologies such as ADS-B and the Global Aeronautical Distress and Safety System (GADSS) provide near-continuous position reporting—now mandated to occur at least every 15 minutes—even in remote areas. Looking forward, developments include satellite-based tracking networks and automated emergency alert systems designed to close remaining gaps in aircraft surveillance.

  By integrating these elements—rigorous regulation, unbiased investigation, continuous training, robust infrastructure, independent oversight, and intelligent data use—the aviation industry has created a dynamic, anticipatory approach to safety. This model

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[4] 25-hour CVR mandate is a huge step forward in flight safety. Honeywell. (n.d.). https://aerospace.honeywell.com/us/en/about-us/blogs/25-hour-cvr-mandate-is-a-huge-step-forward-in-flight-safety

transforms lessons from history into real-world protections and continuously drives improvements, ensuring safer skies worldwide

How Plane Crash Tragedies Drove Legal Reform in Aviation

The story of aviation safety is, at its heart, a story of hard-won lessons learned through adversity. Air disasters, while deeply tragic, have consistently exposed weaknesses— whether technical, operational, or systemic—that compelled lawmakers and safety regulators to introduce wide-ranging reforms. Over the decades, this iterative process has transformed aviation law into one of the most comprehensive safety regimes in any industry.

Below, we trace this transformation by examining key landmark plane crashes— internationally and in India—and how each prompted lawmakers and safety authorities to act. This evidence-based evolution showcases a pattern: with every headline-making tragedy, governments and the industry refined the rules, closing gaps to make air travel even safer.

Major Accidents and Their Legal/Regulatory Legacies 1956 Grand Canyon Collision (USA)

- What happened? A mid-air collision between two passenger jets over the Grand
- Canyon left 128 people dead, shocking the world.
- Legal response: This catastrophe led to the Federal Aviation Act of 1958 in the United States. Congress dissolved previous authorities in favor of the new Federal Aviation Administration (FAA), charged with national airspace oversight and a state- of-the-art, radar-driven air traffic control system.
- Impact: This was a shift from fragmented oversight to centralized, government- run airspace management that soon became a global model.

1977 Tenerife Airport Disaster (Spain)

- What happened? Two wide-body jets collided on a foggy runway, killing 583 people— the deadliest aviation accident in history.
- Legal response: Regulators around the world mandated standardized cockpit communication, adopted English as the official language of air traffic control, and upgraded airport technology with advanced ground movement radars.
- Impact: Accidents were increasingly attributed to human factors, and "crew resource management" (CRM) training was introduced to reduce miscommunication in the cockpit.

1989 United Airlines Flight 232 (USA)

- What happened? A catastrophic engine failure led to loss of all hydraulic controls, forcing the crew to crash-land using only engine thrust. While many perished, over 180 survived thanks to crew ingenuity.

- Legal response: Aircraft were redesigned with more robust hydraulic backup systems, and pilot training started to include worst-case scenario, hands-on simulation.

- Impact: Aircraft and training evolved to presume that even the most improbable failures could occur. 1996 ValuJet Flight 592 (USA)

- What happened? A fire sparked by improperly stored oxygen tanks in the cargo hold caused the loss of 110 lives shortly after takeoff.

- Legal response: US authorities banned certain hazardous materials in passenger aircraft, required fire detection and suppression infrastructure in cargo holds, and increased oversight of maintenance contractors.

- Impact: This case drove worldwide regulatory standards on dangerous goods and cargo compartment fire resistance.

2001 September 11 Attacks (USA)

- What happened? Four commercial planes were hijacked in coordinated terrorist attacks on the US, leading to massive loss of life and a global security rethink.

- Legal response: The US established the Transportation Security Administration (TSA), reinforced cockpit doors, and rolled out behavior-based passenger screening and intelligence sharing. Similar security upgrades soon followed globally, including in India via the Bureau of Civil Aviation Security (BCAS).

- Impact: Security became a central pillar of aviation law, entwined with both domestic and international legal frameworks.

2009 Colgan Air Flight 3407 (USA)

- What happened? A commuter plane crashed near Buffalo, New York, due to pilot fatigue and training gaps, killing all on board.

- Legal response: The Airline Safety and FAA Extension Act of 2010 required more extensive pilot qualifications (including a 1,500-hour rule for first officers) and strengthened crew rest regulations.

- Impact: Improved pilot mentoring, stricter training, and industry-wide emphasis on managing human limitations.

2015 Germanwings Flight 9525 (Europe)

- What happened? A co-pilot intentionally crashed a jet into the Alps, killing 150 and highlighting the risks posed by unchecked crew mental health issues.

- Legal response: The European Union mandated psychological screening for airline pilots, introduced peer-support programs, and required two-person cockpit occupancy during flights.

- Impact: Mental health became a recognized safety concern; similar policies were adopted in India and elsewhere.

Indian Table-Top Runway Accidents (2010 Mangalore C 2020 Kozhikode)

- What happened? Runway overruns at so-called "table-top" airports—with limited overrun space—resulted in significant loss of life.

- Legal response: India's DGCA mandated longer runway end safety areas (RESA), imposed stricter terrain-specific approach training, and upgraded infrastructure at risk-prone airports.

- Impact: These reforms underscored the importance of matching global safety benchmarks with local operational realities, driving infrastructural and procedural updates.

How Legal Reform Has Evolved

Early legal changes were reactive and focused on technology and procedures: centralized air traffic control, broad regulatory mandates, and basic cockpit and cargo safety measures. Over time, as the root causes of major accidents shifted from mechanical failures to human error, security lapses, and infrastructure gaps, legal reforms grew to encompass:

- Global standardization of cockpit language and procedures

- Emphasis on teamwork and communication (CRM) in the cockpit

- Thorough screening of hazardous cargo and fireproofing

- Dynamic security protocols in response to terrorism risks

- More comprehensive and mandatory pilot training and fatigue mitigation

- Proactive measures for psychological well-being of aviation personnel

- Infrastructure upgrades tailored to local airport challenges

RECENT CASES

Air India Flight 171: A Tragedy and Its Aftermath

On 12 June 2025, Air India Flight 171, a Boeing 787-8 Dreamliner, crashed shortly after takeoff from Ahmedabad en route to London, marking the first fatal crash of this aircraft type since it entered service in 2011.

The Crash[5]

- The aircraft took off at 13:38 IST but lost altitude just 32 seconds later, impacting the hostel block of B.J. Medical College, about 1.7km from the runway.

- Of the 242 people on board (230 passengers, 12 crew), only one survived. The disaster also killed 19 people on the ground and injured 67 more, with several buildings severely damaged.

- Eyewitness videos showed the plane behaving abnormally—wobbling and dipping—before disappearing from sight amid flames and smoke.

- The only surviving passenger, a British citizen named Vishwash Kumar Ramesh, was able to escape with minor injuries when the fuselage near his seat broke open. An infant also survived the fire, shielded by his mother, though with serious burns.

Investigation and Findings[6]

- India's Aircraft Accident Investigation Bureau, together with UK and US teams, quickly launched an inquiry.

- The cockpit and flight recorders were recovered; the main recording showed both engines suddenly shut down right after takeoff when their fuel control switches moved from RUN to CUTOFF—a process meant only for ground use and protected by a mechanical lock.

- The cockpit voice recording caught one pilot asking the other why the switches had been moved, both denying having done it.

- Emergency power from the aircraft's Ram Air Turbine deployed automatically, as expected after engine failure.

- No evidence of a pre-impact fire or mechanical fault was found in the preliminary report, and speculation about an electrical fire was ruled out.

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[5] Aviation body flags 51 safety lapses in Air India's operations. www.ndtv.com. (2025, July 29). https://www.ndtv.com/india- news/aviation-body-flags-51-safety-lapses-in-air-indias-operations-8978108/amp/1

Response and Impact

- Following the crash, India's aviation regulator ordered immediate inspections of all Air India Dreamliners, resulting in major flight cancellations. The airline retired the AI171/172 flight numbers out of respect.

- The crash led to a sharp drop in Boeing's stock price and affected investor confidence in both Air India and its stakeholders.

- Public trust was shaken, with increased anxiety reported among frequent flyers, and renewed scrutiny on Air India's internal safety culture and Boeing's manufacturing oversight.

- The disaster spotlighted gaps in India's aviation regulatory and legal frameworks, accelerating discussions about a tougher aviation liability law. The newly introduced "Bharatiya Vayuyan Adhiniyam, 2024" aims to strengthen regulatory control, clarify compensation rights, and enforce stiffer penalties.

- Among pilots, there's now a visible pushback against flying aircraft that are merely "approved" rather than demonstrably flawless, reflecting heightened vigilance over operational safety.

Legal Reforms

India's response to the Air India Flight 171 disaster draws on its recently overhauled aviation laws—most notably the Bharatiya Vayuyan Adhiniyam, 2024. This modern legislation replaces outdated standards with a robust system that prioritizes oversight, accountability, and passenger rights.

Regulatory Oversight:

The Act strengthens the authority of key bodies such as the DGCA (in charge of safety), BCAS (airport and flight security), and the AAIB (accident investigations). These agencies now have clearer mandates to launch full-scale, impartial investigations, ground fleets if needed, clamp down on violations, and align with global aviation norms.

Transparent Investigations:

The AAIB is required by law to lead thorough, independent, and "no-blame" accident investigations following international standards (ICAO Annex 13). Their findings are published so the public and affected families get transparent answers, while crucial evidence is

preserved for future learning.

Compensation and Liability:

India's laws, in line with the Montreal Convention, make airlines automatically responsible for compensating victims—both those on board and on the ground— regardless of who is at fault. If there is proven negligence, victims' families can pursue additional compensation.

Enforcement and Accountability:

A range of strong measures is now available to regulators: imposing heavy fines (up to ₹1 crore), recommending criminal prosecutions, grounding airlines for serious breaches, and introducing protections for whistleblowers who flag unsafe practices.

Protecting Passenger and Victim Rights:

Victims and their families are guaranteed a streamlined, transparent system for compensation claims and grievances, including the right to appeal regulatory and airline decisions—a major improvement over past processes.

Driving Systemic Change:

Authorities can now require airlines across the industry to undergo full safety audits and to adopt new practices or corrections based on accident findings, ensuring that the lessons of tragedies like Flight 171 lead to real improvements.

The Angara Airlines An-24 Crash: Human Toll and Systemic Lessons

On July 24, 2025, Russia's Far East was the scene of a devastating air disaster when an aging Angara Airlines An-24 turboprop crashed while attempting to land near Tynda. The aircraft— in service since 1976 and lacking modern navigation technology—was traveling from Khabarovsk to Tynda, with a stopover at Blagoveshchensk.

The Crash and Its Aftermath

- The An-24 vanished from radar during its approach. Later, it was discovered on a remote mountainside some 15–16 kilometers from the runway.
- Rescue efforts were hampered by relentless forest and challenging terrain; search helicopters struggled to reach the site.

- All 48 individuals aboard—42 passengers (including seven children) and six crew members—lost their lives. Tragically, there were no survivors.

Investigation and Initial Findings[6]

- Early reports indicate that poor weather and low visibility forced the pilot to abort the first attempt at landing. On the second approach, eyewitnesses saw the plane flying perilously low, possibly below the clouds, leading to speculation that it struck a hillside or trees while circling back for another try.

- No distress call was made before the aircraft went down.

- The Russian aviation authority recovered and began decoding the flight recorders. Investigators quickly launched a criminal case over potential breaches of air safety regulations.

The Broader Safety Context

- The accident has cast a harsh light on the deepening safety crisis within Russian aviation. After four years of tough international sanctions, Russia's airlines are struggling to maintain aircraft as access to both parts and technical support from Western manufacturers has dried up.

- Airlines have resorted to stripping grounded planes for parts and sourcing components through unofficial or "grey" markets. Meanwhile, the regulator, Rosaviatsiya, has relaxed certain oversight procedures, prioritizing aircraft availability over strict safety enforcement.

- Inspections earlier in July 2025 found major maintenance violations at Angara Airlines—eight planes were temporarily grounded, but the company continued flying. A veteran industry observer noted that serious infractions are commonplace in Russian civil aviation.

- The An-24's remarkable durability is well known, but experts widely agree its operational life should have ended years ago due to structural fatigue; nonetheless, official policy has extended its service life to 2036, without approval from the original Ukrainian designers.

- Attempts to introduce new, safer Russian-made aircraft (like the Baikal and IL- 114-

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[6] Meduza. (2025, July 28). "every inspection finds violations" what a deadly passenger plane crash in Russia's Far East reveals about the state of the country's aviation industry. https://meduza.io/en/feature/2025/07/28/every-inspection-finds-violations

300) are stalled by technical and production issues, while international sanctions rule out buying replacements from abroad.

International Scrutiny and Sanctions

- The International Civil Aviation Organization (ICAO) flagged Russia with a severe safety warning ("red flag") in 2022, placing it among the lowest-ranked countries for aviation safety. For the first time, Russia lost its seat on the ICAO Council, reflecting global concerns over its regulatory standards.

- Russia maintains that sanctions are endangering flight safety by obstructing access to essential parts and updates, but the evidence of declining safety is difficult to ignore accident statistics have spiked, and catastrophic crashes like the Angara An- 24 have become alarmingly regular.

Ongoing Consequences

- Russia's aviation record is among the poorest globally. In 2023, the number of aviation accidents more than doubled from the previous year, and experts grimly observe that a major fatal crash is now a near-annual occurrence.

Legal Summary: Angara Airlines An-24 Crash[7]

The July 2025 crash of the Angara Airlines An-24 highlights key legal and regulatory challenges in Russian aviation. Governed by Russia's Air Code (No. 60-FZ, 1997), the Federal Aviation Agency (Rosaviatsiya) is responsible for enforcing safety standards, certifying aircraft, and investigating accidents.

Following the crash, authorities launched a criminal probe into alleged violations of air traffic safety rules, holding individuals and operators potentially accountable under Russian criminal law.

The incident exposes systemic weaknesses, including the continued operation of aging aircraft like the 50-year-old An-24, inconsistent enforcement of maintenance regulations, and the strain of international sanctions limiting access to parts and technical support.

Internationally, the ICAO red flagging of Russia's aviation safety reflects these persistent

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[7] Journal of Modern Science. (n.d.). https://www.jomswsge.com/

regulatory shortcomings. Sanctions and inadequate oversight have contributed to safety compromises, putting operators at legal risk.

Conclusion

Over the years, tragic plane crashes have driven crucial legal and regulatory changes, helping to turn aviation from a risky venture into one of the world's safest industries. Time and again, each major accident has revealed important shortcomings, sparked strong public reaction, and pushed authorities to introduce lasting safety rules that continue to protect travellers today.

Global aviation safety has improved steadily thanks to better technology and lessons learned from previous accidents. However, the crash of Air India Flight 171 serves as a reminder that serious regulatory and infrastructure gaps still exist in places like India. At the same time, events like the Russia-Ukraine war have brought new challenges from supply chain disruptions to heightened safety risks underscoring the need for ongoing international cooperation and adaptability. Overall, aviation is a constantly evolving industry that requires continued vigilance, transparency, and a commitment to proactive reform to keep passengers safe worldwide.

Throughout aviation history, devastating plane crashes have often been the turning point that forced lasting legal change. Each tragedy has pushed the industry away from simply reacting after the fact and towards building a culture focused on legally preventing accidents before they occur. These hard learned lessons have led to stronger legal regulations, increased independent oversight, and steadily higher safety standards around the world. Ultimately, moving from tragedy to legal reform has shaped today's aviation system helping ensure safer skies for everyone who flies.