Aviation Safety Report

2016

Civil Aviation Authority of Nepal

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Civil Aviation Safety Regulation Directorate
Civil Aviation Authority of Nepal
Head Office, Babarmahal
Kathmandu, Nepal
Phone : +977-1-4262387, 4262518, 4262326
Fax : +977-1-4262516
Website: www.caanepal.org.np

Foreword

The vitality of air transport industry in the economic growth and development of a nation is more pronounced in today's globalized world. Civil Aviation Authority of Nepal (CAAN) realizes that one of the key elements to maintaining the vitality of civil aviation is to ensure safe, secure, efficient and environmentally sustainable flight at the national, regional and international level.

As a regulator of civil aviation activities in the country, CAAN has the responsibility of ensuring safety and promoting air transportation in the country. CAAN sets Requirements based on the Standards and Recommended Practices (SARPs) stipulated in various Annexes to the Convention on International Civil Aviation. Based on these requirements, air transport industry needs to deliver safe and quality services in their respective areas of operation while maintaining a high level of capacity and efficiency in their endeavors.

Safety is paramount in aviation, risk being its inherent factor. While managing safety is the joint responsibility of the regulating authority and aviation service providers, service provider organizations are required to implement Safety Management System so as to reduce the risk of accidents and incidents in their respective areas of operations. CAAN is committed to achieving and maintaining an acceptable level of safety based upon the guiding principles of ICAO through various regulatory arrangements including safety oversight activities. Accordingly, three measures in the areas of regulation, technology and training have been adopted. As part of implementation of these measures, CAAN has taken a number of steps which include amendment of regulations empowering inspectors to carry out effective safety oversight function, enforcement of SMS requirements, making mandatory the flight simulation training in aircraft type simulators for pilots, and provision of frozen ATPL training for CPL holders. In these and for all other emergent needs, CAAN is committed to synergize with the airlines and industry partners in raising standards and implementing best practices under the guidance and assistance of ICAO and regional organizations.

This Safety Report is the first-ever publication of CAAN. It presents a cursory overview of updates on safety indicators including accidents that occurred during the last10 years (2006—2015). Besides, it also considers associated risk factors, USOAP audit results and updates, while also accounting for safety priorities of the State and the industry.

(Sanjiv Gautam)
Director General

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Executive Summary

Flying environment

Difficult and rugged topography, coupled with ever-changing, adverse weather conditions, put heavy constraints on safety, efficiency and regularity of air transportation in Nepal. Small turbo-prop aircrafts, DHC-6 300/400 and DO-228, operate in most of the airfields that are located either in narrow valleys or hill-tops. There are 19 airline companies comprising scheduled and non-scheduled operators, helicopter operators and recreational operators showing a heterogeneous mix of fleet in the domestic sector. Besides, three other scheduled operators are operating internationally. During the past 10 year span, air traffic movement has been consistent on average, though with marginal downturn in some years.

Safety indicators – Accidents

Accident rate and compliance of SARPs under the confirmatory audit results are considered to be the safety indicator of civil aviation system in a State. Accident data from 2006-2015, represented in various tables and figures in this report, reveal that majority of accidents are associated with the turbo-prop aeroplane with capacity of 19 seats or less, which mostly operate in STOL airfields of the country. The chart below shows that there have been 11 accidents with 134 fatalities with turbo-prop aircraft having 19 or less seat capacity. Except for one, there have been no major mishaps on trunk routes to and from Kathmandu in the past 32 years. As regards helicopter operations, there have been 13 accidents resulting in 33 fatalities.

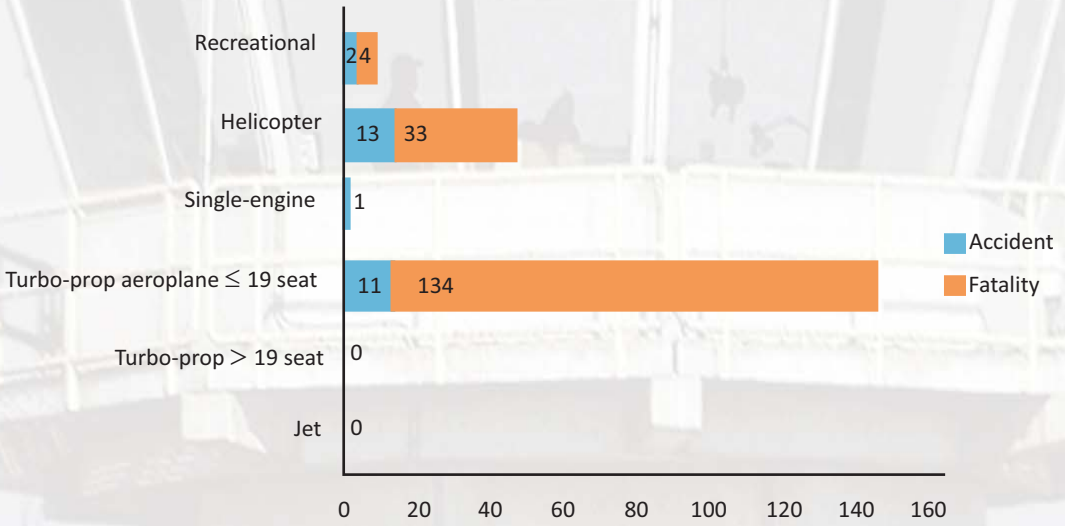


Chart 1: Accident-Fatality of Nepalese registered aircraft (2006-2015)

Accounting for high risks associated with flight operations, controlled flight into terrain (CFIT) still remains the major contributor to the total aircraft accident and fatality. Out of 12 accidents recorded during the last 10 years (including a accident in 2016) 5 accidents are CFIT related, with 100 fatalities. It is apparent that the challenges surrounding aircraft operations in Nepal are intrinsically associated with CFIT, turbo-prop (≤ 19 seats) operations, hostile topographical constraints, adverse weather patterns and unavailability of en route weather information, high altitude STOL operations, and VFR operational limitations, among other unapparent conditions. With a view to reduce accident rates, CAAN has undertaken various safety measures focused on improvement needs felt in the areas of training, licensing, airworthiness, flight operations and maintenance.

Safety indicators – Audit Results

Recognizing that the level of effective implementation of the Critical elements is an indication of a State's capability for safety oversight, CAAN has ever been committed to responding to various deficiencies in its safety system as pointed out under USOAP audits, ICVM, and Offsite validation. Figures on the State's status of and progress in the effective implementation of CEs demonstrate continuous, overall improvement – by 43 %, 55 % and 58.4 % in 2009, 2013 and 2016, respectively.

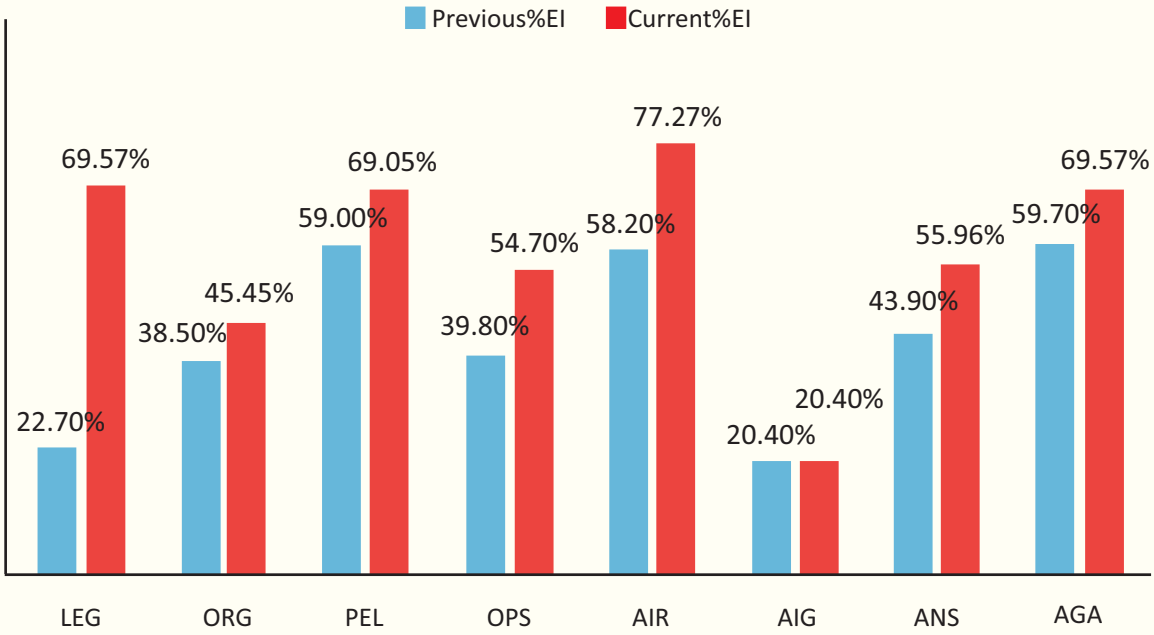


Chart 2: USOAP audit result

Strategies, Initiatives and Reformation

Safety strategies are primarily associated with the regulator and service providers. Strategies adopted by CAAN constitute a holistic response to deficiencies identified during USOAP audits, ICVM and Offsite validation. CAAN conducts its activities in accordance with the recommendations made by ICAO with regard to such deficiencies. CAAN is geared to attain EI by more than 60 per cent in USOAP and alleviate SSC in the forthcoming ICVM. On a broader level, an initiative on international collaboration with EASA has been undertaken in the area of aircraft maintenance. Likewise on Flight Operations and Airworthiness, CAAN has benefitted from technical missions and training programmes of COSCAP-SA under the patronage of ICAO. Moreover, to resolve safety concerns and other deficiencies, ICAO and Nepal have signed an ICAO Safe Fund Project Agreement in 2015, which aims to provide technical assistance in the areas of OPS, AIR and PEL.

Civil aviation has experienced several signs and milestones indicative of conduciveness for reinforcement of aviation safety system in the country. The transformation of CAAN from the erstwhile DCA in 1998 was essentially an important signpost to that end. It is also important to spotlight the State visit of ICAO Council President Mr. Roberto Kobeh Gonjalez to Nepal in 2012, which provided enough leverage for the State and CAAN in their initiatives towards segregating service provider functions from the regulatory regime of CAAN, strengthening safety oversight capability of the Regulator and reviewing the legal frameworks in line with Chicago Conventions and other ICAO Regulations. Currently, an Integrated Civil Aviation Act and other related documents as part of broad spectrum targets are underway under a Capacity Development Project. Efforts to separate Aerodrome Operations and Air Navigation Services from the Civil Aviation Authority of Nepal are also underway. A new Civil Aviation Act is undergoing a conclusive review at the Ministry of Culture, Tourism and Civil Aviation.

Introduction

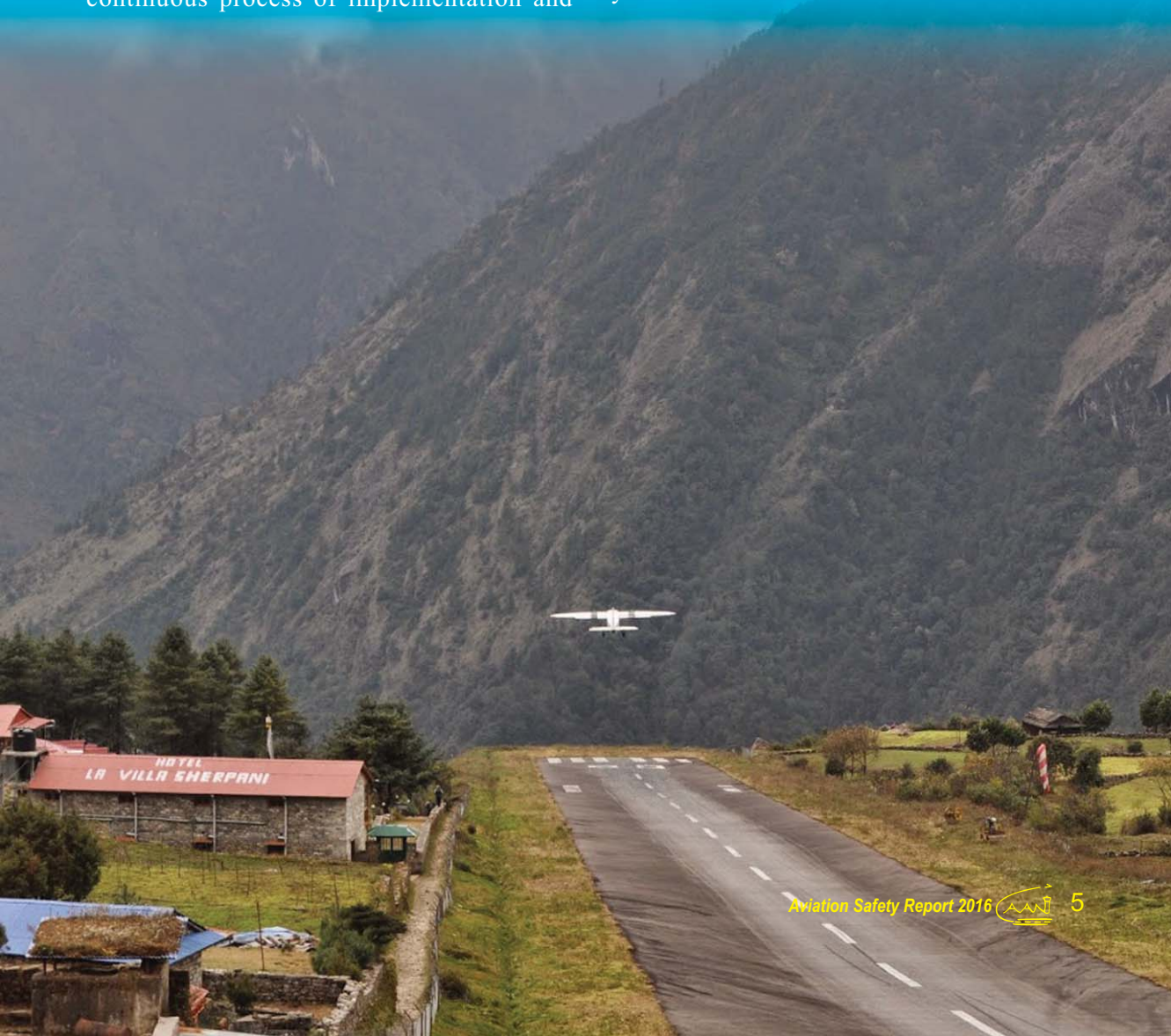
Nepal is the Himalaya nation renowned for its natural beauty, amazing flora and fauna, rich cultural and historical heritage and many more. Tourism is a high potential area that can play a significant role in the socio-economic development of the country. As a land-locked nation, air transportation is the only means to link the country to the outside world. Similarly, due to topographical constraints, a well-managed air transportation system is indispensable for the people living in remote areas of mountainous region to travel other parts of the country and airlift supply of essential goods and commodities.

Nepal constitutes a unique geographical feature coupled with adverse ever-changing weather phenomenon associated with the Himalayas and altitudinal variations. Among total of 50 airports of the country, including an international airport, 32 airports are in operations. Many airports in Nepal are lying either in the narrow valley of high mountain or on the top of hill with elevation ranging from 8000 feet to 10000 feet AMSL. Small turbo-prop aeroplanes like DHC-6 300/400, DO-228 and single engine aeroplanes operate in these airfields flying through uneven terrain and narrow gorges. So, flying to these vulnerable STOL airfields in such a hostile environment is very challenging in itself.

Safety

ICAO Annex 19 'Safety Management' defines 'Safety' as - 'the state in which risks associated with aviation activities, related to, or in direct support of the operation of aircraft, are reduced and controlled to an acceptable level.' To achieve an acceptable level of safety, service provider organizations are required to identify safety hazards, analyze associated safety risks and introduce appropriate mitigation measures under their respective Safety Management System (SMS). Deployment of an SMS is the best means of improving safety in service provider organizations. Safety management is not a onetime task to be accomplished rather it is the continuous process of implementation and improvement of safety components and its associated elements.

Safety management system is still in its initial phase of implementation in Nepal. Since CAAN is yet to implement State Safety Programme (SSP), the acceptable level of safety has not been established. CAAN has introduced specific safety measures based on safety defenses, such as, Regulation, Technology and Training keeping in view the ground realities of flying environment of the country. Accident rate and compliance of SARPs are considered as the safety indicators of civil aviation system in a State. CAAN is putting in its effort to strengthen its safety oversight capability in eight critical elements (CEs) of safety oversight system as prescribed by ICAO.



Aircraft Operations

Aircraft operations in Nepal can be categorized basically in four category as follows:

S.No.	Type of Operations	Number
1.	Schedule	
	International	3
	Domestic	7*
2.	Non-schedule	3
3.	Helicopter	8
4.	Recreational	3

* *Nepal Airlines and Buddha Air operate both international and domestic flight.*

Table 1: Aircraft Operations

Nepal Airlines, a State-owned carrier, operates internationally with B757 and A320 aircraft. Himalaya Airlines, a joint venture with Tibet Airlines of China, is a new international airline operating with A320 aircraft. Buddha Air, a major contributor in domestic front, is operating its regional flights to Varanasi, India, from Kathmandu with ATR-72 aircraft.

Domestic airlines operate with ATR-72/42, Jet Stream, CRJ 200, MA-60 and B1900C/D fleet on trunk-routes connected domestic airports situated in the plain areas. Whereas, small turbo-prop aircraft like DHC-6 300/400, DO-228, Y-12E, LET 410 operate mostly to STOL airfields situated in mountainous high altitude areas, ranging from 8,000 to 10,000 feet AMSL. Small single-engine aeroplanes C-208B and PAC 750XL operate passenger and cargo charter services mostly to and from remote airfields in the mountainous areas. These aeroplanes are not authorized to operate scheduled flights.

Helicopters are mostly engaged in high altitude rescue operations and also providing logistic support for needy trekkers and expeditions. Majority of helicopters operating in Nepal are AS350 series, BELL 206, AS332, MI 8 MTV/AMT, etc.

Recreational aviation is based in Pokhara, the most exotic tourist destination of Nepal. Small piston engine ultra-light aircraft are operating to support leisure tourism.

Air Traffic Movement

The chart 3 below depicts the movement of aircraft in domestic operations from 2006 to 2015, which shows a surge in aircraft movement from 2006-2010 by 30.36%, whereas from 2011 to 2015 it demonstrates a 16.9% decrease.

The highest downturn in air traffic movement recorded for 2014-2015 can be attributed to the massive earthquake that hit the country in April 2015 impacting the entire tourism industry significantly.

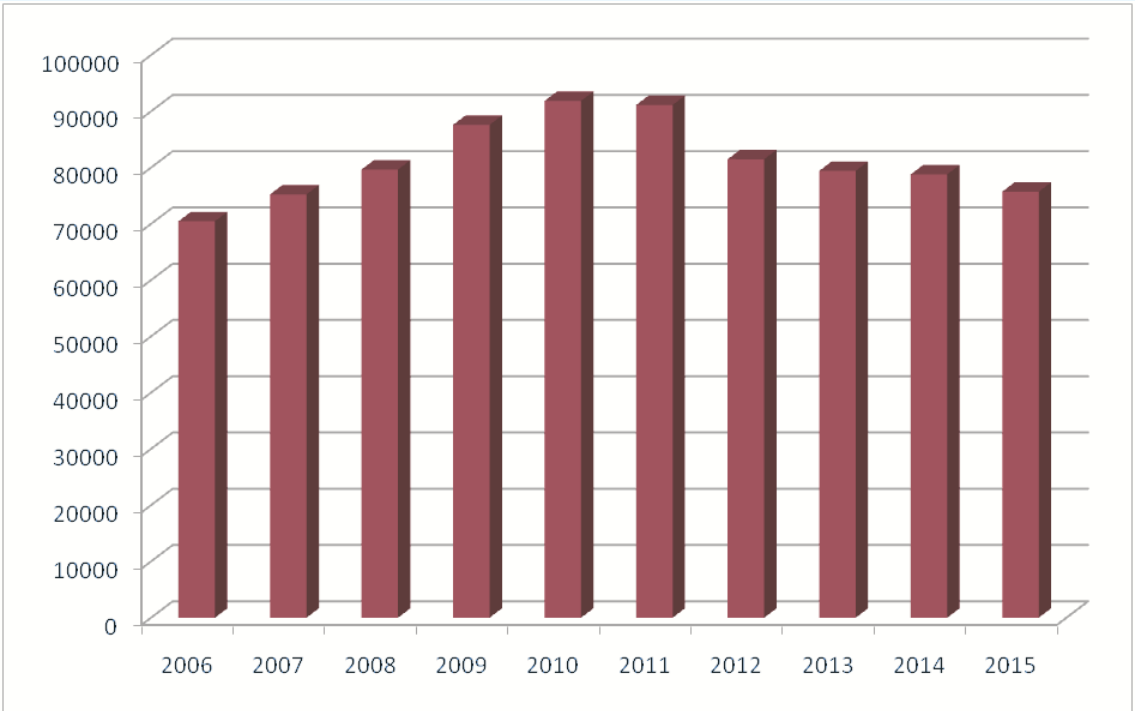


Chart 3: Domestic aircraft movement, 2006-2015

International aircraft movement shows that the otherwise increasing trend of annual aircraft movement has decreased by 2.36 % from 2014 to 2015. Though the 2014 figure surpasses the figure of 2013 by 12.46 %, the decrease in international aircraft movement in 2015 is also attributed in part to the devastating earthquake of April 2015.

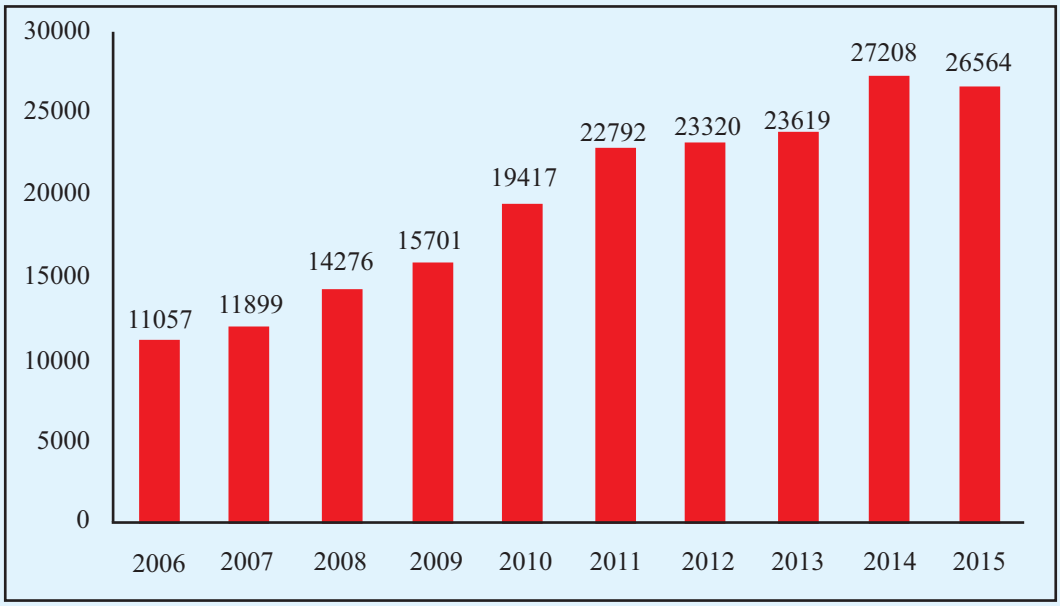


Chart 4: International aircraft movement, 2006-2015

Accident of Nepalese Registered Aircraft (2006-2015)

Accident data represented in the table above reveals that all accidents are associated with the aircraft with capacity of 19 seats or less. Such aircraft usually operate in the STOL fields which are 23 in number out of 33 in operation. Such airfields are located in the hilly and mountainous region rendering it difficult even for the most skilled pilots to fly free of challenges. Data reveal that the fatal accidents have not occurred on trunk routes connecting the controlled aerodromes.

Aircraft	No. of Accident	Fatality
Jet	Nil	Nil
Turbo-prop schedule aeroplane >19 seat	Nil	Nil
Turbo-prop multi-engine aeroplane ≤19 seat	11	134
Single-engine turbo-prop aeroplane	1	Nil
Helicopter	13	33
Recreational	2	4

Table 2: A cursory glance at aircraft accident with Turbo-Props

Accident of multi-engine turbo-prop aeroplane ≤ 19 seat

This type of scheduled passenger operations is carried out by DHC-6 and DO-228 aircrafts in remote airfields located in the mountainous region. The majority of accidents and resulting fatalities is associated with such type of operations.

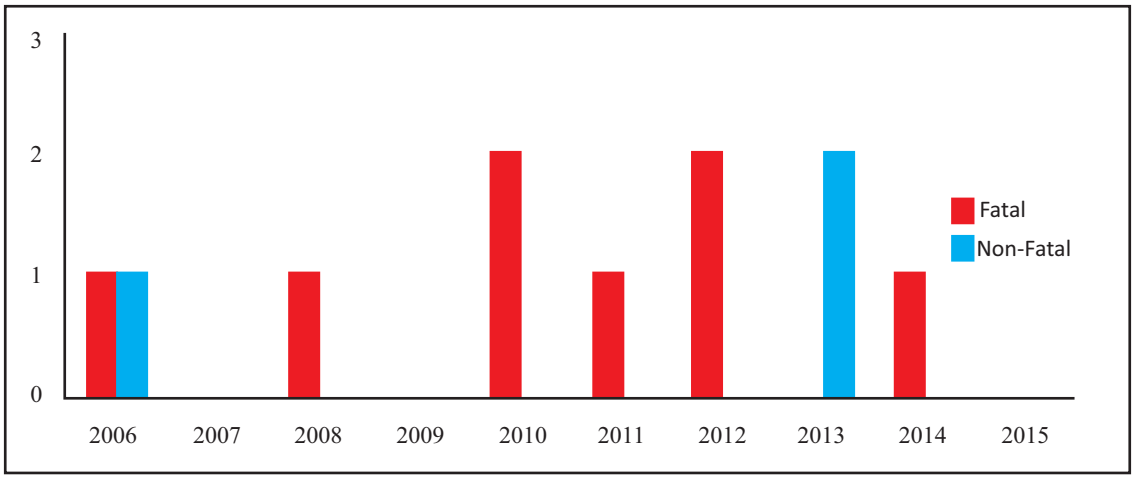


Chart 5: Accident of multi-engine aircraft with ≤19 seat

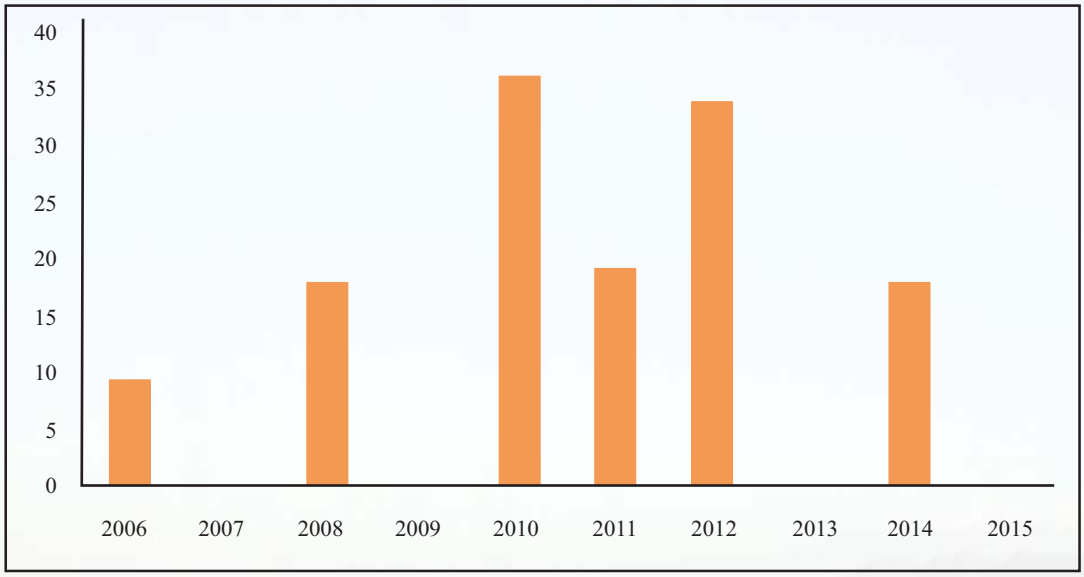


Chart 6: Fatality

Out of 11 accidents involving turbo-prop aeroplanes relating to the schedule operations, 8 met with fatal accidents which claimed 134 lives.

In 2016 there was an accident of a DHC-6/400 aircraft engaged in scheduled operations where 23 people lost their lives.

Accident of turbo-prop aircraft involved in charter operations

This category of operation is related to the single engine aeroplane. Single engine aeroplanes are not authorized to operate scheduled flights. They are more confined to rendering charter and cargo operations in remote airfields. There were a total of 7 accidents recorded during the period of 1961 to 2016 till August. They are presented in Chart 7 below:

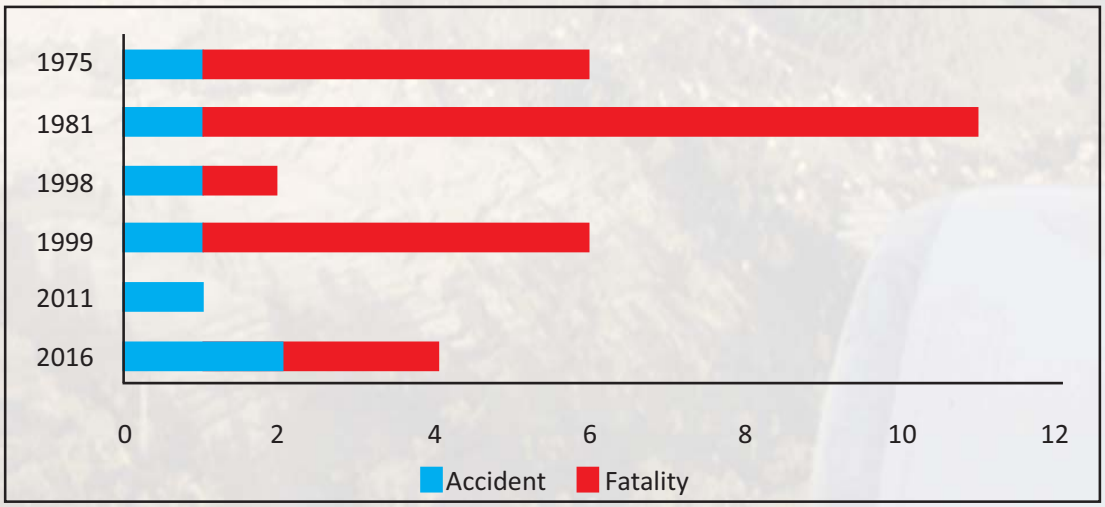


Chart 7: Accident vs Fatality

Accident in Helicopter operation

Helicopters are mostly operated in high altitude rescue missions and logistic transportation for trekking and expeditions. Apparently, the risk associated with such operations is comparatively higher.

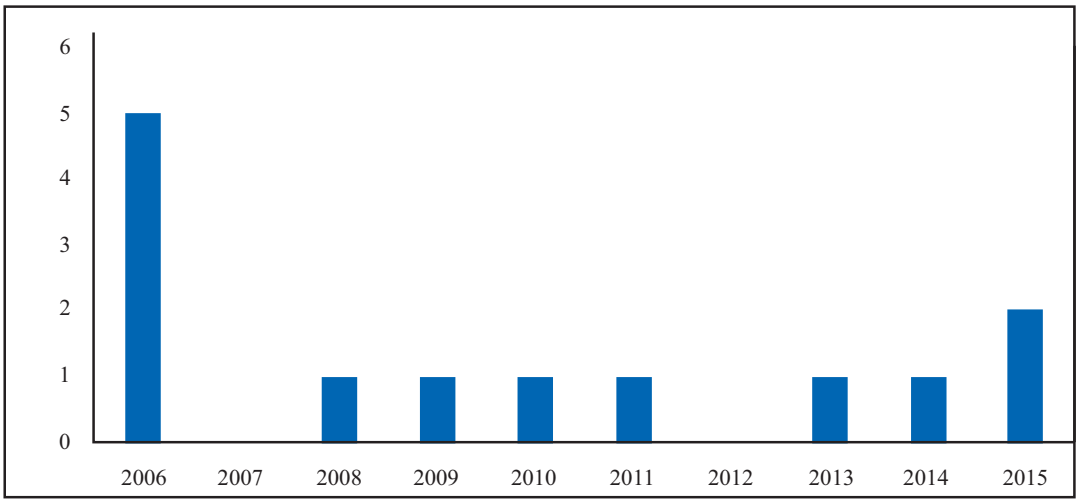


Chart 8: Helicopter accidents

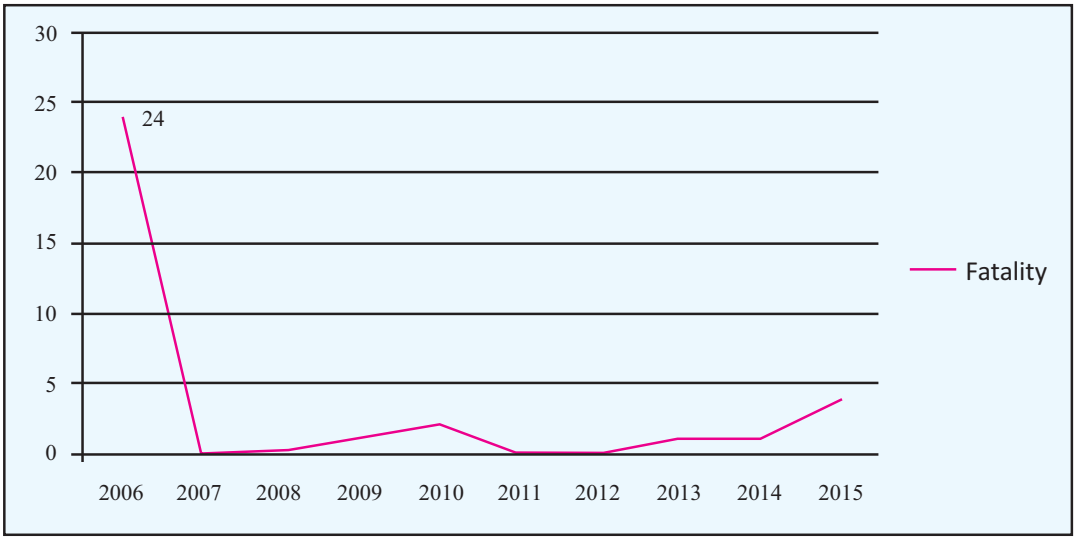


Chart 9: Fatality trend in Helicopter accidents

There were a total of 13 helicopter accidents during the period of 2006-2015. Among these 13 accidents, 6 accidents were fatal and 7 accidents were non-fatal. A total of 33 persons died in these 6 accidents during the period of ten years.

Nepal witnessed the year 2015 with a sudden increase in the number of accidents and fatality relating to helicopter operations. The tremendous rise in the number of helicopter movement that year was inevitable for the State to dispense relief and support helicopter services in favour of victims of the devastating earthquake of April 2015.

High Risk Category Accidents

ICAO has classified high risk accident in three categories as follows:

- Runway Safety (RS)
- Loss of Control (LOC)
- Controlled Flight Into Terrain (CFIT)

Among them, Runway Safety which implies a safe flight — both at its start and at its conclusion, continues to be one of the major contributors to accidents and incursions, whereas CFIT is the least contributor in total global accidents as identified by ICAO Contrary to this universal, causes of most air accidents in Nepal are contextually situated. In Nepal, CFIT still remains the major contributor to the total aircraft accident and fatality relating to the multi- engine turbo-prop aircraft having seating capacity at or below 19 seats. Among the 12 accidents recorded during the past 10 years and including the accident of the year 2016 till August, 5 accidents were related to CFIT which resulted in 100 fatalities.

In contrast to the world accident trend, the accidents related to Runway Safety was the lowest one i.e. 3 accidents with zero fatality. Whereas LOC related accidents were largest after CFIT with a total of 4 accidents and 57 fatalities.

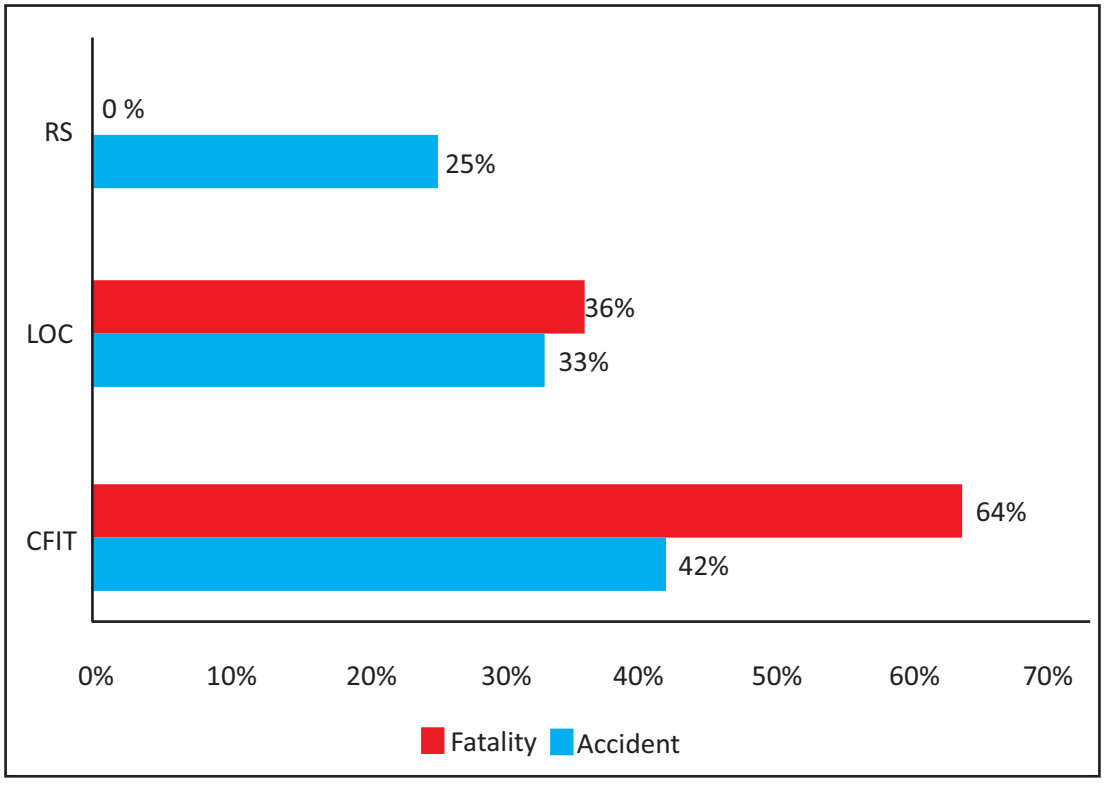


Chart 10: High risk category accident vs fatality

Challenges of aircraft operations in Nepal

Challenges of Aircraft operations in terms of safe flying emanate from various intersections of contributing factors. This entails considerations of various parameters which include aircraft type, size of fleet, flying environment associated with remote and trunk route destinations, human factors, etc.

CFIT: the major contributor to accidents

Accounting for assessments on the high risks associated with flight operations, controlled flight into terrain (CFIT) still remains the major contributor to various aircraft accidents and fatality. Chart 10 illustrates that 42 % of accidents during the past 10 years are ascribed to CFIT related, with 64 % fatality.

Accidents-turbo-prop aircrafts with ≤ 19 seats

Accident data of the last 10 years reveals that aircraft accidents relating to the schedule passenger operations are confined to small twin-engine turbo-prop aircraft with passenger capacity ≤ 19 seat rather than aircraft with over 19 seat capacity operating on trunk routes to and from Kathmandu.

Hostile terrain and weather phenomenon

Nepal's high mountainous topography poses a serious challenge to the safe aircraft operations. Majority of CFIT accident occurred while operating in airfield located in high altitude terrains during bad weather conditions.

High altitude STOL operations

People living in the remote, hilly and high altitude regions have no other options than air transport. Airfields in these regions can be appropriately termed as ALTIPORTS rather than STOLPORTS. Air strips in these airfields constitute high gradient and permits one way approach. Go around execution in many such fields are either prohibited or strictly discouraged.

Unavailability of en route weather information

Aircraft has to rely on destination airports and other airports for the en route weather information. However, in the flight sectors of many remote areas, there are no alternatives to receive en route weather. Subjective way of anticipating and predicting the weather is the norm for all pilots to follow. At several crucial junctures, entanglement in adverse *en route* weather conditions is very likely, creating a threat for them to conduct safe maneuver.

Limitation associated with VFR operations

In VFR flight operations, pilots have to rely on their innate capacity to assess the weather phenomenon. While flying to and from a remote STOL airfield located in the mountainous region, pilots have to fly along the narrow gorges and passes where in case of any judgment error on their part aggravated by a bad weather encounter en-route, even a narrow escape may be impossible.

Safety Measures to reduce accident

CRM and CFIT reduction training

CRM is an effective mechanism for flight crew personnel to assure safe and resourceful operation, error reduction, stress avoidance and efficiency enhancement by utilizing all available resources. CAAN has made mandatory provision of CRM and CFIT reduction training for flight crews. They must have met requirements on CRM prior to renewal of their licenses.

Installation of EGPWS and Aircraft tracking system

CAAN has made provision of EGPWS for all twin-engine aircraft engaged in domestic schedule operations as required by Flight Operations Requirements (Aeroplane). Similarly, Aircraft tracking system has been introduced in helicopter operations.

Stringent pilot license requirements

CAAN has introduced some stringent requirements in the personnel licensing procedures regarding high altitude operations. Airfields are categorized in terms of elevation and pilot clearance requirements have been introduced accordingly. CAAN has introduced mandatory ATPL theoretical knowledge requirement for co-pilots to fly Nepalese registered multi-engine aeroplanes.

Strict provision for Visual Flight Rules (VFR)

Operations under VFR in Nepal are unavoidable due to various constraints such as topography, limited air space at most of remote destinations, and non feasibility of installing relevant Navigational facilities and development of IFR based departures and arrivals procedures. Care has to be taken by pilots while flying visually in bad weather condition. Aircraft accidents over the last 10 years show that these accidents occurred while operating flights under VFR. So, CAAN has introduced strict regulations against the violation of VFR. Accordingly, pilots shall not take unnecessary risk unless the flight is inherently safe.

Human Factors training in aircraft maintenance

Due to the nature of operations and the operant conditions of the environment, performance of aircraft needs to be maintained without any deficiencies left behind. CAAN has introduced human factors training in aircraft maintenance as part of continuation training.

Safety awareness programme

Highly localized safety awareness programme such as National Aviation Safety Campaign, Monsoon seminars and High-Tension wire-strike awareness programmes are being regularly organized in collaboration with airline industry and other partners. Such programmes have been fruitful in providing insights and practical knowledge on situational awareness in local context of flying.

Implementation of safety recommendations

Majority of recommendations of aircraft accident investigation shows that there are many common factors on these accidents. CAAN has thoroughly assessed the investigation reports and focused to address in deficient areas. It has been found that 71 % of these recommendations have already been complied with. Non-compliance of the remaining ones is ascribed to either their non-applicability, provisions already in existence or not relevant. The implementation status of safety recommendations made by accident investigation commissions is as follows:

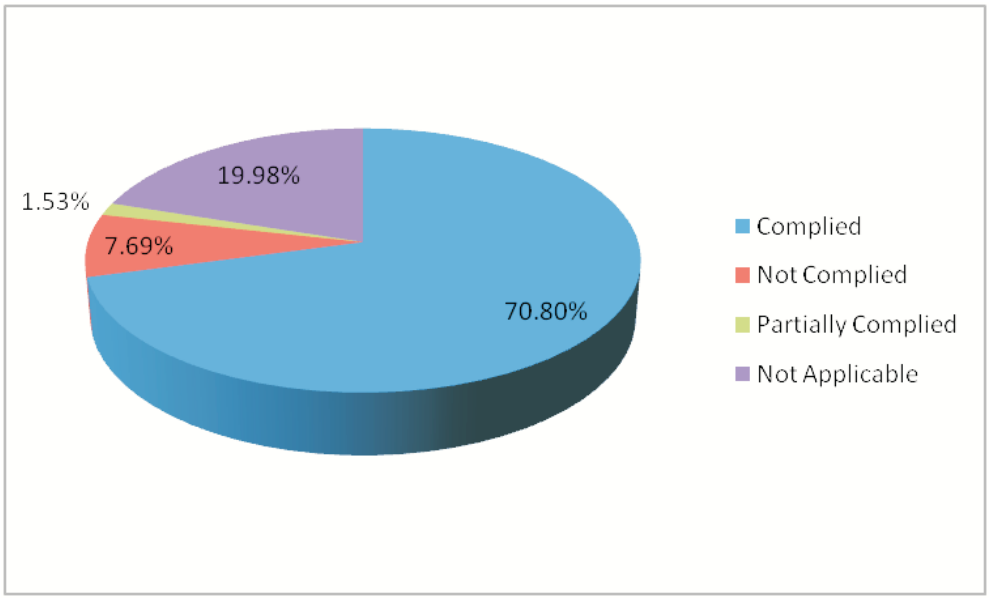


Chart 11: Implementation status of safety recommendations to CAAN

USOAP Audit

32nd session of the ICAO Assembly held in 1998 through Resolution A32-11mandated ICAO to carry out safety oversight audit of its Member States under Universal Safety Oversight Audit Programme (USOAP). Through USOAP ICAO assesses the implementation status of safety-related Standards and Recommended Practices, associated procedures, guidance material and practices by its Member States.

The audit programme assesses the eight core areas of safety oversight system of Member States. These eight areas are Primary Aviation Legislation and associated civil aviation regulations, Civil Aviation Organizational structure, Personnel Licencing activities, Aircraft Operations, Airworthiness of civil aircraft, Aerodromes, Air Navigation Services and Accident and Serious incident investigations. USOAP audit results are considered as an benchmark of the status of safety in a State.

USOAP Audit May 2009

The USOAP audit of the civil aviation system of Nepal conducted from 5-14 May 2009 generated an overall Effective Implementation (EI) of 43 % for the eight critical elements (CEs) of the State.

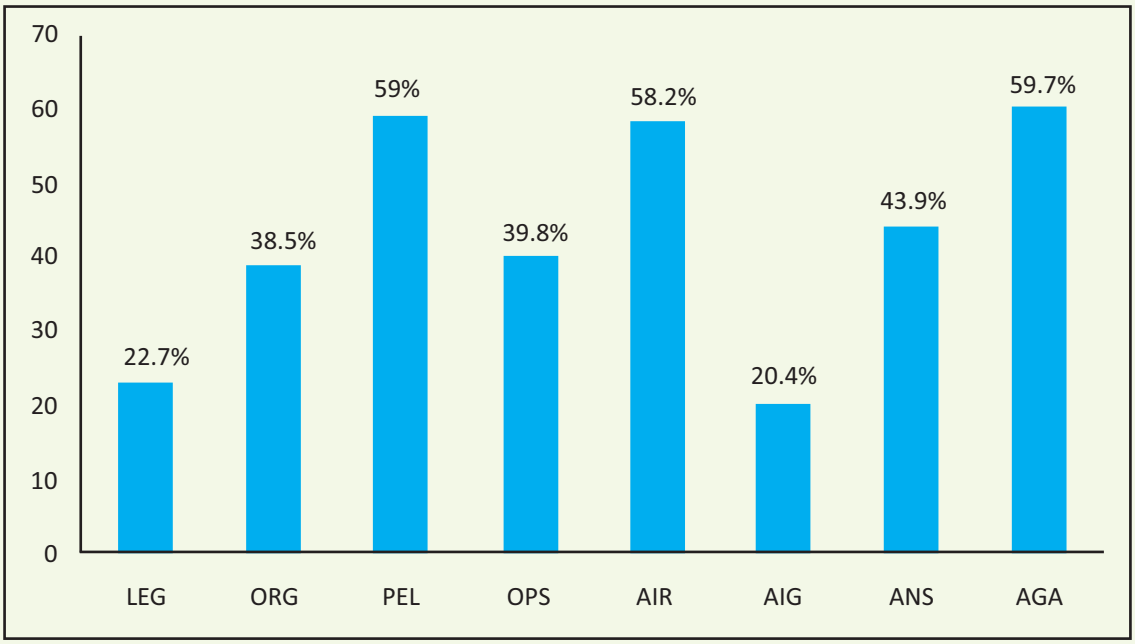


Chart 12: EI in audit areas in 2009

ICVM July 2013

In September 2007, the ICAO Assembly Resolution A36-4 established a new approach to be applied in the USOAP beyond 2010 which is based on the concept of a Continuous Monitoring Approach (CMA). The ICVM of Nepal under CMA was conducted from 10 to 16 July 2013. The ICVM team reviewed the progress in resolving 342 PQs in the areas of LEG, ORG, PEL, OPS, AIR, ANS and AGA. Following this review, the status of 69 PQs was changed to satisfactory and that of 1 PQs to not applicable, which resulted in an updated EI of 55 %. The scope of the mission did not include the area of AIG.

The certification process for the issuance of air operator certificates is the only one SSC ICVM has raised in the area of OPS. In response to resolve this SSC, certification has been enacted based on compliance requirement of ICAO 5 phase certification process.

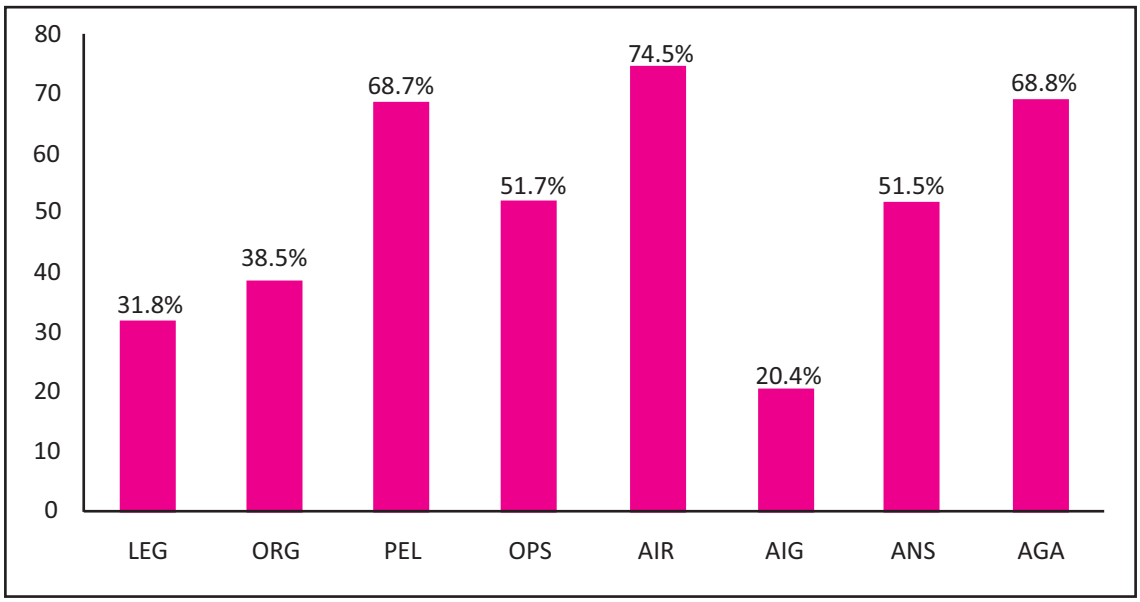


Chart 13: EI after ICVM in 2013

Offsite Validation 2016

ICAO conducts off-site validation based on update made by State in Online-framework (OLF). However, such validation is limited to the progress made by State in those PQs of CEs 1 to 5 where on-site validation is not required. The actual progress in EI will only be revealed after next-cycle of ICVM.

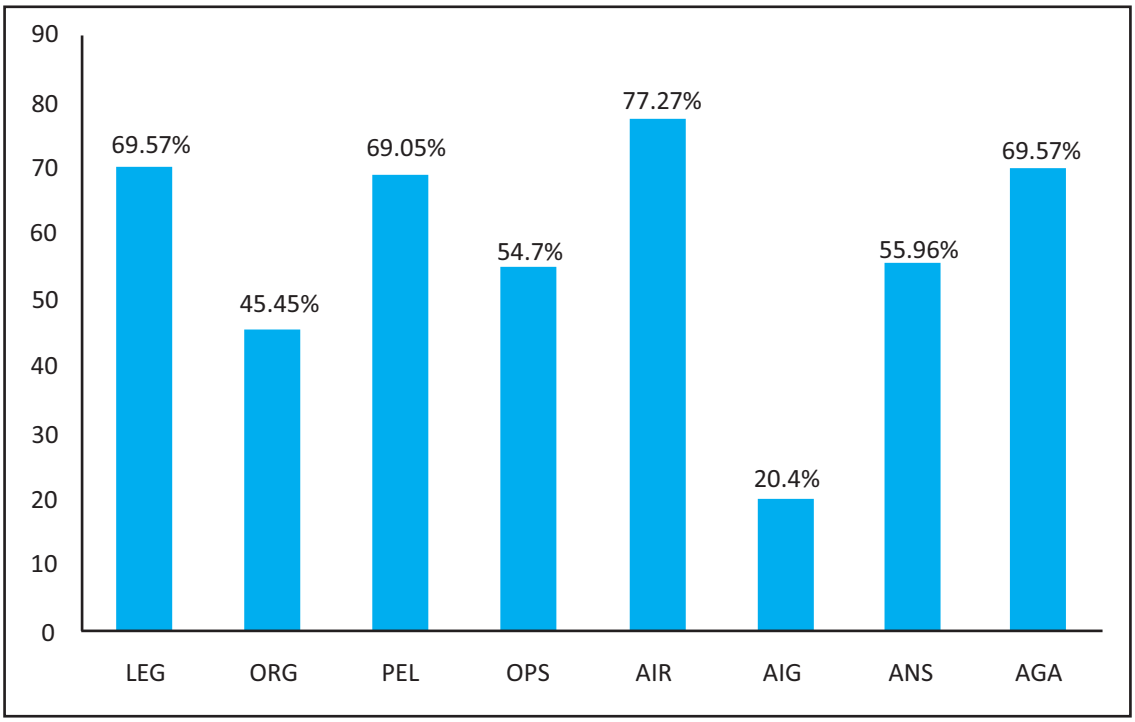


Chart 14: Offsite validation-tentative EI status 2016

Comparative Chart

The EI score represents the percentage of satisfactory USOAP protocol questions applicable for a given State in respect of 8 CEs. The effective implementation for each area of Audit in respect of Nepal is comparable against the global average standing depicted in chart 15.

Nepal's position against the global average is encouragingly greater in the areas of Legislation (69.57%), Airworthiness (77.27%), Air Navigation (55.96%) and Aerodrome (69.57%). However, without being complacent with these encouraging figures, CAAN is rather committed to implement all areas effectively, while also addressing and resolving other safety issues.

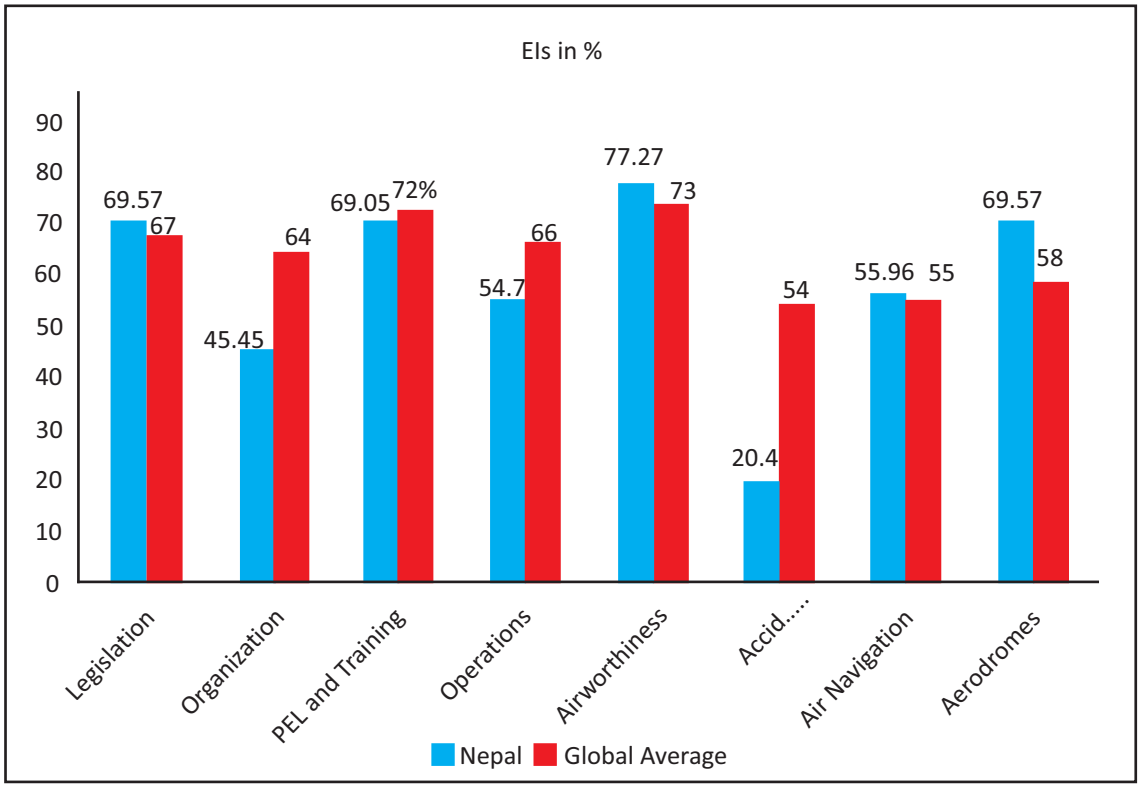
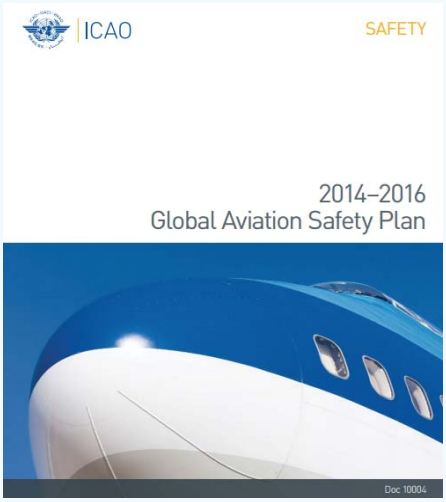


Chart 15: Comparison of EIs

Safety Strategies

ICAO Global Aviation Safety Plan (2014-2016)

ICAO Global Aviation Safety Plan (GASP) sets out a continuous improvement strategy for States to implement over the next 15 years through the establishment of core, and then more advanced, aviation safety systems. The target dates and the broad objectives are set out below:



Target Date	Broad Objective
Near-Term (by 2017)	Implementation of an effective safety oversight system
Mid-Term (by 2022)	Full implementation of the ICAO State safety programme framework
Long-Term (by 2027)	Advanced safety oversight system including predictive risk management

Near- Term Objective

The first near-term objective

States lacking fundamental safety oversight capabilities to achieve an effective implementation rate above the current global average.

The second near-term objective

States currently having EI rates above the global average to achieve full SSP implementation, thereby addressing risks specific to their aviation systems.

The third near-term objective

This near-term objective addresses safety managed regionally by encouraging all States and stakeholders to put in place mechanisms for the sharing of safety information in RASGs and other regional or sub-regional fora.

The mid-term objective

GASP objective is for all States that have not done so, to fully implement the SSP components no later than 2022. Additionally, RASGs should continue to mature with regional monitoring and safety management programmes.

The long-term objective

In the long term, States will build upon safety manage-ment practices within the SSP to develop predictive risk controls necessary to support real-time collaborative decision-making processes that will become integral to future aviation systems. The objectives are sequenced to advance the implementation of SSP and SMS proactive safety management principles as a foundation for the introduction of predictive risk-modelling capabilities necessary to support the aviation systems of the future.

Safety Strategies of Nepal

Both the regulator and industry have specific parts to play in the State aviation safety system. It is the regulator's role to provide requirements and conduct oversight but, in the end, it is for industry to ensure that its compliant operations are conducted safely and the primary responsibility for this rests with the Accountable Manager of the organization concerned.

Eight critical elements of safety oversight system

CAAN as Regulator

In accordance to the GASP, CAAN has focused its efforts on the near-term objective. To strengthen the safety oversight capability, CAAN is actively engaged to improve in the area of 8 critical elements of safety oversight system as recommended by ICAO. With the implementation of these CEs, a state's safety oversight system can be approximated. CAAN commits to perpetually making its regulatory oversight activities more adequate to satisfy safety requirements and needs of the State and ICAO. To that end, the following strategies have been adopted in line with ICAO recommendations.

- Strengthen safety oversight capabilities
  - Improvise the legal framework
  - Strengthen organization
  - Hire and retain qualified technical manpower
  - Increase surveillance
  - Effective Enforcement
- Attain above 60% EI in USOAP
- Alleviate SSC in forthcoming ICVM
- Implement State Safety Programme (SSP)

Airline Operator/Service Provider

Airline Operators and other service providers are required to deliver service in accordance with the operations specifications of their certificate and existing regulatory requirements. To that end they have to follow the following imperatives:

- Improve regulations in line with regulatory requirements
- Hire and train personnel
- Strictly adhere to the regulations
- Implement Safety Management System (SMS)
  - Safety policy and objectives
  - Safety risk management
  - Safety assurance
  - Safety promotion

International cooperation

SARI: South Asia Regional Initiative (SARI) is a forum developed at the outset of the EU-SA Civil Aviation Project aiming at the harmonization of safety regulations and working procedures among the countries in the region. In line with EASA regulations, the SARI members have confirmed their commitment to develop and implement maintenance regulations based on the EASA Parts and to work towards the harmonization of these national regulations. Accordingly Part 145, Part M, Part 66 and Part 147 have been implemented and Part 21 is in the process of implementation.

COSCAP-SA:

Cooperative Development of Operational Safety and Continuing Airworthiness Programme - South Asia is a regional cooperation progrmme to strengthen safety, regularity and efficiency in civil aviation among seven South Asian Nations. The programme commenced in February 1998 under the cooperative agreement signed between the Civil Aviation Authorities of Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan and Sri Lanka. Airbus, Boeing, FAA, EASA, Transport Canada, IFFS - ICAO are 'Partners' and supports the activities of COSCAP-SA. Various Technical Assistance Missions and Training activities are being carried out on regular basis under this programme.

ICAO SAFE Fund: SAFE Fund is an initiative of ICAO to improve the safety of civil aviation by addressing serious safety deficiencies in countries which lack the financial means to do so, as well as by providing ICAO with the management reserve required to act immediately and effectively on urgent safety issues and in response to unforeseen events. Nepal and ICAO signed an agreement on 'Project NPL 15801' in 23 April 2015 to strengthen the safety oversight capability of Civil Aviation Authority of Nepal.

The scope of this Project is to provide technical experts to assist Nepal to resolve the Safety Concerns and other safety deficiencies identified during the USAOP ICVM focusing on areas of OPS, AIR and PEL.

Reform in Civil Aviation System

Department of Civil Aviation (DCA) was established in 1959. DCA was transformed into an independent Civil Aviation Authority of Nepal (CAAN) in 1998.

The current status of Civil Aviation Authority of Nepal (CAAN) is that it is not only assuming the role of Regulator of aviation activities, it is also assuming the role of service provider in the areas of Aerodrome Operations and Air Navigation Services.

In 2012, ICAO Council President Mr. Roberto Kobeh Gonjalez made his State visit to Nepal. During his visit, Mr. Kobeh made courtesy call with the Hon. President of Nepal, Hon. Prime Minister, Hon. Minister for Culture, Tourism and Civil Aviation, Secretaries and high ranking officials at CAAN. During his visit Nepal made commitment to separate service provider functions from CAAN, strengthen safety oversight capability of the regulator and review the legal frameworks in line with Chicago Conventions and other ICAO Regulations.

As part of major reformative efforts, Capacity Development Project has been launched since 2013. This Project drafted an Integrated Civil Aviation Act, 2072 (2015) and other related documents including Organization Structures, Business Plan, Air Transport Plan, MIS etc required for Civil Aviation Authority of Nepal and Airports and Air Navigation Services.

Towards separating Aerodrome Operations and Air Navigation Services from the regulatory functions of CAAN, a new Civil Aviation Act has been drafted and is in its final stage of review at the Ministry of Culture, Tourism and Civil Aviation.

Acronyms

AGA	Aerodromes
AIG	Accident Investigation
AIR	Airworthiness
AMSL	Above Mean Sea Level
ANS	Air Navigation Services
ATPL	Airline Transport Pilot License
CAAN	Civil Aviation Authority of Nepal
CEs	Critical Elements
CFIT	Controlled Flight into Terrain
CMA	Continuous Monitoring Approach
COSCAP-SA	Cooperative Development of Operational Safety and Continuing Airworthiness Programme – South Asia
CPL	Commercial Pilot License
CRM	Crew resource management
EASA	Europian Aviation Safety Agency
EGPWS	Enhanced Ground Proximity Warning System
EI	Effective Implementation
GASP	Global Aviation Safety Plan
ICAO	International Civil Aviation Organization
ICVM	ICAO Coordinated Validation Mission
LEG	Legislation
LOC	Loss of Control
OLF	Online -Frame work
OPS	Operation
ORG	Organization
PEL	Personnel Licensing
PQs	Protocol Questions
RASG	Regional Aviation Safety Group
RS	Runway Safety
SARI	South Asia Region Initiatives
SARPs	Standards and Recommended Practices
SMS	Safety Management System
SSC	Significant Safety Concern
SSP	State Safety Programme
STOL	Short Take-off and Landing
USOAP	Universal Safety Oversight Audit Programme
VFR	Visual Flight Rule

Appendix-1

Operating Airlines and fleet

S.No.	TYPE OF OPERATION / OPERATOR	A/C TYPE
A.	SCHEDULE	
	INTERNATIONAL OPERATION	
	1. Nepal Airlines	A320-233, B757-200
	2. Himalaya Airlines	A320-214
	3. Buddha Air	ATR72-212A
	DOMESTIC OPERATION	
	1. Buddha Air	ATR72-212A, ATR42-320 BEECH-1900D
	2. Goma Air	LET 410 UVP-E20 C208B
	3. Nepal Airlines	DHC 6/300, Y 12E MA 60
	4. Simrik Airlines	DO-228-202K, DO-228-212 BEECH 1900C
	5. Sita Air	DO-228-202K
	6. Tara Air	DHC6-300, DHC6-400 DO-228-212
	7. Yeti Airlines	JETSTREAM 4100
B.	NON SCHEDULE	
	1. Air Kasthamandap	PAC 750XL
	2. Makalu Air	C208B
	3. Saurya Airlines	CRJ 200
C.	HELICOPTER	
	1. Air dynasty	AS350BA, AS350B2 AS350B3e
	2. Fishtail air	BELL-206B AS 350B3e
	3. Manang Air	AS350B3e
	4. Mountatin Helicopters	AS350B2, AS350B3e EC 130B4
	5. Prabhu Helicopters	R44 II, R 66
	6. Shree Airlines	MI 8 AMT, MI 8 MTV1 AS350B3e
	7. Simrik Air	AS350B3e
	8. VVIP	BELL-206-L3, BELL-206-L4 AS-332L1
D.	RECREATIONAL	
	1. Avia Club Nepal	BIMAN-1M, EDGE X Classic CRUISE 582, Dragonfly A-22L, A-22L2
	2. Fishtail Ultra Flight	Quik GT 450
	3. Pokhara Ultralight	Ikarus C42B Aeros 2

Accident of Nepalese registered turbo-prop multi-engine Aeroplanes

S.N.	Date	Registration	Type of A/C	Operator	Operation	Place	Fatality	Survival
1	11/05/1961	9N-AAD	DC-3	Nepal Airlines	Scheduled	Bhairahwa	4	None
2	14/05/1973	9N-ABG	DHC-6/300	Nepal Airlines	Scheduled	Lukla	None	
3	22/12/1984	9N-ABH	DHC-6	Nepal Airlines	Scheduled	Cheklatidanda	15	8
4	02/05/1986	9N-ABI	DHC-6	Nepal Airlines	Scheduled	Sanfebagar Airport	None	
5	19/08/1987	9N-ABB	DHC-6	Nepal Airlines	Scheduled	Dolpa	None	
6	09/06/1991	9N-ABA	DHC-6	Nepal Airlines	Scheduled	Lukla	None	
7	26/09/1992	9N-ACI	Y-12	Nepal Airways	Scheduled	Lukla	None	
8	08/11/1993	9N-ACS	Y-12 II	Nepal Airways	Scheduled	Jomsom	None	
9	31/07/1993	9N-ACL	DO-228	Everest Air	Scheduled	Solighopte	18	None
10	14/01/1995	9N-ABI	DHC-6	Nepal Airlines	Scheduled	Kathmandu Airport	2	23
11	15/07/1995	9N-ADB	Y-12	Nepal Airways	Scheduled	Bharatpur	None	
12	25/04/1996	9N-ABR	HS-748	Nepal Airlines	Scheduled	Meghauli	None	
13	23/12/1996	9N-ACF	Y-12	Nepal Airways	Scheduled	Dolpa	None	
14	05/09/1999	9N-AEG	HS-748	Necon Air	Scheduled	Thankot, Kathmandu	15	
15	25/12/1999	9N-AFL	DHC-6	Skyline Airways	Scheduled	Burjo Lake, Makwanpur	10	
16	26/02/2000	9N-ABO	DHC-6	Nepal Airlines	Scheduled	Bajhang	1	
17	27/07/2000	9N-ABP	DHC-6	Nepal Airlines	Scheduled	Jogbuda, Dadeldhura	25	None
18	03/11/2000	9N-ACV	DO-228	Gorkha Airlines	Scheduled	Lukla	None	
19	19/11/2000	9N-AFS	DO-228	Cosmic Air	Scheduled	Tumlingtar	None	
20	05/04/2001	9N-AEV	DHC-6/300	Yeti Airlines	Scheduled	Tumlingtar	None	
21	17/07/2002	9N-AGF	DHC-6/300	Skyline Airlines	Scheduled	GadgadeDanda, Surkhet	4	None
22	22/08/2002	9N-AFR	DHC-6/300	Shangrila Air	Scheduled	Pokhara	18	None
23	21/04/2004	9N-AEK	B 1900D	Buddha Air	Scheduled	TIA Airport	1	None

24	25/05/2004	9N-AFD	DHC-6/300	Yeti Airlines	Scheduled	Lamjura, Solukhumbu	3	None
25	30/06/2005	9N-AEO	DO-228	Gorkha Airlines	Scheduled	Lukla Airport	None	
26	12/06/2006	9N-AEQ	DHC-6/310	Yeti Airlines	Scheduled	Jumla Airport	9	None
27	03/07/2006	9N-AFE	DHC-6/310	Yeti Airlines	Scheduled	Bajura Airport	None	
28	08/10/2008	9N-AFE	DHC-6/300	Yeti Airlines	Scheduled	Lukla Airport	18	1
29	24/08/2010	9N-AHE	DO-228	Agni Air	Scheduled	Sikharpur, Makawanpur	14	None
30	15/12/2010	9N-AFX	DHC-6/300	Tara Air	Scheduled	Okhaldhunga,	22	None
31	25/9/2011	9N-AEK	Beech 1900D	Buddha Air	Scheduled	Kotdanda, Lalitapur	19	Nome
32	14/5/2012	9N-AIG	DO-228	Agni Air	Scheduled	Jomsom Airport	15	6
33	28/9/2012	9N-AHA	DO-228	Sita Air	Scheduled	Manohara, Bhaktapur	19	None
34	16/5/2013	9N-ABO	DHC-6/300	Nepal Airlines	Scheduled	Jomsom Airport	None	
35	01/06/2013	9N-AHB	DO-228	Sita Air	Scheduled	Simikot Airport	None	
36	16/02/2014	9N-ABB	DHC-6/300	Nepal Airlines	Scheduled	Masinelek, Arghakhanchi	18	None
37	24/02/2016	9N-AHH	DHC-6/400	Tara Air	Scheduled	Dana, Myagdi	23	None

Accident of Nepalese registered single-engine Aeroplanes

S.N.	Date	Registration	Type of A/C	Operator	Operation	Place	Fatality	Survival
1	31/03/1975	9N AAZ	PC-6	Nepal Airlines	Charter	Bouddha, Kathmandu	5	None
2	30/10/1981	9N ABJ	PC-6	Nepal Airlines	Charter	Biratnagar	10	None
3	20/11/1998	9N ABK	PC-6/B2-H4	Nepal Airlines	Charter	Phakding	1	None
4	17/01/1999	9N ADA	C208	Necon Air	Charter	Jumla	5	7
5	21/11/2011	9N AJM	C208	Makalu Air	Cargo	Talcha Airport, Mugu	None	
6	26/02/2016	9N AJB	PAC750XL	Air Kashthamandap	Charter	Chilkhaya, Kalikot	2	9
7	04/08/2016	9N AKC	C208B	Makalu Air	Charter	Heldung Khola, Humla	None	

Accident of Nepalese registered helicopters

S.N.	Date of Accident	A/C Reg. No.	Type of A/C	Operator/Owner	Place of Accident	Fatality	Survival
1	27/12/1979	9N-RAE	Allutte-III	VVIP	Langtang	6	None
2	27/04/1993	9N-ACK	Bell-206	Himalayan Helicopter	Langtang	None	
3	24/01/1996	9N-ADM	MI-17	Nepal Airways	Sotang	None	
4	30/09/1997	9N-AEC	AS-350	Karnali Air	Thupten Choling	1	4
5	13/12/1997	9N-ADT	MI-17	Gorkha Airlines	Kalikot	None	
6	04/01/1998	9N-RAL	Bell-206	VVIP Flight	Dipayal		
7	24/10/1998	9N-ACY	AS-350B	Asian Airlines	Mul Khark	3	None
8	30/04/1999	9N-AEJ	AS-350BA	Karnali Air	Lisunkhu, Sindhupalchowk	None	
9	31/05/1999	9N-ADI	AS-350B2	Manakamana Airways	Ramechhap	None	
10	11/09/2001	9N-ADK	MI-17	Air Ananya	Mimi	None	
11	12/11/2001	9N-AFP	AS-350B	Fishtail Air	Rara Lake, Mugu	4	2
12	12/05/2002	9N-AGE	AS 350B2	Karnali Air	Makalu Base Camp	None	
13	30/09/2002	9N-ACU	MI-17 (MI8-MTV)	Asian Airlines	Sholumkhumbu*	None	
14	28/05/2003	9N-ADP	MI-17 IV	Simrik Air	Everest Base Camp	2	6
15	04/01/2005	9N-AGG	AS-350BA	Air Dynasty Heli Service	Thhose VDC, Ramechhap	3	None
16	02/06/2005	9N-ADN	MI-17	Shree Airlines	Everest Base Camp	None	
17	07/05/2006	9N-ADT	MI-17 MTV1	Heli Hansa Services	Dhawalagiri Base Camp	None	
18	08/08/2006	9N-AGS	MI-17	Karnali Air	TI Airport, KTM	None	
19	03/09/2006	9N-ACR	AS-350BA	Air Dynasty Heli Service	Dhawalagiri Base Camp	None	
20	23/09/2006	9N-AHJ	MI-17	Shree Airlines	Ghunsa, Taplejung	24	None
21	23/11/2006	9N-ADO	MI-17	Simrik Air	Raralihi, Jumla	None	
22	29/06/2008	9N-AIA	AS-350	Fishtail Air	Annapurna Base Camp	None	
23	15/11/2009	9N-AHT	MI-8	Manang Air	Rudikot, Humla District	1	5
24	07/11/2010	9N-AIX	AS 350B3	Fishtail Air	Amadablam Mountain	2	None
25	29/11/2011	9N-AIK	AS 350B	Fishtail Air	Solukhumbu	None	
26	19/06/2013	I-VIEW	AS 350B3	Fishtail Air	Simikot, Muchu	1	5
27	03/08/2014	9N-AJI	AS 350B3	Fishtail Air	Sindhupalchok	1	None
28	02/06/2015	9N-AJP	AS 350B3	Mountain Helicopter	Yamuna Danda, Sindhupalchok	4	None
29	22/06/2015	9N-AKF	AS 350B3e	Simrik Air	Samdo, Gorkha	None	
30	17/03/2016	9N-AJI	AS 350B3	Fishtail Air	Langtang	None	
31	08/08/2016	9N-AKA	AS 350B3	Fishtail Air	Betani, Nuwakot	7	None

Foreign Aircraft Accident in Nepal

S.No.	Date	Registration	Type	Category	Airline	Place	Fatality	Survival
1	08/03/1955	VT-AZX	DC-3	Fixed	Kalinga Air	Simara	2	1
2	15/05/1956	VT-DBA	DC-3	Fixed	Indian airlines	Kathmandu	14	19
3	24/03/1958	VT-CYN	DC-3	Fixed	Indian Airlines	Patnebhnajyang	20	None
4	31/07/1992	HS-TID	Airbus-310	Fixed	Thai Airways	Gyangphedi	113	None
5	28/09/1992	AP-BCP	Airbus-310	Fixed	PIA	Bhattedanda	157	None
6	07/07/1999	VT-LCT	B727(200)	Fixed	Lufthansa	Bhasmasur Hill, Kathmandu	5	None
7	4.3.2015	TC-JOC	A330-300	Fixed	Turkish Airlines	Tribhuvan International Airport	None	

Ultralight Aircraft Accident

S.No.	Date	Registration	Type	Category	Airline	Place	Fatality	Survival
1	03/10/2013	9N-AJY	A-22L2	Sports	Avia Club	Santi Stupa, Pokhara	2	None
2	10/08/2015	9N-ALI	Aeros 2	Sports	Pokhara Ultralight		2 Missing	

Civil Aviation Authority of Nepal
Head Office, Babarmahal
Kathmandu, Nepal
Phone : +977-1-4262387, 4262518, 4262326
Fax : +977-1-4262516
Email: cnsatm@mos.com.np
Cable: AIRCIVIL
AFTN: VNKTYAYX

www.caanepal.org.np