CAAN Souvenir

2015

17th

ANNIVERSARY

2015

17th Anniversary

Civil Aviation Authority of Nepal (CAAN)

31st December 2015

The Prime Minister

KATHMANDU
NEPAL

I am pleased to know that Civil Aviation Authority of Nepal (CAAN) is celebrating the Seventeenth Anniversary of its establishment.

To a land-locked country like Nepal, air transportation is the most reliable means of connectivity to the outside world.Well-established airports network of the country has not only strengthened the national integrity but also played a significant role for the socio-economic growth of the deprived population in many rural areasthrough the tourism promotion.

In our context, aviation is the backbone of rescue and relief services during national calamities.I would like to remember the devastating earthquake of April 2015, when the Tribhuvan International Airport served as the hub of rescue and relief operations accommodatingalarge number of international and domestic flights beyond its capacity. Here, I would like to express my sincere appreciation to thepeople of aviation community for their exemplary devotion, dedication and round the clock service.

I note with satisfaction that CAAN is moving ahead in collaboration with international aviation bodies to ensure safe, secured and standard air transport service in the country.

I wish CAAN every success in the days ahead.

22 December 2015

K.P. Sharma Oli

Hon. Ananda Prasad Pokharel
Minister
Ministry of Culture, Tourism & Civil Aviation
Singhadurbar, Kathmandu, Nepal

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Message

On the occasion of its 17th Anniversary, I would like to express my congratulations to the Civil Aviation Authority of Nepal.

In present day world aviation is emerging as an important tool that enhances economic development of a country. Apart from economic benefits, air transport also provides significant social advantage by connecting people and facilitating accessibility to remote areas. In Nepal many areas inaccessible by road are getting benefits of air services and are being developed as famous travel destinations in the world. It is a matter of satisfaction that CAAN has done a lot of work in the area of airport upgrading and related infrastructure development.

Flight safety assurance and sustainability of civil aviation is the primary area of concern for a regulatory body. CAAN's regulatory obligations have become increasingly diverse and challenging due to increased air transport activities and subsequent obligations of international safety standards. Despite of limited resources, CAAN has been working hard to resolve the safety issues in collaboration with airline industry, ICAO and concerned international organizations.

Speed and reliability are the most effective attributes of aviation. Its significance is more pronounced during the times of natural or humanitarian crises. Nepal witnessed the indispensable role of aviation in delivering aid, search and rescue services and medical supplies following the devastating earthquake this April. On this occasion, I consider it my duty to extend my accolades to the employees of CAAN, airline industry and all individuals of aviation community.

On this occasion, I wish CAAN all the success in its future endeavors.

Ananda Prasad Pokharel
Minister
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Personally as well as on behalf of the Government of Nepal, I am pleased to convey our sincere felicitations to the Civil Aviation Authority of Nepal on the occasion of its 17th Anniversary.

Rapidly expanding air transport network and opening up of the airport infrastructure to private sector participation have fuelled the growth of the air traffic in Nepal. Nepal is currently handling 1.4 million domestic and 3.5 million international passengers with more than 28 international airlines operating to Nepal.

In an endeavor to make the growth of the sector equitable and inclusive, Government of Nepal has taken significant measures for providing affordable air connectivity to remote and interior areas of the country. The decision of modernization and development of new airports in remote areas is a significant step in this direction.

On this occasion, I urge all the stakeholders to cooperate CAAN in every way possible to discharge their respective regulatory and service provider functions. The Government is committed to adopting appropriate policy and mechanism to facilitate the CAAN and industry in discharging our noble objectives of ensuring safe, secured, reliable, affordable and efficient air transport and airport operations in the country.

At this moment, I would like to urge all CAAN staffs to work together in line with government policies in the betterment of civil aviation system.

Finally, I congratulate CAAN for the day, and wish you all -- all the best-- in your endeavors.

Dinesh Kumar Thapaliya
Secretary

International Civil Aviation Organization | Organisation de l'aviation civile internationale | Organización de Aviación Civil Internacional | Международная организация гражданской авиации | منظمة الطيران المدني الدولي | 国际民用航空组织

Message from the Regional Director of the International Civil Aviation Organization, Asia and Pacific

on 17th Anniversary of Civil Aviation Authority of Nepal

On behalf of the ICAO Asia and Pacific Regional Office, I would like to extend our congratulations to the Civil Aviation of Nepal for celebrating of its 17th Anniversary on 31st December 2015.

On this memorable occasion ICAO would like to reiterate its strong support to the Civil Aviation Authority of Nepal for the development of safe, secure and sustainable aviation system.

Please accept my best wishes and assurance of our cooperation at all times.

Arun Mishra
Regional Director
International Civil Aviation Organization
Asia and Pacific Office

8th December 2015

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Foreword

On the occasion of the 17th anniversary of the establishment of the Civil Aviation Authority of Nepal (CAAN), I have the pleasure of presenting this special Souvenir to our distinguished readers.

CAAN is the State agency responsible for the safety oversight of civil aviation in Nepal. Safety oversight system has changed drastically after the introduction of USOAP by ICAO. With the ever growing number of aviation activities, aviation safety is the major concern today. Now States have to prove their status of compliance of Safety Standards together with their capability of safety oversight. CAAN has introduced and implemented a structured safety oversight system. CAAN is working in close coordination with ICAO Asia-Pacific Office, EASA, and COSCAP-SA to address safety issues of Nepalese civil aviation.

CAAN is also responsible for the operations of aerodromes and provision of air navigation services. To cope with the modernization of air navigation technologies, CAAN has strengthened its Communication, Navigation and Surveillance system. Moreover, CAAN has successfully completed the pavement and up- gradation of runways, especially those of remote airports. Airport infrastructures in many airports including TIA have also been developed. Bhairahawa International Airport is under construction and Pokhara International Airport construction work will commence very soon.

Technology, Training and Regulation are the defenses of civil aviation system. CAAN has given high priority for developing professionals required to carry out its multi-disciplinary functions. CAAN is among the public enterprises that is self-sustained and also one of the largest contributors of revenue to national treasury.

Finally, I would like to thank all those who have put their best efforts to make this publication a success.

Sanjiv Gautam
Director General

Editorial Notes

With the sixteen pace setting years warmly folded in our memory once again the graceful serenity of the winter has brought in joys in our hearts as we are celebrating the 17 th anniversary of CAAN. On the occasion of this remarkable day we have published ' CAAN Souvenir 2016 ' with all enthusiasm we have been experiencing through these years on every thirty first day of December. It is our humble effort to serve the noble cause of sharing ideas, opinions and experience. The publication is the collection of deeper understanding of subject matter of various colors and hues by professionals from different fields. Be it the matter of importance that Nepalese airspace has for air transport development or the national economic growth or the need to set up new regulatory mechanisms to govern ever expanding horizon of air activities born out of new advanced technologies like Unmanned Aerial System (UAS) or recreational/adventure activities – all articles are the best reflection of substantive study and exposure of writers in the respective domain. The publication has also ignited in the feeling of cohesive bond among the members of aviation community.

We feel that it is an appropriate time to make self introspection with respect to our past performance, achievement we have made so far and our weaknesses. This would help to chart out a clear course for future endeavors.

The whole nation is grappling with the unprecedented level of damage and loss caused by the natural devastation last April which has dealt a severe blow on the face of national civil aviation. It is perhaps the opportune time to vow to unite and stand together to fight this new challenge facing the aviation sector and emerge stronger.

The Publication Committee would like to express sincere gratitude to the writers and contributors together for their valuable suggestions and support to make this publication success.

Wish you all a very happy and prosperous New Year 2016 !!!

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Management & Success in Life

Sugat Ratna Kansakar
Managing Director, NAC
Board Member, CAAN

Present day world is looked upon by experts as "Global Village", "Flat World", "High-tech World", "Ultra-modern World" and so on. Nepal cannot stay out from rest of the world, and obviously our citizens have to be proactive to succeed to be in tune with 21st Century world. Good sign is that young generation has easily grasped the world of Information Technology, with growing use of Internet. It is being estimated that new information are fed to world citizens on world-wide basis at such a rate that volume of information produced in past 30 years is more than that produced in previous 5000 years. And it is still increasing exponentially. Although quite often we use to hear that information is power, this saying is not so much valid as each and every person in any part of the world can access enormous amount of information from Internet. More important is to make sure that available information is being used to empower us. Definitely there is a "management angle" in this vast information. Although academic education on any field is of utmost importance for success in life, it is proven by experts that in most of the professions, sufficient degree of success cannot happen without effective use of management and leadership skills.

One study has found out that on average a human-being will be, knowingly or unknowingly, interacting or influencing at least ten thousand people in his life time. So, we can easily imagine the effect and importance of quality of a person's influence on others. Basically, management and leadership skills will teach a person HOW to use his influence towards success in whatever he is doing.

Management and leadership, especially the leadership part is more complex than what we find in management books available in book stores. Of course, it helps a lot to read those books. But what matters is the practice in all places from daily domestic life to social and office lives. Main factors concerning leadership development are respect, experience, emotional strength, relationship skills, discipline, vision, right and timely judgment etc. One problem is that it is a tough job to grasp and understand fully those leadership traits and practice in real life. It can be easily proved that one main reason of failure in steering our country in the right direction is lack of leadership abilities of kings, politicians and top bureaucrats, who governed the nation in the past 64 years. According to data published by global agencies like World Bank, IMF, Asian Development Bank and UN, Nepal is among least developed countries of Asia, and it will be naïve to blame people of Nepal for this sorry state of affairs.

One way of improving leadership ability is to do daily practice of improvising one's influence on anybody coming into contact anytime everywhere. In fact, it is a difficult job for even persons with high IQ to deeply understand many aspects of human emotions and relationships. That is why there are many examples of intellectuals, who excelled in education, but failed to succeed in their professional or political lives.

One should never make mistake of assuming that leadership skills are needed only for big bosses and leaders. One can try to practice many management and leadership skills right from student days. And the skills are applicable in any situation from family life to any profession. It will be quite interesting exercise to try for

more mature, productive and lively relation or interaction with family members, friends and anybody who come into contact in one's daily life, say a vegetable seller, bus conductor or taxi-driver etc.

We must not forget that there are very few born-leaders or born-managers. One management Guru has made a joke that he has yet to meet a good leader, who came to this world any other way than being born. His bottom line is that most of the successful managers and leaders are learners, who continuously learn and who have self-discipline and patience for constant effort to achieve something.

There are so many instances in the world scene, when a mediocre person suddenly succeeds. But if we study the lives of those successful persons, we will find that those persons were hungry to learn and they read books, try to learn from every possible sources and gain experience and knowledge from encounters with even strangers. We must remember that being a successful person would not happen in short time, it may take years of effort. Managerial and leadership skills should be developed daily and we must not forget that there is no end point in learning or developing one's personality. The good news is that there is no appropriate starting point, one can start immediately. Distinct visible change in one's life may occur with practice of new skills. And this is applicable to anybody from students and newly employed professionals to even businessmen and politicians, including our SIRs and NETAs.

Talking about success, it will be worthwhile to mention a popular principle called Pareto Principle. According to this principle, if one spends time, energy, money and resources on the top 20 percent of priorities, it will give 80 percent of result or production. Conversely, only a small 20 percent return will be possible, if a person focus on other less important 80 percent of activities. So, if one wants to succeed in life, he must understand Pareto Principle. Of course, in the first place, one needs to investigate to identify those 20 percent priority elements. This means it is quite important to learn the art of knowing what to overlook or neglect. It seems Nepal's present day politics is filled with this problem of leaders spending more time on petty and unimportant mundane matters, which will give only 20 percent output. The result is dangerously growing frustration among people at large.

Many a times, managers and big bosses, including politicians boast of working long hours every day. But long working hours may indicate only efficiency, which is not enough. Key is effectiveness, which is the foundation of success. Other important trait for success in life is the element of trust. Trust is also one of the foundations of success. To develop trust, one's competence is essential. If one is competent, occasional mistakes will be forgiven assuming that he is competent enough to succeed in future. People, in general, will tolerate "honest mistakes". More critical element to gain trust is the integrity and character. Even a small weakness or lapse in the character may damage reputation and credibility permanently. Without character, respect is not possible and if people around you don't respect you, success is just not possible.

Another indispensable element to succeed in life is need for a personal vision. One must try to answer two crucial questions: What is my vision? And how can I make it happen? To make a vision, one may have to look for his natural gifts and his desires looking inside oneself. Vision may also come from one's past and history of people around him. Some key events in the past also may create a vision. Vision with bigger picture may not only likely to make a person successful, it may serve others also. World history has many leaders, who became successful and served society, nation and world at large.

Finally, even experts are saying that luck also matters to succeed in life. Many successful people have stories about chance meetings, events, encounters or choices they made, which changed the luck. We cannot deny that bad luck sometimes ruins life and good luck can lead to success. But it must be emphasized here that it has been proven scientifically that one can control and enhance the amount of good luck by continuously adopting management and leadership skills.

Development of Nepalese Airspace to Contribute Country's Economy

Rajesh Raj Dali
Former Director General, CAAN

Background

The landlocked country Nepal is situated in between China in the North and India in the West, South and East. The Country is elongated east, west and average length is approx 795 km where as North, South is very narrow and uneven and the width is ranging between 140 km to 230 km. Geographically the country can be divided into three ecological strips such as:

1. High Himalayas perpetually snowy region which is extremely mountainous with elevation rising from 4877 metres to 8848 metres above the sea level. The major occupation of the people of this region is Sheep and Yak grazing.
2. Middle Mountain is predominantly hilly with some patches of flat river basins and valleys here and there and has an elevation ranging from 610 metres to 4877 metres from sea level. Though it covers largest area of the country only 10% of its area is cultivable.
3. Tarai region is a narrow tropical belt comprising the foothills and extending from East to West along the southern part of the country. This flat land has an elevation ranging from 60 metres to 610 meters above sea level. About 40% of this region is under cultivation. And main East West highways are situated in this area.

Thus with such geographical landscaping, cultural heritage and natural beauty Nepal is well known in the International arena as a prime destinations for tourist. But being a mountainous country Nepal has to face many difficult situations in providing accessibility through different modes of ground transportation. As it has been said universally that "one kilometer road hardly connects any part of the country where as one kilometer runway can connect the whole world". This concept plays a vital role in Nepal because maximum utilization of its airspace for the purpose of air transportation has contributed to overall development of the country. That is why Nepal has more than 50 airports and more than 120 heliports to link as far as possible every part of the country. But some districts are still not connected by the air link. It is necessary to have some home work to be done to draw accessibility line to develop the remote areas.

In this context, Nepal became the member of International Civil Aviation Organization (ICAO) by signing Chicago convention on 29th June 1960. Since then Nepal has started its development in the field of civil aviation with the help of ICAO through the utilization and promulgation of ICAO annexes into the country's acts and regulation. Similarly on 1st March 1977 Kathmandu FIR (Flight Information Region) was officially established which has made complete and exclusive sovereignty over the Nepal's airspace above its territory and made known globally in World Aeronautical Charts. This step has improved the safety of air services by further development and establishment of the airspace including air route structure for the channeling the air traffic. Once Nepal entered into liberal sky policy in early 1990 civil aviation faced tremendous challenges to cope with the increase in the air traffic domestic as well as international. This has brought the new management concept

in civil aviation by establishing Civil Aviation Authority through Civil Aviation Authority Act, 2053.

During early 1993, Nepal has started offering its airspace by proposing new routes for the international operators in different international meetings. Those proposed routes have multiple benefits such as less cockpit load resulting enhancement in safety, shorter route thus saving time, fuel and operating cost, serve as alternate to existing complex and congested route between west and east. After several years of efforts new concept have agreed to develop direct air route for flying between City pairs of States. The international aviation community in the meeting has concluded that, taking into account the introduction of required navigation performance (RNP), area navigation (RNAV) and reduced vertical separation minima (RVSM) into the Asia pacific region, states, ICAO and International Airlines Transport Association (IATA) developed a revised ATS route structure-Asia to /from Europe and the Middle East south of the Himalayas, to gain the benefits of existing aircraft capabilities together with satellite based Communication Navigation Surveillance / Air Traffic Management (CNS/ATM) systems.

ICAO regional office, Bangkok, in close co-ordination with the contracting states of Asia and pacific region, ICAO regional office for Middle East as well as Europe and IATA have come out with some solid proposals for the creation of new and more optimized direct routes known as EMARSSH (Europe, Middle East, Asia Route Structure South of Himalayas) program. Though the most optimized Trans Himalayan route were not easy in the past for lack of facilities. But due to the development of satellites and development of state of art technologies and CNS/ATM system as well as the capability of long range flying aircraft, the changing scenario demands that airline operators seek most direct routes between any two points.

Air route and its impact

The Convention formed the ICAO with the aims and objectives to develop orderly growth of international air transport so as to encourage the development of airways, airports and air navigation facilities to meet the needs of the peoples of the world for safe, regular, efficient and economical air transport. This is only possible if the airspace management is done properly and air route structures are designed to enhance safety and accessible for air operator. Similarly air routes should be established to increase efficiency, reduce complexity and provide additional benefit to user.

Considering the above policy the airspace planning must achieve direct routing beneficial to all aircraft operator. To maintain safety standard, regular monitoring of traffic in each route must be observed. This will encourage the operator to fly in the specified predetermined route which will benefit to the people of the world for fast and comfortable air travel. The new technologies in aviation field, new type of aircraft, facilitated airports and effective and efficient services provided to them have contributed very much in developing economical status of the countries and their people. People travel for their business, entertainment (travel & tour), official activities and meeting people. With this, the opportunity for economic generation is possible by safe and fast air travel. Thus accessibility is the basic need for every body's development.

In Nepal High Himalayas & Middle Mountain occupy around 80% of its land. Most of the airports are constructed in these regions. These airports and remote areas are being linked by air services, which are considered as the basic need for our country for poverty alleviations. The air routes are designed in such a way that it is safe, economical and comfortable for the operator to fly. The management of airspace and air route structure will also be associated with the airport management and air navigation services.

This will help to conduct regular air services which will contribute to facilitate the economic activities of people in different parts of remote area thus supporting country's economy.

Similarly in case of International Operation, airspace became the salable commodity nowadays. By designing the shortest air route with all the required air navigation services and airport facilities, the operator would like to fly those air routes. Once the Nepalese airspace is used by the international air operators, the economic activities will increase automatically through the mobilization of people and materials by aircraft ultimately contributing the Nepalese economy. There are lots of countries in the world whose national economy is being supported by the aviation activities. Such countries give priority in developing the air route structure including required infrastructure and services. To achieve these purposes there will be needed master planning in airspace and air navigation services. Nepal needs to develop airspace master planning to develop the air route structure of course with the help from ICAO and neighboring countries.

New concept

To support various national campaigns for the development of the tourism as well as attract international operators to start operation in Nepal, there should be proper airspace management and air route structure to facilitate entry and exit points. International Airport must be equipped with all facilities of international standard to cope with the development of new design aircraft. Similarly all bilateral air service agreements between Nepal and other countries concerned should include one topic on air route structure regarding entry and exit points.

As Nepal being land locked country and no opening to sea, we have to depend on limited ground access due to geographical location. By any cause if the ground connection is disturbed or become inaccessible then country's economy will be affected and we have to depend on air access. All trade, supply & mobilization have to rely on air transportation. So strategically we have to make air travel easily accessible, safe, standard, economical and reliable as well as need to develop the airspace to accommodate the all kind of air service including cargo services. To implement these policies we need to explore and start developing the air route overflying Nepalese airspace. It needs joint effort from all Civil Aviation Community. This needs continuous effort and high-level commitment. Further it must be included in every bilateral talk of Air Service Agreement (ASA) to seek support from every country.

Similarly with the help of ICAO, Nepalese civil aviation activities may be made safe and dependable even in the environment of mountainous terrain. We have to make reliable and economical flights utilizing advance technology and services. The new concept of flying over the Himalayan range has to be developed and let other landlocked countries also follow the technique used in our country to overcome the problem faced by the situation. And the end result will be that Nepalese landscaping and Trans-Himalaya route will attract tourist and international airline operators for additional activities, which ultimately will contribute to economic development of Nepal and its people.

Conclusion

The effort for developing the civil aviation sector in Nepal will have many impacts such as the national integration, attraction for tourist by inviting more International Airlines to use Nepalese airspace and to make access to international arenas for trade and supply. To overcome the problem faced by land locked situation, Nepal need to do various joint multidisciplinary activities. So, following activities can be identified and can be developed for the implementation of Nepalese airspace for overflying purpose.

a. Development and construction of full-fledged International Airport with safety services such as Communication, Navigation & Surveillance and Air Traffic Management based on satellite system for the use by International Airlines.

b. Tourist attraction can be achieved by Trans-Himalaya route by viewing Himalayan range & Nepalese landscaping which will develop country's image in International forum.

c. The proposed Trans-Himalayan route will be safe, economical & and without any complexity may be as follows:

   1. Nepalgunj-Islamabad (Pakistan)
   2. Kathmandu-Kunming (China)
   3. Nepalgunj-Delhi (India)
   4. Bangkok(Thailand)-Kolkotta(India)-Nepalgunj
   5. Bangkok-Dhaka (Bangladesh)-Kathmandu
   6. Kathmandu-Lhasa-Chengdu-Shanghai
   7. Kathmandu-Biratnagar-Saidpur-Dhaka
   8. Kathmandu-Pokhara-Tashkent(Russia)

d. With the increase in air traffic movement the economic activities will also be increased within the country, which will contribute Poverty Alleviation in Nepal.

e. Restructuring of airways is essential taking into consideration of the growth in international traffic and need for additional airways to connect Nepal with new destination via shortest route.

f. Civil Aviation activities are to be related with national integration and development of qualitative air services as well as supporting basic need of the country, which will contribute to the country's economy.

g. The trade and transit problem faced by land locked situation should be tackled by air access promoting economical cargo services.

h. The master plan should be developed for airspace and air route structure by having ASA with Concern country like China, India, Pakistan, Bangladesh, Myanmar, Thailand, and Russia. And of course with help of ICAO and IATA.

i. A High level government committee should be formed to do continuous follow up to international level to pursue the topic regularly.

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"Safety and Security can not be compromised."

Conceptualization of Civil Aviation Commission in APAC Region

Rajan Pokhrel
Dy. Director General, CAAN

Background

The concept of establishment of Civil Aviation Commission in Asia-Pacific Region is being discussed in Asia Pacific (APAC) civil aviation forum in recent days. The idea was floated by China during the 52nd Directors General Conference held in Hong Kong, China in 24 to 27 November 2014. The purpose of the Commission is to enhance cooperation and coordination among the civil aviation authorities to harmonize policy and practices for the safe and secured air transport activities. After long discussion on this proposal, the Conference decided to form a task-force to study the feasibility of Civil Aviation Commission in APAC Region.

ICAO and Regional Organizations

ICAO has divided the world into seven geographical regions and established regional offices to ensure better coordination and cooperation for the implementation of ICAO policies and guidance among its Member States. These regions are Asia Pacific Region, Middle East Region, Eastern and Southern African Region, Western and Central Africa Region, Europe and North Atlantic Region, Southern America, North and Central America and Caribbean Region. Among them Asia-Pacific is the largest geographical region consisting of 42 states of different sizes. Article 55 of the Convention on International Civil Aviation has envisaged the formation of regional commissions in the area of air transportation and air navigation. But this Article clearly states that these commissions will be in the form of sub-ordinate bodies of ICAO and may deal to facilitate the carrying out of the aims of the Convention.

Despite this ICAO has played a very supportive role to establish regional organizations of States for the development of civil aviation. In 1955, ICAO Assembly, by Resolution A10-5, established a policy framework to govern relations between ICAO and the European Civil Aviation Conference (ECAC). AssemblyResolution A18-21 invited the Council to extend such policy and arrangements to other regional civil aviation bodies. Based on these Resolutions, ICAO had also been extending its financial support to regional civil aviation commissions. Considering the growth and development of regional bodies, Twenty –seventh session of ICAO Assembly held in 1989, by Resolution A27-17, urged these regional bodies to assume full responsibility for their own financial affairs. Through Resolution A27-17 ICAO assured regional civil aviation bodies to extend its support on their work and activities wherever such support is requested, taking into account the resources of ICAO and the implementation of its work programme.

Evolution of Civil Aviation Commissions

At present there arefour Civil Aviation Commissions established in different ICAO Regions. European Civil Aviation Conference (ECAC),established in 1955, is the pioneer among such regional organizations. While establishing the ECAC in Europe, the need for it to be established in line with Article 55 as the subordinate body of ICAO was taken into consideration. However, after long arguments and

discussions it was agreed that the ECAC would remain an independent body and would liaise with ICAO for the harmonization of regulation and practices in civil aviation.

The need for Civil Aviation Commission was felt during the late 60's for the cooperation among States to develop physical infrastructure and foster air transportation in the region. Following the same principle of 'independent-status', other Civil Aviation Commissions came into existence post ECAC. African Civil Aviation Commission (AFCAC) was established in 1969, Latin American Civil Aviation Commission (CLAC) in 1973 and the Arab Civil Aviation Commission (ACAC) as the youngest one in 1996.

All these regional organizations have one thing in common i.e. the higher level of political patronage which is very important for the sustainability of such kind of organizations established for sectoral development. In Europe, majority of 44 ECAC States are also the Members of European Union (EU). ECAC has a strong bond with EU and has played a crucial role for the establishment of European Aviation Safety Agency (EASA). Organization of African Unity (currently known as African Union) has a vital role for the establishment of AFCAC. African Union has recognized AFCAC as its specialized agency in the field of civil aviation. AFCAC comprises of 54 States and is divided into five different regions. ACAC was established under the support of the League of Arab States as a regional organization for coordination and cooperation among Arab countries and with other parts of the world in the field of civil aviation. CLAC consists of 22 States of South and Latin America. This regional organization is also evolving as an effective regional civil aviation body in Latin America.

APAC Civil Aviation Commission Task Force

In accordance to the decision of the DGCA Conference, ICAO APAC Office formed a task-force comprising of the representatives from civil aviation authorities of APAC States. The first meeting of the Task-force for the feasibility study of APAC Civil Aviation Commission was conducted in May 2015. During the meeting, participating States forwarded mainly two different ideas – the establishment of APAC Civil Aviation Commissionor strengthening the existing regional mechanisms.

Asia-Pacific is the most dynamic region in terms of air transport growth rate for last few years. There is a high potential of travel, trade and tourism promotion in the region. Therefore a permanent platform of civil aviation authorities to discuss on civil aviation issues is very essential.A regional civil aviation commission would be very helpful as it can develop and enforce guidelines of national aviation regulations, supportive for the implementation of ICAO safety standards and guidance. Small States, with lack of required expertise and resources, can get benefit from such regional aviation body. Moreover, States were of the view that due to the lack of such forum, Asia-Pacific States were unable to put their single voice in ICAO Assembly, Conferences, Meetings and other International Civil Aviation Forums.

Others had the view that the Asia-Pacific Region is a vast geographical area with diversity in terms of size of States, language, culture, legal and political structure, economy, technological development, aviation activities and so on. Considering the size of APAC region, in addition to an APCAC headquarter, other regional offices may also be required. The budgetary provision for infrastructure, experts and employees, logistics and office expenses will be very costly compared to the existing regional arrangements. ICAO itself is the organization of 191 States and it has established regional offices in all its geographical regions. Formation of independent regional organizations may lead to weakening of the role of ICAO Regional Offices and ultimately the role of ICAO itself. So, it was suggested that instead of duplicating resources and efforts in APAC region it would be more beneficial to

strengthen the existing regional mechanism under the umbrella of ICAO APAC Office.

Existing Mechanism in APAC Region

At present a number of regional groups, to achieve different technical objectives, have been formed under the ICAO APAC office. Among them, APANPIRG and RASG are the most effective ones. APANPIRG is the forum where APAC States discuss on the matters of air navigation and aerodromes. Several different sub-groups under APANPIRG are actively involved on specific areas like ATM, CNS, AGA, and MET. Under RASG, Asia Pacific Regional Aviation Safety Team (APRAST) is an active forum where Civil Aviation Authorities and Air Transport Industry work together for the continuous improvement of safety in the region. Different Sub-groups in specific areas such as CFIT, Runway Safety, Loss of Control, Safety Management and AIG have been established under APRAST.

A Regional Sub-Office (RSO) of APAC Office has been established in China with the aim of improving airspace organization and management to maximize Air Traffic Management (ATM) performance across the APAC Region. Cooperative Development of Operational Safety and Continuing Airworthiness Programme (COSCAPs), under the initiative of Technical Cooperation Bureau of ICAO, have been established in North Asia, South-East Asia and South-Asia. Ten states of OCEANIA has established Pacific Aviation Safety Office (PASO) as an intergovernmental Organization of Civil Aviation Authorities for Aviation Safety and Security. ICAO APAC is working as the focal point to coordinate with these sub-regional organizations. Conference of Directors General of Civil Aviation is a forum of civil aviation authorities to discuss and decide on the policy issues suggested by different technical sub-groups. ICAO APAC Office is providing secretariat service to the DGCA Conference.

Conclusion

Regional organizations can provide cohesive environment to address the issues of safety, security and air transport development. They also act as a common platform to lobby the issues relating to the APAC region in international forums. It is equally true that APAC Region has its own complexities in terms of geography, economics and politics. As discussed earlier, a high level support from political level is essential for the sustainability and effectiveness of these kinds of organizations. In APAC region, some organizations such as ASEAN and SAARC, established on sub-regional basis also existin higher political level but they are yet to prove their effectiveness in the area of regional harmony and cooperation. The performance of SAARC itself is enough to illustrate the state of regional cooperation in South Asia.

Directors General of Civil Aviation Conference has been serving as a platform of civil aviation authorities of APAC States for last many years. Additionally, COSCAPs are working as the sub-regional organizations for the cooperation in the field of operations and airworthiness. Most of the existing regional arrangements are focused on the matter of aviation safety. Issues relating to the air transport such as liberalization and economic regulationhave not yet been entered into the APAC regional forums.The expert group will take into account all possible alternatives of regional cooperation so that an appropriate mechanism could be developed to address the upcoming challenges of civil aviation in the region.

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Nepal : A Tourist Destination

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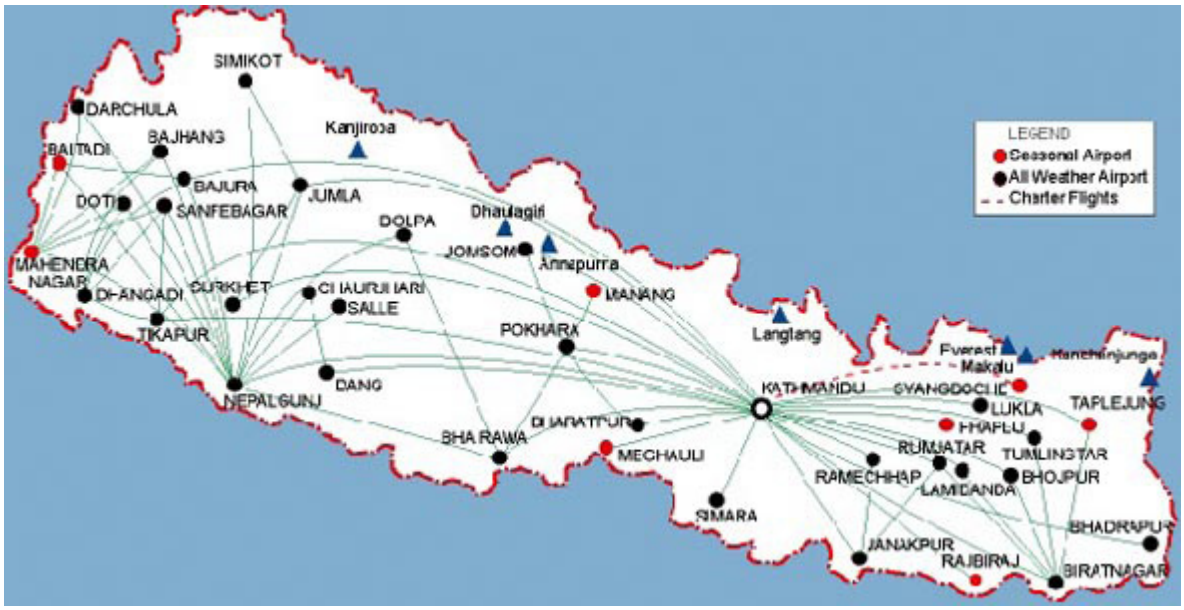

Nepal, a small land locked country with a area of 147181 sq km situated in between two big rapidly developing nations China and India, is one of the beautiful country of the world. It is a tourism based country with beautiful Himalayas including the top of the world Mount Everest and six tallest mountains among 10 in the world lie in Nepal. The flora and fauna within this small country are of diverse nature. Nepal has a tremendous potential in tourism and the air transport.Air sports activities like Paragliding, Power Gliding, Para jumping, Ballooning, Heli Skying is increasing day by day. Water sports like Rafting and Bunzi jumping in the numerous rivers flowing from the mountains with high current and jungle safari, village tourism and pilgrimage are some of the major attractions in this country.

A well known writer Mr. Tony Hagen in his book has clearly mentioned that Nepal is one of the best tourist destinations and Annapurna Trek in the western region of Nepal is one of the best trekking routes in the world.

Due to its mountainous nature road access is not easy in this country. The only way of approaching these areas is by air. This is the reason why Nepal being a poor country has more than 50 small airports. Presently, Nepal has only one International Airport (TIA) in Kathmandu. Two more International Airports in Bhairahawa (Gautam Buddha International Airport) and Pokhara Regional International Airport are now started to build. Second International Airport at Nijgadh Bara is under the feasibility study. After completion of Nijgadh Bara Airport in the low land i.e.Terai Region of Nepal, which is supposed to be a full-fledged Int'l Airport, It can serve as a hub airport in south Asia Region.

TIA Airport

Proposed Gautam Buddha International Airport

Proposed Pokhara Regional Int'l Airport

Tourists from each and every part of the globe are attracted to visit the natural beauty, our hospitality and diversified cultural nature with historical places. Since the increasing number of tourists are attracted to come in Nepal the government of Nepal and private sector have put a lot of efforts to increase the Hotels, Restaurants and Travel and Trekking Business. One gets world class food and the Hotels here in Nepal.

Although a lot of tourists want to visit this country there is a lot of rooms for the improvement to attract them and Nepal welcomes to visit our beautiful country from every part of the globe to see the natural beauty and big heart of the Himalayan people.

Presently, the major tourist flow is from neighboring countries like India and China and we have more than 40 International flights per day in Kathmandu. Civil Aviation Authority of Nepal with Nepalese Govt. support is upgrading

Tenjing Hillary (Lukla) Airport

Airports of Nepal for the safe operation of flights. Civil Aviation Authority of Nepal (CAAN) has completed asphalt concrete pavements in 22 airports including Tribhuvan International Airport, Kathmandu. CAAN with its available resources will be adding some more airports in future if it is deemed necessary and the feasibility study reports come to be positive for safe flight operation.

Nepal Airlines the National Flag carrier of the country, has very less number of aircrafts and is now trying to increase the numbers but there are following airlines (International) operating in Nepal and the Domestic airlines have also shown in the charts.

Airlines and Type of Aircraft

International

S.N	Airlines	Type
1	Air Arabia	A320
2	Air India	A320/A319/321
3	Bimanbangladesh	A310 / B727
4	Buddha Air	ATR42/72
5	Bhutan airlines	A319
6	Air China	A319

7	China Eastern	B737
8	China Southern	A319
9	Druk Air	A319
10	Etihad Airways	A319/A 332
11	Fly Dubai	B738
12	Dragon Air	A330
13	Indigo	A320
14	Jet Airways	B738
15	Korean Air	B772
16	Malaysia Airlines	B737
17	Nepal Airlines	B752
18	Oman Air	B738
19	Pakistan Air	A310
20	Qatar airlines	A320/A332/A333
21	Spice Jet	B738
22	Silk Air	A320/A319
23	Thai Airways	B772
24	Turkish Airlines	A330
25	United Airways	MD83/A310/ATR72
27	Others	ALL

Domestic

S.No	Airlines	Type of A/C
1	Air Dynasty	AS50
2	Air Kasthamandap	P750
3	Buddha Air	B190, ATR42, ATR72
4	Fishtail Air	AS50, B206
5	Goma Air	C208
6	Mountain Helicopter	AS50
7	Makalu Air	C208
8	Muktinath Airlines	RUUII
9	Nepal Airlines	DHC6
10	NSBS (Mid Air Base)	HS74, BN2T, AN28 & Helicopters
11	Saurya Airlines	CRJ200
12	Shree Air	MI8
13	Simrik Air	AS50
14	Simrik Airlines Pvt. Ltd	B190/D228
15	Sita Air	D228
16	Yeti Airlines	JS41
17	Tara Air	D228, DHC6, PC6
18	VVIP	AS32, B206

STOL (Short Landing & Take off) Airports like –Tenzing Hillary airport Lukla, Jomsom,and Jumla Airport are few examples at the remote areas of Nepal. Which are serving as a major tourist airports for Khumbu, Mustang and Karnali area respectively, resulting to the remarkable economic growth of the peoples there.

Nepal is a country of amazing weather pattern and amazing climate situation. A passenger let's suppose from Simara Airport (Elevation 445 ft AMSL. Temp 38^0C) flies to KTM by 25 min (Elevation 4386 ft) with 25^0 C temp again catches a flight to Lukla (Temp 10^0 C) by 35 min of flight will experience hot, mild and cold temperature within 1 hour 30 min of a STOL aircrafts flights. There are a lot of rivers, lakes, gorges, waterfalls, caves and numerous of ethnic group and cultural and historical heritages with a warm welcoming hospitality.

Yet a very few percentage of potentiality is used in Nepalese tourism sector and there are number of sectors whereby the whole world especially SAARC region can support for economic and socio-cultural growth of a peace loving country Nepal.

I urge and have a big hope the outside world will definitely support Nepal like underdeveloped nations by extending their hands of support in the field of tourism by visiting us and also can support in the field of vocational trainings, agricultural, industry, forest, hydropower and etc.

A lot of young Nepalese are visiting other countries like middle east for hard work because they have less opportunities of doing jobs in Nepal. We can exchange our manpower as a friendly nation by supporting our young generation to those countries for job opportunity and they can provide us valuable tourists in Nepal.

Unfortunately, the Earthquake of 25th April & 12th May 2015 badly affected some of the districts of this country.There is a large decrease in tourist flow. But now we are getting revived and our country is safe for visit.

We are really thankful if you can visit our natural beauty country to uplift the Nepalese economy and we can explore you as a valuable guest by giving a complete natural taste of tourism which may be yet unknown to the outside world.

Recommendations for Future Revisions of UAS Policy in Nepal

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Introduction

The first operation of anUnmanned Aerial System (UAS) in Nepal that gained wide-spread attention was that of a fixed-wing surveillance drone at Chitwan National Park. The presence of such a drone serves as a deterrent to poachers and illegal loggers, with the region being monitored both on the ground and from above. Since then, drone applications in journalistic, relief and surveillance flights have become frequent in Nepalese skies, hence raising requirements for proper policies at place to regulate their operation.

UAS, that primarily include fixed-wing aircrafts and quadcopters, have great scope in surveillance and relief operations. They have the potential to reach a disaster hit regions for surveillance and provide an initial estimate of the severity of the disaster and the imminence of help needed in the critical locations. New frontiers for their applications in the areas of conservation, imaging as well as mapping are being widely explored around the world.

In Nepal, basic development of UAS is picking pace from the sides of academic institutions as well as the government security agencies. Some developments are also taking place under collaboration between academic institutions and INGOs that jointly carry out survey and conservation efforts with the use of onboard mapping and imaging devices.The UAS developed or brought into Nepal so far fall under the category of model aircraft, commonly referred to as RC model aircrafts. Current RC aircrafts are mostly electrically powered with a Li-Po pack and controlled with a radio controller or GSM device.

RC aircraft operations in Nepal can primarily be categorized under the following5 groups:

- International organizations (for e.g. *Conservation Drones*), as well as individuals, working in fields of wildlife and environmental conservation. Soil and terrain surveys also fall under the application areas for the RC Aircrafts. PIX4D mapping, and GIS mapping assisted with RC aircrafts is another frontier for some of these organizations.
- Journalists and freelance RC aircraft pilots working for 'valuable consideration' (payments) through aerial photography and survey. They mostly work with RC quadcopters enabled with a surveillance camera and mapping devices. Majority of the operators of aerial photography drones after the August 2015 earthquakes for 'relief operations' fall under this category.
- Research institutes carrying out experimental flights of prototypes and experimental UAS research.
- Hobby flyers and enthusiasts.
- Military and other government security agencies.

In most states, flights over public and private spaces require consent from the owners or the

council. Yet, the general flight rules of restricting flights under the designated altitude above ground level, e.g. 120 m, still apply in all cases.

EASA regulation "… *mandates the Agency to regulate Unmanned Aircraft Systems (UAS) and in particular Remotely Piloted Aircraft Systems (RPAS), when used for civil applications and with an operating mass of 150 Kg or more*". Experimental or amateur build RPAS, military and non-military governmental RPAS flights, civil RPAS below 150 Kg as well as model aircraft are subjected to regulations issued by individual member states.

FAA regulations identify a model aircraft as an unmanned aircraft that is capable of sustained flight in the atmosphere flown within visual line of sight of the person operating the aircraft, and flown only for hobby or recreational purposes.

The government issued a UAS flight procedure that requires operators to obtain permission from the Ministry of Information and Communications for frequency and from the Ministry of Culture, Tourism and Civil Aviation for individual RC aircraft operation. This procedure applies explicitly to all UAS operations, while the flight operation directive issued earlier does not make distinction between the types of operation to which the regulations apply.

The Flight Operations Directive No.7 for UAV issued by CAAN mandates in paragraph 2.5 for permission to be taken from the CAAN for aerial work to be carried-out with a 'small unmanned aircraft'. On the other hand, paragraph 4.8 of the directive grants a RC drone weighing less than 2 kg operating within the premises of private property of the operator below 200 ft AGL without requiring permission from CAAN.

General RC operation regulations can be summarized under the following points:

- Distinctions are not made between RC aircrafts flown for commercial or recreational purposes.
- The RC aircraft must be of 15-25 kg or lower in weight, fly at day light within the VLOS and must not fly above 120m AGL unless certain conditions are met and approved. The VLOS requirement generally applies to cases where a pilot is at control within the VLOS range as well as for aircrafts remotely flown with a GSM/Mission Planner system.
- The RC aircraft must not fly close to the aerodrome, unless certain conditions are met, or obtain permission from the concerned authorities while operating in special airspace (for e.g. military airspace, conservation areas).
- The operations should avoid hazards to persons, properties or other aircrafts. While operations that might have risks of such hazards must present an exposition of the mitigation efforts that will be taken during the operation. Operations in crowded areas, near building or public spaces should have this criteria mandated everywhere.
- The operators must have consent from the owners or administering authorities before flying above a private or public property.

In many states, proper policies are not in place due to the lack of understanding of these systems, and their (inevitable) importance. This is in part because it is not yet a priority operation in most states, including in Nepal, hence lack initiatives from the administering authorities for development of a comprehensive guideline for their operation. Future guidelines should make a distinction between different UASs based on the type of operation,C2 frequency, weight, type of powerplant (and propeller), flying range and altitude AGL.

Development in RPAS policy

International Civil Aviation Organization (ICAO)

is yet to come up with a Remotely Piloted Aerial System (RPAS) policy that can guide states to regulate their airspace with revision for RPAS flight rules. An ICAO panel will recommend the first UAV standards in 2018. Once approved, the standard will guide ICAO's 191 member states in setting their own national regulations. The overall process of producing RPAS standards is expected to take a decade longer. Recent developments in the RPAS standards and operation guidelines are summarized in the following points:

- The current ICAO high-level panel focuses on development of Standards and Recommended Practices (SARPs) for adoption by the council of ICAO in 2018.
- A lower level RPAS panel formed in 2007 produced the document 10019, or "Manual on Remotely Piloted Aircraft Systems".
- The document serves as an educational tool for states, industry, service providers and other stakeholders on most of the topics that comprise the regulatory framework.
- Supporting Procedures for Air Navigation Services (PANS) and guidance material will be provided, to underpin routine operation of RPAS throughout the world in a safe, harmonized and seamless manner comparable to that of manned operations.
- Categories will be based on size, weight, complexity, human factors, airspace requirements and operational characteristics.
- Segregated airspace is established by Aeronautical Information Publication (AIP) and/or Notice to Airmen (NOTAM) under the categories: 'restricted', 'experimental', and 'special flights'.

Examples of CAA Policies for RC Aircraft Operations

As outlined in the ICAO Doc 10019, RC model aircrafts are not subjected to the guidelines and SARPs developed for RPAS operations, which are developed primarily for operations that might interfere or be included into the existing airspace, as well as, cross-border operations in accordance to the Article 8 titled "*Pilotless Aircraft*" of the 1944 Convention on International Civil Aviation (Doc 7300).

The following sections provide existing regulations in some of states for RC model aircraft (intra-border) operations.

United Kingdom

Small UAS operators must need permission from the CAA for flight of model aircrafts on a commercial basis (i.e. conducting aerial work), as well as to fly a camera/surveillance fitted aircraft within congested areas or closer (than the distances listed within Article 167) to people or properties (vehicles, vessels or structures) that are not under the operator's control. While permission is not required for model aircrafts that will not be flown close to people or properties, and operations that do not get 'valuable considerations' from the flight. In addition, practice or demonstration flights do not require permission from CAA ensuring no one is endangered while flying the aircraft. However, general regulations listed in Chapter 1 still apply.

India

For RC aircraft, flight is permissible only under an Amplitude Modulation (AM) radio band, consisting of the frequencies 27004 KHz, 27116 KHz, 27148 KHz, 27156 KHz and 27228 KHz. These five frequencies are earmarked for aeromodelling. Model aircrafts generally violate this frequency range; high-end remote controllers' C2 frequencies lie in the 2.4 GHz band. In addition, to restrict flight range,

the battery strength is fixed at 5W. No strict distinctions have been made between UAS in general and the model or autonomous aircrafts.

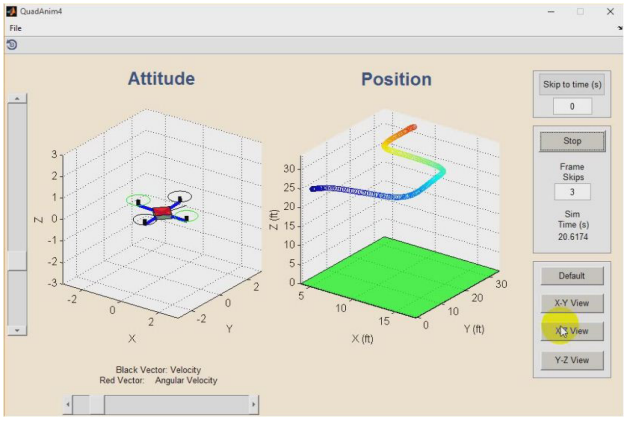
The public notice issued by the DGCA India- Public notice File no. 05-13/2014-AED (7th October 2014)- mandates civil operation of UAS to obtain approval from the Air Navigation Service Provider, defense, Ministry of Home Affairs, and other concerned security agencies, besides the DGCA.Till the regulations for the certification and operation for use of UAS in the Indian Civil Airspace are issued, all non-government agency, organization, or individual are restricted from launching a UAS in Indian Civil Airspace.

United States

FAAs Advisory Curricular AC 91-57A identifies "model aircraft" under a specific category in order to segregate the operations and guidelines under which they can be regulated. It strictly defines a model aircraft as one that is flown for hobby or recreational purposes and does not exceed 55 pounds (~25 kilograms), while limiting the flight to 400 ft above ground level. Hence, practice and experimental flights of RC model airplanes can be categorized under this nomenclature.

Current Developments in UAS technology at IOE

Institute of Engineering has been the center for research and prototyping of electro-mechanical systems in Nepal for more than a decade. Since mid-2014, research-based projects have been carried out for the development of small UAS, including fixed-wing power gliders, multi-rotor hovercrafts and blended-wing-body experimental aircraft prototypes. The systems are operated with a radio controller, with a 2.4 GHz frequency band. The models are designed with specific capabilities through numerical modeling and optimization. Examples of some of these prototypes are shown in the illustration below.



Examples of the range of RCUAS prototypes under R&D at IOE

The prototypes developed here are so far only operated with an RC device, while work is

underway to provide them with semi-autonomous capabilities with GSM-enabled technologies. Such prototypes can be given a flight trajectory through a mission planner (open-source tool) to carry-out a predetermined mission, e.g. survey and aerial photography works. In addition, similar to the RC quadcopter shown in the illustration above, quadcopter prototypes are designed to carry a payload to be 'delivered' designated station.

Once fully loaded, the prototypes come to be with a weight in the range of 2.5-4 kg. This weight exceeds the maximum weight criteria outlined in the paragraph 4.8 of the Flight Operation Directives No. 7 (May 2015) and Appendix J of the*Procedure for Manual Flight Permission*; August 2015). Hence, further tests are restricted by the guideline without permission from concerned authorities. The recent directive to require permission for each individual manual operation of model aircrafts further hinders the development.

Recommendations

1. The scope of this paper is hence to recommend further revision of the guidelines to allow for practice and experimental tests to be carried out by institutes, without hindrance to the development of such systems in an open and responsible manner. The guidelines provided by the CAA United Kingdom for operation of model aircraft, as summarized in section above can be an appropriate reference for such revisions in the future.
2. Outright banning of all UAS operations hinders the academic and research progress at that country's institutes. The restrictions imposed and tediousness of following the current procedures for RPAS flight operations are impractical for academic and research institutes. A better and well-researched policy can be generated based on EASA/ICAO standards and in par with the UAS regulations issued by CAAs of states with standard UAS flight procedure and practices.
3. Future guidelines should make a distinction between different UASs based on the type of operation, C2 frequency, weight, type of powerplant (and propeller), flying range and altitude AGL. Explicit mention for government institutions taking part in the research and development of UAS should be made to be allowed for free test and practice flights at designated areas under safe flying altitudes AGL.
4. It is strongly recommended that the current regulations stated in paragraphs 2.5, 3.5, 4.5 and 4.8 of the Flight Operations Directive No. 7 be revised to permit limited autonomy, with explicit privilege for national institutions for practice, experimental and research-related UAS operations.

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The Saga of Air Cargo Complex at TIA in Brief

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Not too long ago three ordinary buildings at three different locations (known as Godown No. 1, 2 and 3) were being used by Customs for handling of bonded air cargo at Tribhuvan International Airport (TIA), which were not really and originally built for air cargo warehousing purpose.Then Civil Aviation Department had nothing to do with it.

Eighties of the 20th century saw a major trend in the development and management of civil aviation worldwide, mainly in the sense that government run agencies were transformed into one or the other kind of autonomous "Authority" for the fast growth of needful infrastructure in civil aviation. Honkong, India, Pakistan, Singapore, Thailand, Australia are few good examples to mention in Asia and Pacific region.

"Authority(ies)" were really quite successful in many ways. To mention one, providing needful infrastructure for the management of air cargo, at international airports in particular, was a good source of high non-aeronautical revenue for the airport operators, not to mention the goodwill gained by being recognized as one of the important partners in the development of trade and commerce in one's country. This phenomenon is very true to this date. To cite one example, Airports Authority of India gets more than a third of its total income through the revenue generated from air cargo handling alone.

In Nepal, Civil Aviation Authority of Nepal (CAAN), an autonomous regulatory as well as service provider agency, was established on 31 Dec, 1998. Air Cargo business (export of carpets and garments) were booming in Nepal.A separate and full-fledged Air Cargo Complex (ACC) was urgently required. Construction of awell equipped and modern ACC was started on March 13, 1998 and completed in 2001 covering 8 hectares of land with the financial assistance of Asian Development Bank (ADB) amounting to Rs. 556,000,000/- under Loan No. 1512 Total estimated cost including the land is valued at Rs One Billion then and Rs Three Billion in year 2014. CAAN got to run this bonded warehouse for the first time in the history. ADB loan is repayable in 30 years and bears an interest of 8% per annum. CAAN is paying back the loan since 2008 when the grace period ended. An agreement was signed between CAAN and Department of Customs in 2001 for the ad-hoc operation of this ACC by customs and close Go-downs no 1, 2 and 3.

The new ACC provides a storage area of 7,700 square meters, 2,145 sq. m. of office space, automatic water sprinkling system, a big cargo built-up apron, truck docking yard, adequate car park, and 1.56 Km long (10m wide) access road on the airside to link ACC apron to international parking apron. Handling capacity for import is 10,000 MT and 16,000 MT for export per year with provision to expand facilities to handle upto 12,000 MT of import and 24,000 MT of export per year in future. It has 1900 sq.m of other rentable space area spread in two floors.

CAAN floated a tender notice (Invitation for Bids) to develop, operate and manage (DOM) ACC on 21 December 2001. This notice was re-advertised in 2002. There were two substantially responsive bidders, Airogo Co. of Chennai, India

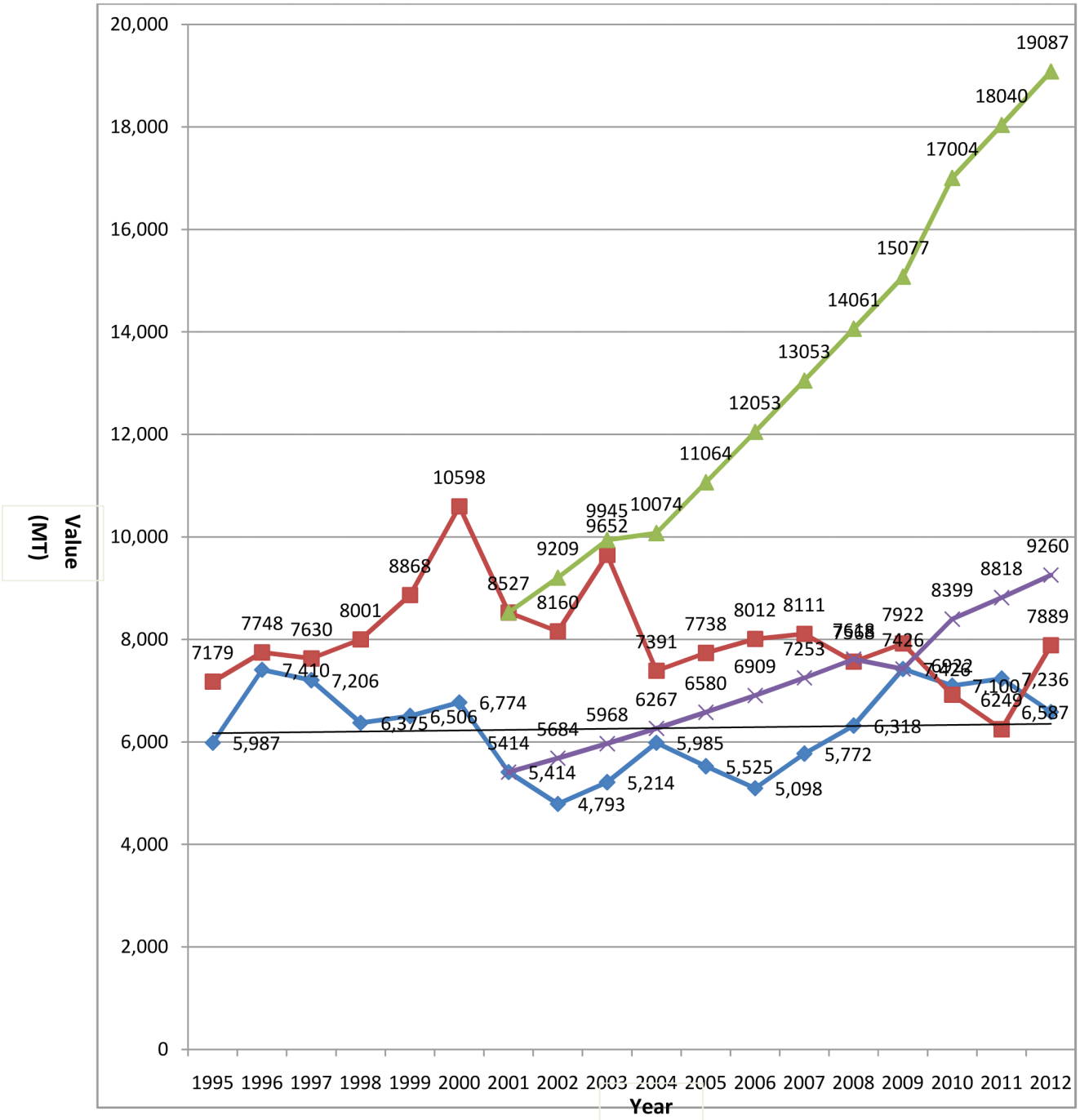
and Central Warehousing Corporation of Delhi, India, both bidding a little more than 1.35 Billion rupees as total lease amount for the lease period of fifteen years.

CAAN approved the Bid of Airogo Co. on 19 March, 2003 and awarded the Letter of Intent (LOI). Nevertheless, after a prolonged negotiation with CAAN, Airogo, ultimately defaulted, probably because of the unforeseen decline of import / export due to the then on-going political insurgency in Nepal.

Data showing the future of cargo throughputat TIA as per CAAN forecast vis-à-vis actual data for the same period from 2002 to 2012 is as follows.

Year	Actual Import (MT)	Actual Export (MT)	Export Forecast (8%)	Import Forecast (5%)
1995	5,987	7179		
1996	7,410	7748		
1997	7,206	7630		
1998	6,375	8001		
1999	6,506	8868		
2000	6,774	10598		
2001	5,414	8527	(8527)	(5414)
2002	4,793	8160	9209	5684
2003	5,214	9652	9945	5968
2004	5,985	7391	10074	6267
2005	5,525	7738	11064	6580
2006	5,098	8012	12053	6909
2007	5,772	8111	13053	7253
2008	6,318	7568	14061	7618
2009	7,426	7922	15077	7426
2010	7,100	6922	17004	8399
2011	7,236	6249	18040	8818
2012	6,587	7889	19087	9260

Graphically, it looks like this:



■ = Actual Export = ■ ■ ■———

♦ = Actual Import= ♦ ♦ ♦

▲= Forecasted Export = ▲▲▲

X=Forecasted Import = X XX

The graph has a very interesting feature to note. While it shows forecasting the export cargo trade by 8% and import by 5% as estimated by CAAN, and gives a very bright picture for the future of air cargo in Nepal, actual data for the years 2001, 2002 and 2003 and beyond proved to be quite an anti climax in the sense that it (import and export cargo) made a nosedive in the years 2002, 2003, and so on, as the whole cargo business in Nepal (90% of the factories closed, etc, etc) collapsed due to the decade long political insurgency. Needless to say, Airogo Co. of Chennai, India was too scared to commit and go on paying the annual lease amount to CAAN amounting to more than Rs. 1.35 billion within the lease period of fifteen years. No surprise, Airogo, at the end of more than two years of negotiation with CAAN, defaulted. For CAAN, it had to start the whole exercise all over once again.

Government of Nepal, Department of Customs formally handed-over the custodian rights of all bonded air cargo at TIA to CAAN on 19 June, 2007. Subsequently, CAAN by signing an MOU, permitted the Nepal Transit and Warehouse Management Co. Ltd. (NTWMCL), an undertaking of the Government of Nepal, to operate the Bonded Warehouse in Ashad 2067 (July, 2010). It is to be noted that, CAAN failed to apply the charges mentioned in CAAN Airport Tariff Rules 2067 then due to the unlawful agitation by some local cargo forwarders. As a result NTWMCL, to this date, is officially charging the cargo rates as low as 3 pice, 40 pice, 80 pice per kg to this day, virtually free of cost, at the cost of CAAN. CAAN made this decision in haste. It is now repenting in leisure.

Details of current warehousing rates in force and applicable since more than decades ago, are as follows:

[Note: Rs 1.00 =100 Pice]

(1) Export

(1.1) General Goods (Per Consignment)

(a) Upto 50 Kg - Rs. 70.00

(b) From 51 Kg upto 500 Kg - Rs. 140.00

(c) From 500 Kg upto 1000 Kg - Rs. 220.00

(d) Over 1000 Kg - Rs. 280.00

(1.2) Demurrage Charge

(a)First seven (7) days - Free

(b)From eight (8) days to thirty (30) days - 40 Pice Per day / kg

(c) From thirty one (31) days to sixty (60) days - 80 Pice Per day/ kg

(d) Over sixty (60) days - Rs. 1.20 Per day / kg

(1.3) Valuable goods -Rs. 280 Per Consignment

(2) Import

(2.1) General Goods

(1.1.1) Warehouse Charge per day per Kg

(a)Warehouse charge upto seven (7) days-3 Pice

(b)Handling Charge (governmental and personal effects)- Rs. 43.00 per packet or 80 pice per Kg whichever is higher.

(1.1.2) Demurrage Charge

(a)Upto first seven (7) days -Free

(b)From eight (8) days to thirty (30) days -40 Pice day / kg

(c)From thirty one (31) days to sixty (60) days -80 Pice day / kg

(d)Over sixty (60) days -Rs. 1.20 day / kg

(2.2) Courier Charge

Document Parcel and Dip.Mail Rs. 10 per pkts.

Others Rs. 43 per pkts or 80 Paisa per kgs whichever is higher.

A glimpse of the gross revenue, thus charged by NTWMCL in fiscal year 2067/68 and 2068/69 is presented below.

Fiscal Year	Weight (MT)	Warehouse Fee	Late Fee	Total Income
067/68	7914.00	33,19,330/-	4,50,613/-	37,69,943/-
068/69 (First 9 months)	6535.00	24,72,460/-	2,67,160/-	27,39,620/-

Volume of Import and Income

Fiscal Year	Weight (MT)	Warehouse Fee	Late Fee	Total Income
067/68	6037.00	1,45,06,164/-	98,46,920/-	243,53,084/-
068/69 (First 9 months)	5267.00	1,10,69,929/-	1,16,84,990/-	2,27,54,919/-

Note: 1. English calendar year and Nepal Fiscal Year are different.

2. Rates being applied for Cargo Handling is much lower than those quoted in CAAN Airport Tariff Rules, 2067.

Only 66.66% of the savings after deducting all the operating cost by NTWMCL is payable to CAAN by NTWMCL, which is virtually very negligible.

CAAN Airport Tariff Rules, 2067, have been issued. But, "Cargo Terminal Service Charges at TIA", as mentioned in Schedule-8 of this "Rules" could not be applied yet. Attempts were made again and again by CAAN in 2012, 2013 and 2014 too, whereby when the winning Bidder (as per these tender notices) takes over DOM of ACC, rates as per CAAN Airport Tariff Rules, 2067 becomes applicable. They are presented hereunder in a tabulated form.

S.N.	Nature of Cargo	Export	Import
1	General Cargo	Rs 2.85 per kg or Rs 200.00 whichever is higher.	Rs 5.35 per kg or Rs 100.00 whichever is greater.
2	Valuable Cargo	Rs 3.00 per kg or Rs 300.00 whichever is higher	Rs 8.00 per kg or Rs 200.00 whichever is greater
3	Perishable Cargo	Rs 3.00 per kg or Rs 300.00 whichever is higher	Rs. 8.00 per kg or Rs 200.00 whichever is greater
4	Dangerous / Hazardous Cargo	Rs 6.00 per kg or Rs 600.00 whichever is higher	Rs. 16.00 per kg or Rs 400.00 whichever is higher
5	Express Courier Bag/ Parcel / Cargo	Rs 5.00 per kg or Rs 100.00 whichever is higher	Rs 5.00 per kg or Rs 200.00 whichever is higher
6	Live Animals	Double the rate applied for Valuable cargo for Export or Import as the case may be	

Note:

1. Aforementioned cargo will be classified as per ICAO Air Cargo Tariff Rules.
2. Palletisation or De- Palletisation job will cost Rs 100.00 per MT
3. Extra Rs 50.00 will be charged per consignment it the cargo clearance service is to be performed on public holidays and/or beyond normal office hours.
4. No demurrage will be charged for the first 24 hours on export cargo. After the gratis period,

demurrage at the rate of Rs 1.00 per kg from next day upto 30 days, Rs 1.50 per kg from 31st Day to sixtieth (60th) day and Rs 2.00 for the duration thereafter will be charged.

5. No demurrage will be charged for the first 5 days on Import Cargo. After the gratis period, demurrage at the rate of Rs 2.00 per kg from next day upto 30 days, Rs 2.50 per kg from 31st day up sixtieth day and Rs 4.00 per kg for the duration thereafter will be charged.

   The free (gratis) time also would be counted under demurrage if the consignment is not moved out or taken delivery within free (gratis) time.

6. If actual weight is greater than the declared weight, the charge will be double the applicable normal rate.

7. There will be no service charge on human remains, whether out-bound or in- bound.

8. Building or room rental rate of ACC will be Rs 550.00 per sq. m. per month.

All the attempts to engage a reliable and experienced international air cargo warehousing company for the DOM of ACC have failed. The million dollar question is-What next? What is the best way out for CAAN? Only time will tell obviously, CAAN is over burdened by the backload of ADB loan, which, as the figures indicate, could never be paid back if the existing situation is allowed to be continued any further. The least CAAN can do, is let NTWMCL charge the rates as mentioned in CAAN Airport Tariff Rules 2067 (CATR 2067) immediately. And secondly, quadruple the rates mentioned in the CATR 2067 from the start of fiscal year 2073/74 at the latest, anyway whatsoever. A separate Service Centre Building was supposed to come up in 2003. It is yet to be realized. There are lot of other scope unraveled yet to generate more business in ACC. ACC must be fully exploited. Sooner the better.

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Work in progress towards south of cargo complex (ICB01)

Audit Report and Certification: Financial Statement of a Development Partners' Funded Project

Janak Raj Gautam
Former Dy. Auditor General

Preface

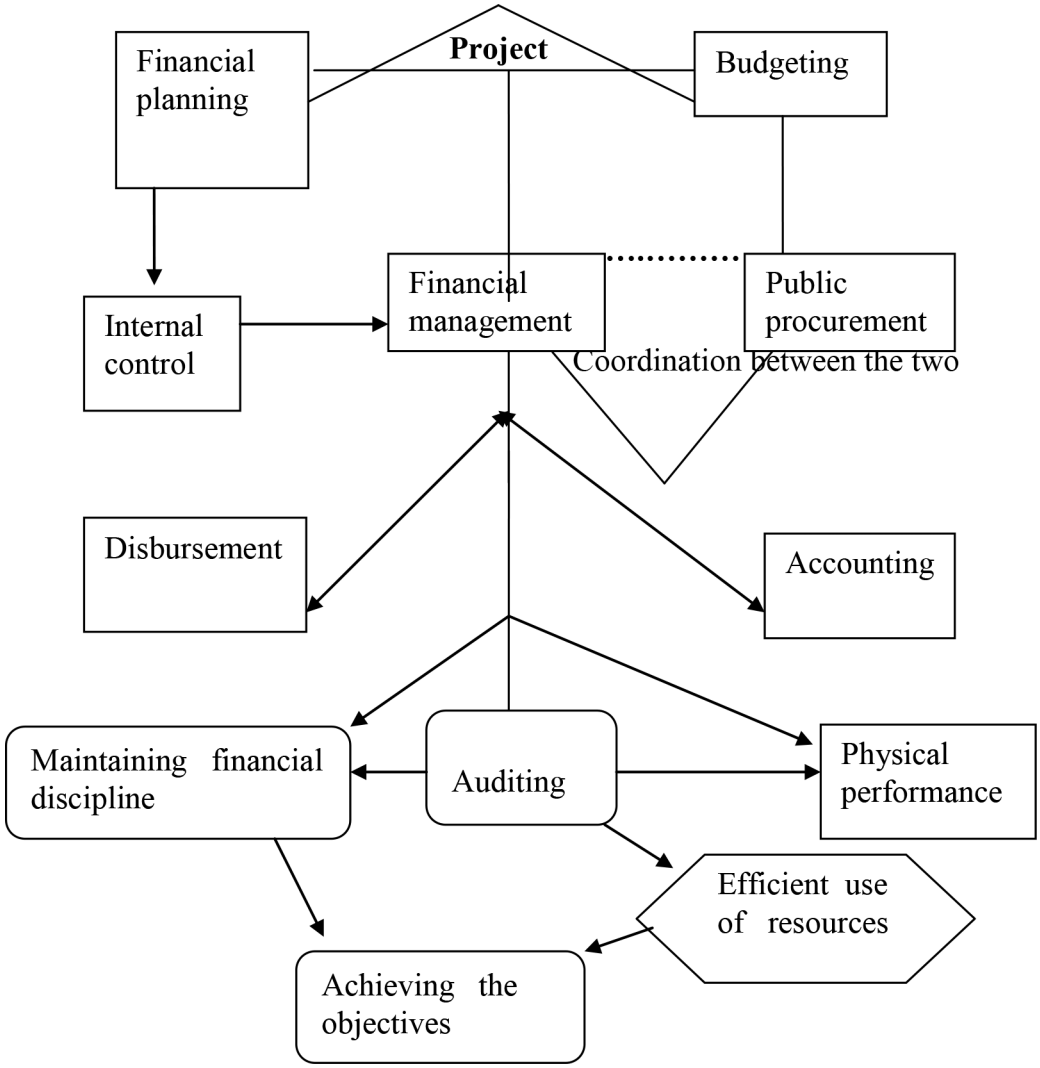
A Government audit report, in our context, refers to formal written presentation of results usually made after an enquiry, test, examination and verification of financial matters by the Office of the Auditor General (OAG) of Nepal. This includes a true and fair view of the state of affairs, organisational functioning and working results and opinion thereon. The auditor should disclose some key audit procedures followed for vouching and verification of including all supplementary and periodical reporting. In an audit of a government project, effective implementation of the covenants of agreements, directives, code of ethics, operatiing guidelines and a provision of public audit have been adhered as per transparency and accountability. This article particularly is based on the reference of Government financial rules 2008, project agreement with developing partners, reports and directives of the Auditor General, my long-time working experience in project auditing and so on.

Certificate, on the other hand, is an official document that may be used to prove the facts therein are true and correct. The word certificate is derived from Latin words 'citrus' (certain) and 'facere' (to make). Literally, for a long time, auditing profession remained a one-to-one cross-check on the correctness and not really the fairness of the financial statement. The auditors should certify that the operational income and expenditure of accounts are faithful, reliable and exact in fact. Consequently, an audit certificate as a written confirmation, connotes verification for certainty, with the accuracy of facts precisely. According Justice Lindely- 'An auditor must be honest, therefore, must not certify what he does not believe to be true'. Naturally then, it needs taking reasonable care and skill for certifying true and correct after evaluating internal control, examining books of accounts, checking financial statements and verifying with financial covenants but not involving any estimate or opinion. The underlying idea of requirement of the certificate lies in the need of an assurance of a correct and complete disclosures from a government auditor.

Development cooperation

In Nepal's development initiative, some development partners are providing grant, loan, technical assistance and other funds in the form of cash, commodity, direct payments, reimbursement, and turnkey projects under the Principles of Paris Declaration, 2005. Therefore, Nepal government shall ensure that the available foreign sources and counterpart funds of government for all capital works are transferred to the project accounts on a timely basis to complete the tasks economically and efficiently. In our context, development cooperation is a form of a combination of aid modalities like sector wide approach (SWAp), sector programme support, budgetary support,

Aspect of Financial Management of a Project



project assistance, technical assistance and other aid-instruments complying according to the Nepal Development Policy, 2014. Before the completion of the mission, the project provides a copy of aide moiré requesting all concerned authorities such as Finance Comptroller General Office (FCGO), Office of the Auditor General (OAG) and ministries for their cooperation so that the audit report of the project accounts may be submitted within the following due-date.

Bilateral agreement for grant and multi-lateral agreement for loan and grant, 2014

Category of Agreements	Assistance/grant providers	Loan providers	No. of donors
Bilateral	India, China, Japan, UK, Norway, Switzerland DFID, AusAid, USAid etc	India, China	19
Multi-lateral	ADB, WB, OPEC Fund, Climate change fund, EU, Denmark, Norway, Finland etc.	ADB, WB, OPEC Fund, CIF, IFAD, Saudi Fund,	10
United Nations Agencies	United Nations' assistance and grants.	–	12

Due date

It is to be noted that the project accounts are submitted within the deadline, for instance, 2013-14, a few of the project accounts were not submitted up to May 2014, i.e. after completing the end of the grace period also. Therefore, in the ministry-wise program should include if there is a requirement of audit certificate to be issued to the developing partners of donor funded projects. By and large, appropriate remedial measures should be established to submit the certified copies of audited accounts and financial statements together with project accounts, statement of expenditures (SOE) and designated accounts are required to be submitted within the following date in every fiscal year:-

Schedule of Auditor's Report Submission Deadlines

	Donor Institutions	Un audited report	Audited report	Grace-period
1	World Bank (WB-IDA)	15 October	15 January	15 April
2	Asian Development Bank		15 April	-

Distinction

Audit report and Audit certificate are fundamentally the same and, to some extent, there are some distinctive features from each other although the source of their contents is the same books of accounts, referral evidences, periodical reporting and financial statements. In some cases, the form and contents of certificate are specified by statute, agreement, notification, memorandum of understanding. A project auditor should not normally issue the report or certificate until the statutory audit of the same project has been completed.

Difference between Report and Certificate

Audit Report	Audit Certificate
1.**Books of accounts–** Whether Proper books of accounts are maintained and accordingly, the financial statements and annexure are prepared in the format as approved.	Existence of cash balance, approved budget, disbursed amount, expenditure and value of assets from initiation to till the date of issue.
2. Clarification– Obtain information and explanations for more clarification from management.	Review management letter already issued by the auditors.
3. Expression– A report is a formal statement usually made after an enquiry, Using the terms 'true and fair', 'full and fair', or 'represent properly' for the expression of opinion based on report, Using the representaive samples, not verified or unchecked information, are included within the same expression.	It is a written confirmation of the accuracy of the facts stated therein and does not involve any estimate or opinion. An auditor's certificate represents certain figure is in a position to vouchsafe the truth of the statements as per their professional efforts. Furthermore, it gives an impression that the auditor is issuing a guarantee of absolute of correctness and accuracy of certain facts.
4. **Judgment-** There is no question of exactitude, precision, meticulousness, correctness in case of a report since its ground may also be on estimates and judgmental elements.	A certificate may be issued where there is a need of certificate rather than audit report. A certificate may be a part or a segment of a few of the by-gone years also.

5. Responsibility– An auditor is responsible for ensuring that the report is based on factual data and information satisfactorily to the best of their beliefs. Normally, they are not held responsible unless professional negligence is proved.	Assure on no apparent mistake, inconsistencies or advertent errors are in the financial statements. If any mistakes found later, the auditor will be held responsible accordingly.
6. Basis- It is arrived by the application of due professional care and reasonable skill on examination, inspection, observation, enquiry and review of specified matters.	It is certified certain matters that are already included in the statutory auditing. An auditor can issue a certificate where the auditor verifies the factual accuracy of financial figures.
7. Disclosure– A reporting auditor is responsible for assurance of complete and correct disclosure.	Factual accuracy of the contents therein are disclosed accoring to the needs of the stakeholders..

Audit plan

In the annual program document of the project management, actions on deficiencies disclosed by the auditor in the report are to be responsive and resolved in a given time with adequacy of corrective measures, necessary clarification and up-dated information. The time-basis estimated action plan, i.e. generally starting from August and ending maximum within the month of January, linking with the functional responsibilities of entities, is in sum-up here as below-

Accounting and Auditing Activity	Responsible agency	Estimated period
1.Internal audit completion	FCGO	One month
2.Sending letter of request for final audit and verification of project account to the OAG	OAG	5 days
3.Preliminary audit observations and inspetion of books of accounts	OAG	15 days
4.Checking, analyzing and verification	OAG	10 days
5.Clarification and responsive on preliminary audit report by management	Project management	15days
6.Final audit observations	OAG	10 days
7. Preparation of audited financial statements with the signetures of competent officials.	OAG	15 days
8. Submission of the financial statements	Project management	15 days
9. Checking and analysing the financial statements of the project	FCGO	15 days
10.Certification on the project accounts and financial statement	OAG	15 days
11.Submission of audit report to concerned authorities	Project	5 days
12. Make response to audit queries before the concerned authirities and in the meeting of the developing partners.	Developing partners	5 days

The way foreward

6.1 Annual program – In the ministry-wise annual program, if there is a requirement of audit certificate in a donor-funded project, the same should be disclosed in the program.

6.2 Financial management– Nepal Government, as the borrower regarding projects, shall establish a sound financial management system with accounting principles, assumptions and policies for project.

6.3 Phase-wise project audit– Auditor General should start phase-wise project audit, i.e. a project may be divided into some phases regarding nature of work, time, cost, area, achievement indicators and products of such projects, Initially, it is better to start in the performance audit of a project.

6.4 Review– Reports of compliance with the requirements and covenants monitored periodically by review missions, routine project supervision, and the same may be reviewed by the auditor.

6.5 Template – Some of the donors, if stand alone, require model audit certificate that the template for such should be specified in written as a covenant of the agreement.

6.6 Meeting the deadline – The project accounts should be submitted within the deadline, since the past trend is the most of the project account statements were not submitted within the aforesaid due-date. i.e. even after termination of the end of the grace period also.

Dolpa Airport upgrading work

De-briefing: A tool of Safety Management System

Sudhir Kumar Chaudhary
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Debriefing is a process of receiving an explanation, receiving information and situation-based reminder of context, reporting of measures of performance and/or opportunities to further investigate the results of a study, investigation or assessment of performance after participation in an immersive activity is complete. Debriefing is most effective when conducted interactively between the participant of the immersive activity and the assessment or observation personnel. Such debriefings are common in a unit and crew activities and in a training context to improve knowledge, skills and abilities (KSA) significantly when conducted formally using pre-determined measures of performance derived from front-end analysis.

Objective of Debriefing

De-briefing as safety management activities may be used for the implementation of Safety Management System in ATS, with the following objectives:

a. Analyze the occurrence reports, events with impact on safety of flight.

b. Identify safety hazards.

c. Assess the safety risk and find the way out for risk mitigation.

d. Assess the safety performance and recommend for remedial action.

e. Establish harmony among ATS personnel in the work place.

Debriefing in SMS

In the context of Safety Management System (SMS), debriefing process can be used as an important tool for the collection of safety data useful for the identification of hazard in an organization. Accurate and timely reporting of relevant information related to hazards, incidents or accidents is a fundamental activity of safety management. The data used to support safety analysis may be reported by multiple sources. One of the best source of data is direct reporting by front-line personnel (Air Traffic Controller, Pilots, Maintenance personnel etc.) since they observe hazards as part of their daily activities. A workplace in which personnel have been trained and are encouraged to report their errors and experiences is a prerequisite for effective reporting system. Through debriefing process, safety data should be collected and data on hazards should be analyzed with other data source to support the Safety Risk Management(SRM) and Safety Assurance (SA) process.

Use of Debriefing in ATS SMS

Hazards exist at all level in the organization and are detectable through use of reporting system, inspections or audits. Mishaps may occur when hazards interact with certain triggering factors. Hence, hazards should be identified before they lead to accidents, incidents or other safety-related occurrences.

Effective hazard reporting is a key component of safety management.The type of data to be

collected may include accidents and incident, events, non-conformance or deviation, deficiencies and hazards.These data may be collected by conducting different activities on the safety management. In this regard, debriefing process may be the part of safety management activity and helpful to implement safety management system.

As outlined in the Manual of Standard Air Traffic Services (MATS) Nepal second edition, ATS Safety Management activities include:

a. Monitoring of overall safety levels and detection of any adverse trend

b. Safety reviews of ATS units

c. Safety assessments in respect of the planned implementation of airspace reorganizations, the introduction of new equipment systems or facilities, and new or changed ATS procedures, and

d. A mechanism for identifying the need for safety enhancing measures.

Aforementioned ATS SMS activities are important for the implementation of safety management system. Such activities need to be conducted on a regular basis under the SMS implementation plan. To conduct such SMS activities (debriefing), a high level management commitment is necessary together with strong decision on the following six important highlighted issues:

- Identify appropriate **Accountable** and **responsible** executive.
- Allocate enough **resources**
- Conduct **training** on SMS for the employees involved in SMS.
- **Trust** and **respect** between personnel and management must be created and supported at the senior management level.

Tribhuvan International Airport (TIA) as Air Traffic Service Provider requires implementing safety management system. Out of 12 elements of ICAO SMS, the first and the most important element is the management commitment and responsibility.The ATS provider should define its safety policy which should include a clear statement about the provision of the necessary resources for the implementation of the safety policy. Continuous improvement in safety performance is possible when safety becomes a value within an organization as well as a priority at the national or professional level. A healthy safety culture relies on a high degree of trust and respect between personnel and management and must therefore be created and supported at the senior management level.

Benefits of Debriefing

a. Debriefing would help establishing formal incident reporting system for ATS personnel to facilitate the collection of information on actual or potential safety hazards or deficiencies related to the provision of ATS, including route structures, procedures, communications, navigation and surveillance systems and other safety significant systems and equipment as well as controller workloads.

b. Review on the reports concerning the serviceability of ATS facilities and system such as failure and degradations of communication, surveillance and other safety significant system and equipment would help to detect any trend in the operation of such system which may have an adverse effect on safety.

c. Safety-related reports concerning the operation of air traffic services, including air traffic incident reports can be reviewed in the debriefing to detect any adverse trend.

d. Debriefing would help conducting safety reviews of ATS units on a regular and systematic basis.

e. Debriefing would help to carry out safety assessment in respect of proposal for significant airspace reorganizations, for significant changes in the provision of ATS procedures applicable to an airspace or an aerodrome, and for the introduction of new equipment, systems or facilities,

f. It would help defining the level of safety performance.

g. A mechanism for identifying the need for safety enhancing measures can be developed through debriefing.

h. A procedure for post-implementation monitoring of safety related activities can be developed to verify the defined level of safety performance.

i. Hence, TIACAO will be able to implement SMS.

Status of ATS SMS in TIA

In TIA, ATS safety management system has not been implemented so far. ICAO SMS requires an Accountable Executive who is responsible for the overall implementation of SMS. To meet this requirement, Civil Aviation Authority of Nepal (CAAN) has appointed Deputy Director General of Air Navigation Service Directorate (ANSD) as an Accountable Executive to implement safety management system in Air Traffic Services. An Aeronautical Information Circular (AIC) to promulgate Voluntary Information Reporting System (VIRS) has also been released by CAAN to support SMS/SSP which needs proper implementation so as to collect necessary safety information. Separation process into regulatory body and service provider is yet to be materialized to meet the ICAO requirement. As of now, Director General of CAAN is acting as both regulator as well as service provider. A big issue has been raised on the Accountable Executive and the responsibility of ATS SMS within CAAN. It has been learnt that a committee formed by the DGCA has suggested splitting the ATS provider from TIA Civil Aviation and merge under ANSD, which may not be enough for the implementation of SMS.

Even after this move the implementation of ATS SMS would be a big question because the reason behind not implementing ATS SMS in TIA is not yet assessed. It is only the matter of trust and respect between personnel and management and support from senior level management. This move would be favorable only when the ANSD delegate its responsibility and accountability together with the resources to the Flight Operation Department (FOD). Similarly collaborative interaction between front-line personnel and their safety and quality counterparts, as well as the representatives of the regulatory authority is necessary to show the positive organizational culture.

Installation of Monopulse Secondary Surveillance Radar (MSSR) in TIA for the provision of En-route Radar Control Service is in progress and targeted to inaugurate on 1st August 2016, according to JICA. The challenges to be faced are:

a. Restructure of airspace: (i) Review the jurisdiction of Kathmandu approach control so as to reduce it to 25NM laterally and at or below 13500ft vertically. (ii) Review the jurisdiction of Kathmandu Area Control Centre (ACC) so as to enlarge it beyond 25NM laterally to the Flight Information Region (FIR) boundary except the jurisdiction of west of 83 degree East and other control zones and vertically up to FL 460 within Control airspace and unlimited within uncontrolled airspace.

b. Develop Standard Operation Procedures (SOP), develop scenario for simulator training, develop rating manual for en-route radar control service

c. Split Area Control Centre (ACC) into ACC East and ACC West since installation of Regional Communication for Air to Ground (RCAG) East has been completed.

d. Amend ATS Operation Manual to incorporate ATS provision related to en-route radar control service.

e. Aforementioned challenges can be addressed through debriefing.

Conclusion

Through de-briefing process most of the ICAO's ATS safety management activities can be conducted and through this process the effective implementation of the ATS SMS can be achieved. By addressing the Findings and Recommendations (F&R) raised through safety oversight program conducted by the ANS audit team, the level of safety can be defined. In this regard, CAAN provides assistance to the service provider including ATS provider with safety-related deficiencies identified through audits, in order to implement the corrective action plans, and thus enable to meet the CAAN obligations.

Civil Aviation Authority of Nepal should assess the implementation status of ATS SMS in Nepal as soon as possible. Human resources on the SMS part needs to be developed. Principle of deployment of employees by allocating right person in right place would help improving safety. CAAN should make a policy to provide SMS training to all staffs involved in the ATS operation. Then choose the qualified personnel among them and conduct SMS activity. Implementation of SMS at TIA is the challenging issue because of lack of qualified and trained personnel on SMS. However, de-briefing is being conducted with the minimum resources without having appropriate training. It is being experienced that the de-briefing conducted so far has helped enhancing safety in ATS operation by solving some operational problems. Such type of ATS safety management activities should be given high priority and full support by the high level management. In order to develop a healthy safety culture among operational personnel considering the special words like accountability, responsibility, resources, training, trust and respect would be helpful implementing safety management system.

"Watch your thoughts;
They become words."
"Watch your words;
They become actions."
"Watch your actions;
They become habits."
"Watch your habits;
They become character."
"Watch your character;
It becomes your destiny."

Since ATS safety management activity is an act to implement safety management system, it should originate from the thought from the senior level management which in turn would become words.

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4. Wikipedia

Airport Rescue and Fire Fighting Services at a Glance

Krishna Bahadur Thapa
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The principal objective of Rescue & Fire Fighting Service (RFFS) is to save lives in the event of aircraft accident or incident. The operational objective is to respond as quickly as possible to aircraft accident/ and or incidents to create maximum opportunity for saving life. It is therefore, RFF personnel shall be properly trained to perform their duties in an effective and efficient manner and shall participate in live fire drills commensurate with the types of aircraft and types of RFF equipment in use at the airport including pressure fed fuel fires using SMS and the RFFS should be facilitated with rescue &fire-fighting equipment and extinguishing agents including water supply provision as per airport category in accordance with ICAO, SARPS.

There are so many factors which may affect the operational objective of RFFS. The efficiency for a rescue and fire fighting service is significantly dependent on the reliability and effectiveness of its communication and alarm system. The provision of effective communication is necessary to deal with an aircraft incident and accident. Effective communication cannot be achieved without considerable preplanning, provision of suitable equipment, specific training and frequent testing and assessment. Each airport authority should establish a Standard Operating Procedure (SOP) for emergency communication and specified frequencies. As situation permitted, RFF personnel should take immediate steps to establish direct contact between the pilot and on scene commander in the aircraft emergency. The purpose is to reduce confusion and bring a better understanding between crew members and rescue and fire fighting personnel. Aircraft Operators must ensure that each of their pilots is familiar with the regulations and procedures of, among others, the airports to be used. RFF personnel should learn to converse succinctly using appropriate telephony language. RFF personnel should also be trained to communicate with the flight crew through internationally accepted ground-to- aircraft hand signals.

The role of other emergency responders may affect operational effectiveness. Coordination between the RFFS and others emergency responders: local fire department, police, army, red-cross and hospitals etc should be achieved by prior agreement for assistance in dealing with an aircraft accident and incident.The coordination of these services will require the same degree of effort as is necessary in developing the AEP. In accordance with the provisions in Annex 14, Volume 1, airport authority is required to establish an emergency plan to cope with an emergency occurring at the airport or in its vicinity. AEP should be tested. Three methods of testing are Full-scale exercises; Partial exercises; and Tabletop exercises. These exercises shall be conducted timely to ensure the adequacy of response of all personnel involved; emergency

plans and procedures; emergency equipment and communications.

Conventional rescue and fire fighting vehicle may not be capable of an effective response in the difficult terrain, therefore, the airport authority should ensure the availability of special procedures and equipment to deal with accidents which may occur in the difficult environment. There must be emergency access roads at an airport. The direct access to the operational runway will assist the objective of minimizing response times. Access routes to the response area should be designated and suitable for use by RFF vehicle. Access routes to cover difficult environs within a distance of 1000 m beyond the ends of each runway should be established and should be suitable for use by RFF vehicles. All rescue and fire fighting vehicles should normally be housed in a fire station. Satellite fire stations should be provided whenever the response time cannot be achieved from a single fire station.

Thorough knowledge of the topography of the airport and its immediate vicinity is necessary for every responder of RFF units. The use of grid maps and careful selection of routes is essential for meeting the response objectives. The location of obstacles both permanent and temporary should be known. The load bearing characteristics of the airport soil structure under various weather conditions should be determined and taken into account.

Airports are called never ending project so the work in progress is likely to affect the response capability or operational performance of the RFFS and other emergency services. Prior notification of the work intended is essential so that amendments to overcome or minimize their effects during response for the emergency services.

Low visibility conditions affect the operational procedure of RFFS. Procedure should be developed to place the RFF personnel on stand-by alert when the airport visibility has deteriorated below a predetermined level i. e. less than 200 m. This should include the provision of forward stand-by positions where response times are likely to be compromised. ATC shall be made aware of the exact location of the RFF vehicles assigned to stand-by duties. Where available, surface navigational aids, such as ground radar, lights system, shall be fully utilized through coordination between RFF personnel and ATC.

The job nature of RFF personnel poses numerous potential hazards during accident or incident even in the training, and they have to perform strenuous activities over an extended period of time. It should be taken into account that each aircraft fire is unique and must be individually evaluated. RFF personnel shall be medically and physically fit because of more practical field based service. For this reason, regular practice is very necessary which helps to update as well as enhance skill and knowledge of RFF personnel.

As the success of any RFF operations rely very much on teamwork, the importance of building mutual trust and team coordination amongst RFF personnel during drills under station routine and training cannot be overstressed. Training and station routine must therefore be designed to guide RFF personnel towards achieving these objectives.

Rescue & Fire Fighting Services' organization is a highly specialized one. Management should promulgate a system of self audit. It is very necessary to include ratings and revalidation of individual standard within that system.

Management must accept that not all personnel can perform at the same level of physical fitness standard. The key is to establish the minimum physical fitness requirements of fire fighters and design a program that can best replica these demands. More importantly, as we recognize the importance of team work and team coordination in rescue and fire fighting operations, RFF services should place heavy emphasis on the collective performance of an RFF outfit during such audit.

Personality clashes within team complicate the task of a commander and can affect both safety and efficiency. A commander's ideas and actions influence the thought and behavior of others. Through the use of motivation and persuasion, and an understanding of the goals and desires of the team, the commander becomes an agent of change and influence. The commander must establish the briefing & debriefing including regular interaction program amongst colleagues to develop teamwork and positive attitude towards profession. Any assessment of the operational effectiveness and safety of RFF personnel must take into account human factors principles such as team coordination. The application of human factors principles to ARFF services must be in order to achieve higher level of professionalism too.

RFF personnel are very much engaged in the humanitarian assistances by doing their duty properly specially during emergencies at the airports. Today's need is dedication towards profession as well as organization. Let us be professional to save human lives and properties. This is the main motto of ARFF services.

Aviation: Safety and Security its Heartthrob

Birendra Kumar Singh
Former Joint Secretary, MOCTCA

The Backdrop

Safety and Security has been the key feature in about anything you name it: be it cars, buses, trains or the most talked about subject especially in the aviation arena that too in the flying machine. Yes the airplanes of any from the day of its discovery- safety and security has always been at the zenith of its concern for everybody. This concern of safety and security has drawn the attention of all the stakeholders.Yet the ingenuity of the human brain has the capability of hoodwinking the very pundits of aviation security and safety bringing about heavy damages and loss of life breaching the norms of AVSEC (Aviation Security) throughout theworld. Of the many treacherous incidents that has been marked few incidents have etched into our souls to bring a drastic turn about in aviation as a smudge in the aviation history. Especially the most infamous 9/11 incident which has always haunted us clearly illustrates that such incidents tear the very fabric of aviation industry. This incident being the watershed in the aviation arena, need to tickle our brain to reflect as to what really went wrong that gave birth to such incidents: maybe we are too over confident, over reactive in pursuing our duties or there may be umpteen of reasons as to why there has been a security breach or a mismanagement which could have been rectified to a very last minute but a slip of a minute brought a huge and a massive disaster. So as the saying goes in the aviation arena: safety in air starts with safety on ground, because if you do your ground work meticulously then less chances of security or safety being undermined.

Awareness

Needless to say the very basic step of safety and security is the awareness by all inclusive of the passengers. They should be well motivated and have the inner urge to say "Yes security is for my safety and I should be utterly vigilant to see that nothing and nobody is there that may breach the norms of Safety and security". Taking this in view ICAO has, time and again, in order to enhance the security and safety procedures, brought about changes not only in its rules and regulations, but also in the equipment that are being used at present day. So, passengers boarding the aircraft have to go through strings of security checks and gadgets.While the means of checking passengers has also been intensified. It has made the check process faster and more reliableto some extent.

Safety and Security: Two sides of a coin

The tragic event of the Sept. 9/11 has made people use the term Safety and Security synonymously yet there is a difference when it comes to air travel. Aviation safety is the efforts that are taken to ensure airplanes are free from factors that may lead to injury or loss, while security in the aviation means the actions taken by all the concerned stakeholders to thwart any lurking danger that is threat to aviation. It is also related to intelligence gathering, pre-boarding procedures and airport security personnel.

On Safety

Besides the many ingredients that make up safety the followings are some of the factors enhancing safety:

- The aircraft design

This is of major consideration as in building an airplane many components are considered to focus on the safety aspect which are built in such a way that they can perform in conditions well beyond what would normally be needed in regular operations. They must be able to anticipate and avoid problems, function at full capacity if something does go wrong and meet the minimum certification standards set by the government regulatory agencies. Major systems are designed with double or triple backups, or redundancies. For instance, mechanical compasses back up electronic gyrocompasses, and every airplane has several kinds of radios.

- The Human Factor Engineering

Records have revealed that almost 70% of the accident that occur in aviation has been the results of human factor that is why human specialist are utilize fully in the designing of an aircraft so it becomes human friendly in the use of the flight deck. This way the ultimate goal is have an improved interaction between human and the machine.

- Government Agencies

This is considered as the most important of all the factors as this agency is the core to ensure if safety is really being performed or not. The government regulatory agencies enforce air safety rules in many ways: pilots have to go for check rides, simulators, trainings etc., review the airlines training program, and audit maintenance records, enhance the security methods of the airport, the performance of the aircraft is monitored on timely basis that enhances the overall safety of not only the aircraft but also of the human being at large.

On the Security Front

Many companies are working day in day out to improve the security in aviation especially Boeing Company is developing enhanced security flight deck doors for 747, 767 and 777 airplanes. One of Boeing's first enhanced security successes was the development of stronger cockpit doors which were able to withstand bullets, explosives and enough blunt force to resist a strong, large male ramming the door at full force. More trainings have been given to various personnel in the aviation arena be it ATC, security persons, firemen, airline staff, and others that will enable security to be in the most tip top condition to perform the assigned jobs of the aviation people be it in ground or in the air thus securing passengers and others to travel safely to their destination.

The Challenge as regard to security and safety

Tremendous challenges are ahead in pursuing safety and security as our security checks should be such that it should not be cumbersome, slow, irritating. ANNEX 17 clearly stipulates that passengers cannot be troubled in the name of security and nothing should be overlooked in the name of pleasing the passengers. So we must be able to strike a balance between the two aspects that has been the hardest job and biggest challenge of the modern day air flight. The solutions we develop have to do more than just increase security - they have to make air transportation safe, secure, efficient and affordable – and that is where we have to wok relentlessly toward that goal of balancing these two aspects : swift and smooth for all.

Conclusion

In quest for safety and security in the aviation lots needs to be done and there has to be a constant work so that we do not rest in our laurels. Because complacency is to attract those who are always on the run to destroy the very fabric of aviation. Hence vigilance, alertness, well trained (so just by the look of the person you can smell fishy and omen oozing out and have the capability to pounce at the person). That requires skill amalgamated with training accompanied by the latest technology and above all well motivated manpower at all stages of security and round the clock if we are to impede the danger.

A Discussion on Financing the Regulatory CAAN

Shaligram Poudyal
Former Director, CAAN

Civil Aviation Authority of Nepal (CAAN) will be split into two corporate entities within few years. Regulatory functions will rest upon new CAAN. Airport operation and air navigation business will be looked after by a new entity called Airports & Air Navigation Services of Nepal (AANSON). Asian Development Bank (ADB) financed project called "Capacity Development of Civil Aviation Authority of Nepal" has prepared draft "Corporate Business Plans" (CBP) for both of these entities. The consultants involved are Prointec, ERMC (p) Ltd. and ineco. In the CAAN_CBP, consultants have identified present revenue sources, annual operating costs, and deficits fora five year period of (2015/16 to 2019/20). Operating revenues are found insufficient to cover CAAN's annual costs. International and domestic passenger forecast data are revised. Charges for aerodrome licenses, ANSP operator licenses, regulatory fees and security fees are proposed. To recover the revenue deficit, Passenger Levy Charge (PLC) of Rs. 48 isproposed. PLC will cover about 90% of CAAN's operating costs.

In this article, I would like to revisit cost estimates of CAAN_CBP at gross, point out the difference. We will explore the best practices followed in representative countries for cost recovery, build idea and try to present our views in Nepalese context. Most importantly, we agree that our views and analysis are not that much sound as to establish professional authority. Therefore, we accept our shortcomings and request the readers to take this discussion as a commoners' understanding of the subject.

Financial Projections

Let us observe the summary of financial projections as given in CAAN_CBP. From an Earnings Before Interest, Tax, Depreciation and Amortization (EBITDA) point of view, financial estimates are as inTable 1.

Difference in Operating Expenses

There is a considerable difference in the CBP projection and the budgeted operating expenses. For FY 2015-16, the payroll and administrative costs budget for Board & DG Office, two Directorates, 4 Departments, and CA Academy is Rs. 768.85 million. At pro rata allocation for CAAN (85 employees' basis) this liability comes to Rs. 396.08 million. Thus, the CBP's projection with Rs. 117.86 million seems under estimated by Rs. 278.22 million making a difference of 336%.

Secondly, Pension and Retired Employee Benefit (PREB) expenses are not mentioned in the CAANCBP. For 2015/16 budget this liability was estimated to be Rs. 502.35 million. Presently, PREB liability for CAAN is mostly for the DCA (Department of Civil Aviation) staff. Operating expenses for FY 2015-16 with PREB liability would cometo Rs. 898.43 million making Rs. 780.57 million(762%) difference with CBP estimates. Thirdly, considering the situation in the aftermath of the last devastating earthquake, the twelve storey high rise commercial building proposed for CAAN Head Office is difficult to materialize. Therefore, Rs. 150 million as rental revenue projected for FY 2019-20 is to be excluded. Moreover, Airport Hotels are owned

Table-1: Summary of Operating Expenses and Revenues included in CAAN_CBP

Details	Before split	After split			Remarks
	2013-14	2015-16	2017-18	2019-20	
Staff strength	165	85	113	140	
Operating Expenses (million)	202.25 (Excluding AMDD & AOD)	117.86	158.45	214.31	With 16% combined effect of inflation &staff growth
Operating Revenues (million)	39.46 (Regulatory+ CAA)	272.71	255.61	288.93	Including levy @ Rs. 48/Pax and excluding rentals from commercial building/land
Operating Surplus /(Deficit) (million)	(162.79)	154.87	97.16	74.62	
CAAN Levy per passenger (Rs.)	0	48	48	48	
Passenger (Dom+Int'l)		3530125	3903501	4330361	

AMDD=Airport Operation and Development Directorate; AOD=Airport Operation Directorate; CAA=Civil Aviation Academy

by airports not by the aviation regulators. Any commercial operations other than professional consultancy services by CAAN will distract its concentration on regulatory mission. As we know the basic idea behind splitting CAAN into two entities is also to separate regulatory function and commercial function.

With this scenario, changed operating expenses and deficits of CAAN are given in table 2.

In the Table-2, revenue source, staff and passenger number are same as given. Only the effects of changed operating expenses are presented in separate rows. With adjusted operating expenses reaching to Rs.1462.80 million in 2019-20 we notice a huge deficit every year ranging from Rs. 625.72 million to 1173.87 million. Recovering this deficit only from passenger levy is to be increased from Rs 48 to more than Rs. 320. Such a high levy for domestic passengers is inappropriate. Also for international passengers, there is already a high charge. This was partly because of the recent increase in Tourism Service Fee (TSF) from Rs.565 to Rs. 1130. Previously a foreign passenger departing to overseas from TIA had to pay Rs. 2695. But now with recently increased TSF, one has to payRs.3260.

Observing this scenario, we like to discuss on some other options to compensate and recover CAAN's costs. Before that let us discuss on some relevant topics.

Aviation Sector Regulation

Main purpose of aviation regulation is to protect the consumer and the public by minimizing the risks on their travel safety. There are different players in civil aviation industry such as airports/ANSPs, air operators, ground handlers, aviation fuel suppliers, aircraft manufacturers/ maintenance agencies cargo operators, training institutions etc. Main focus is on **safety regulation**. Additionally, the growing private partnership in airports and ANSPs has required **economic regulation.** Economic regulation ensures **fair play** in the business by **setting price or price cap**. Regulatory entities do not

Table-2: Operating Expenses and Revenues of CAAN (based on 2015-16 Budget)

Details	Before split	After split			Remarks
Fiscal Year	2013-14	2015-16	2017-18	2019-20	
Staff strength	165	85	113	140	
Operating Expenses as given in CAAN_CBP (million)	202.25 (Excluding AMDD & AOD)	117.86	158.45	214.31	With 16% combined effect of inflation & staff growth
Adjusted Operating Expenses(including PREB) (million)	N/A	**898.43**	**1208.93**	**1462.80***	With 16% combined growth up to FY 2017-18 and 10% from 2018-19
Operating Revenues (Rs. million)	39.46 (Regulatory+ CAA)	272.71	255.61	288.93	Including levy @ Rs. 48/Pax and excluding rentals from commercial building
Operating Surplus /(Deficit) (million)	(162.79)	154.87	97.16	74.62	
Adjusted Operating Surplus/(Deficit) (Rs. million)	N/A	**(625.72)**	**(953.32)**	**(1173.87)**	
Proposed CAAN Levy per passenger (Rs.)	0	48	48	48	
Passenger (Dom+Int'l)		3530125	3903501	4330361	
Net deficit per PAX with Rs 48 of row 7		**226**	**293**	**320**	

**Growth calculated at 16% up to FY 2017-18 and from 2018-19 at10% due to expected decreasing-trend in DCA staff retirees.*

** Changed figures are indicated in bold.*

get involved in business operations. Their own revenue sources are limited. Therefore, they need government support in terms of budgetary grant, tax, levy or excise transfer. Other options may be to charge a high rate on regulatory services which is not practicable in our context. Such modality is not fully applicable in developed countries as well. Other options are operator's revenue sharing from different segments of their business activities.

Best Practices

Let us explore some of the practices followed in other countries for regulator's revenue schemes. Here we are taking the actual data presented in the annual financial statements of Civil Aviation

Authorities (CAA). Civil Aviation Safety Authority of **Australia** (CASA), in 2013-14, got its 66% revenue (A$ 177.6 million) from Aviation Fuel Excise sold to domestic air travel and 24% came from government budget. Fuel Excise is collected by the Australian government and transferred to CASA. CASA generated only 10% (A$13.9 million) revenue from rendering of services. CAA **New Zealand** in FY 2014/15 recovered 63% of its costs through Passenger Security Charge and 21% from Safety levies. Only 11% was generated from regulatory services. 2% of revenue came from government fund. CAA **South Africa**'s revenue for FY 2014-15 was 462.5 million, of which 72% came from Passenger Safety Charge, 16% from user fees, 5% from Fuel Levy and 4% from Government grant. Passenger Safety Charge for 2015 is fixed at 18.72 Rand ($ 1.29) per passenger and Fuel Levy is 13.8 cent (approximately $ 0.01) per liter.

In FY 2014-15, CAA **Singapore** generated only 7% of its total revenue (S$ 372.2 million) from service charges and training fees. 33% came from passenger levy and 37% from ANS charges. **UK**'s CAA is an exception. It recovered 99% (£61.77 million) of cost of regulation (62.55 million) from statutory charges in 2014-15. It also got government grant from Department of Transport. Since 1970, **USA** is collecting aviation related taxes on passengers, cargo and fuel excise. Revenues collected from these taxes are deposited in Airport & Airways Trust Fund (AATF). AATF contributed 92% funding to the Federal Aviation Administration (FAA) costs in FY 2015 covering 88% operational costs in particular.

In 2014, CAA **Sri Lanka** collected 79% of its total revenue (Rs. 1473.8 million) from Overseas Sales Surcharge (OSS), 9% from Embarkation Levy and only 4% from Regulatory Services. OSS rate is US$ 60 applicable on each air ticket issued or sold outside Sri Lanka for flights originating from Sri Lanka. Embarkation Levy is $ 25 per embarked international passenger. **India** has proposed to establish an autonomous CAA in place of DGCA India. Estimated annual cost is Rs. 122 Crore. 33% of this cost (Rs. 40 crore) is estimated to be recovered from service charges and 26% (Rs. 32 crore) by sharing 1% of ANS charges from AAI (Airports Authority of India). Remaining 41% will come from surcharge of Rs 5 to 14 on passenger tickets. India has over 100 million air passengers annually.

Above analysis makes it clear that CAAs in general can generate a very low percentage (4-33%) of revenue required for their operation. Therefore, we conceptualize that CAAs need government budgetary support or other appropriate revenues streams for their sustenance. Revenue alternatives adopted by above eight nations can be summarized as follows:

1. Passenger Safety Charge/Embarkation Levy/Tax: New Zealand, South Africa, Singapore, USA, Sri Lanka, India
2. ANS/CNS Charges sharing: Singapore, UK, USA, India
3. Government Budgetary Support: Australia, New Zealand, South Africa, UK, USA, Sri Lanka
4. Fuel Levy/Fuel Excise : Australia, South Africa, USA,
5. Overseas Sales Surcharge: Sri Lanka

Passenger Levy

Charging passenger levy is adopted by New Zealand, Singapore, Sri Lanka, South Africa and USA. India is also considering this option. In our case CAAN_CBP proposes Rs. 48 levy per passenger. But as discussed above levy required is more than Rs. 320 which seems very high for domestic passengers. For international passengers, existing charges are already high. A foreign passenger departing to overseas country has to pay Rs. 3260. Then what will be the appropriate solution? A levy up to Rs 100/per domestic passenger seems somewhat appropriate.

But for international movement, keeping the limit of Rs. 3260 will be better. This problem can be solved by government intervention. Government should introduce Passenger Safety Tax (PST) of Rs. 565 and reduce the TSF to its previous level of Rs. 565. PST will be passed on to CAAN as budgetary support from government. In fact, TSF has to be phased out. TSF has a fiscal aim of recovering other than civil aviation related costs. ICAO Council Resolution on Charges and Taxes of December 1996 guidelines, states "there should be no fiscal aim behind the charges".

ANS/CNS Charge Sharing

Along with passenger levy, Singapore, USA, & India are adopting ANS revenue sharing modality. UK gets a portion of Eurocontrol revenues. CAAS and FAA provide ANS services as well. In India, AAI will share its ANS revenues to proposed CAA. In Nepal, CNS (Communication & Navigation Service) Charges are minimal and need to be revised appropriately. In India, apart from Route Navigational Service Charges, AAI collects Terminal Navigation Charges (TNC)at the rate of Rs. 1087.90 for aircrafts below 10,000 kg all up weight and Rs. 6546.10 for above 10,000 kg. Rate for small domestic aircrafts weighing up to 21000 kg is Rs. 110 per 1000 kg. TNC is not levied in Nepal. But there seems no reason to subsidize this charge here. By introducing TNC at a minimum rate of Rs. 1000 and revising other CNS charges, airports could generate additional Rs. 100 million revenues (from about 100000 landings). This will increase current CNS revenue from Rs. 250 million to 350 million. Justifiably, a 10% royalty sharing could generate about Rs. 35 million to CAAN.

Government Budgetary Support

The nature of civil aviation regulatory role is like a government department dedicated to 'public goods'. For any 'public goods' government's budgetary support becomes justifiable. With this principle, the governments of Australia, New Zealand, South Africa, UK, USA, and Sri Lanka has provided government funds for aviation regulator. Therefore a policy of governmental budgetary support to meet deficit of CAAN revenue must be introduced. Such a policy will provide CAAN with financial safeguard and will help to play effective regulatory role. The extent of budgetary support from government should be discussed with Ministry of Finance annually.

Fuel Levy/Fuel Excise

Fuel levy/ tax or charge is simple and justifiable method of aviation regulator's cost recovery. This is because passenger levy does not cover cargo planes or general aviation sector. Best practices followed are charging fuel levy or tax for domestic consumption and passenger levy for international flights. Australia, South Africa and USA have sourced most of their revenue from Fuel Excise/ Tax or Levy on domestic Aviation Turbine Fuel (ATF). For international they have passenger levy. New Zealand has also planned to introduce ATF levy from 2016. Presently, Nepal has no provision of ATF levy. But CAAN airports collect 0.30% of sale price as Oil Throughput Charge which comes about Rs. 0.31 a liter. But, major Indian airports collect oil throughput at about NRs. 2.37 to 2.84 per liter. Thus Nepalese rates are far below the Indian rates. Increasing this rate to 1.30% of sale price seems justifiable. Such increase will enhance current 31 million ATF revenue to about 134 million. Sharing 1/3rd of this could bring about 44 million to CAAN.

Overseas Sales Surcharge (OSS)

Sri Lanka is collecting 79% of CAA revenue from OSS. For Nepal, whether such charge will be economically viable or not is to be studied separately. If OSS does not discourage the tourist arrival in Nepal, no doubt it could be introduced. We do not find any other countries practicing such charge system. In USA, 7.5% tax on domestic air ticket and 6.25% on domestic cargo fare is collected to AATF which is also used for FAA

operations. Such taxes may be appropriate for Nepal as well. But, without a clear and precise study in this matter, our perceptions will be premature.

To Sum Up

We observed a huge revenue deficit to cover CAAN operating expenses. To recover the deficit, choosing a mix of levies, charges, and taxes would be more appropriate for Nepal. Revenue diversification will be better and sustainable than to rely on one or two levies or charges. Provision of government budgetary support is a key to an organization dedicated to 'public goods'. Government's commitment in aviation regulatory responsibility must come with a proper financial safeguarding mechanism to CAAN. Controlling operating expenses and fulfilling CAAN's obligation to provide retirement benefits to current and former employees should also be addressed sustainably.

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It doesn't matter if a cat is black or white, as long as it catches mice

- Deng Xiaoping

Disaster Response Plan

Bharat Raj Dhakal
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Background

Number of questions have been raised through the background of recent disaster that had shaken Nepal badly followed by numbers of bigger and smaller aftershocks. As I have some experience in crisis response procedures in aviation sector specifically in term of preparing formal written airport crisis response plan and also the experiences of teaching crisis management in International Civil Aviation Organization (ICAO)'s Aviation Security Training Centers. An small effort (with the believe that the concept , principle , techniques and procedures to respond any kinds of disaster whether it is aviation or non aviation is similar) has been initiated to extend some ideas , views and experiences through this article.

Need and Objective of Disaster Response Plan

Disaster response plan is the process of preparing state to cope with the disaster, the objective of which is to minimize the effect of disaster particularly in respect of saving lives and bring the situation to normal.

First and foremost aspect of disaster response plan is to identify the essential components of a disaster response management, composition and function of a disaster response team, essential facilities and equipment required and system testing features.

Most crucial elements in responding any disaster (aviation, natural or fire) are command, control, coordination and communication. Effectiveness of responses to any of disaster relies on the effectiveness of these elements. Absence of any one of these components may seriously impair the functioning of response management. Command by a single person over the responding personnel, control over the situation, coordination between responding departments or organizations, other states through diplomatic mission and communication procedures up to the field level and from field level up to the central should be decided by the state and included in the disaster response plan.

Disaster Response Plan must be coordinated between all responding organizations (Ministries, Departments, Police, Military, Rescue and Fire Fighting and others as identified by the state).

Plan should include directives and instructions to make sure the effectiveness of actions by all responders.

To ensure the operationally sound, a comprehensive plan must give following considerations:

- Pre - planning before disaster.
- Response actions during disaster.
- Documentations and other supportive actions after disaster.

Pre - planning actions

Preparing a written plan document:

Pre - planning actions may include preparation and approval of written plan document, testing of the document to ensure its effectiveness by conducting exercises on regular basis. During this

phase government has to make some policy level decisions such as to identify the lead agency to speak for government during disaster. Identify an individual to serve as chief of disaster response team and define and allocate tasks to various organizations responding the disaster depending upon their nature of job and their professional skill.

Leading organization or individual should conduct meetings with the participating organizations and make them aware with the objective and need of the plan. It could also be appropriate if the responding organizations should prepare their individual plans which should be discussed in the joint meetings, agreed by the team and later compiled or merged into one National Plan. This idea could help to make the individual responding organizations more responsible for their response action.

Command Structure

i. **National Command and control center**: It is an executive level command center that determines the policy, strategy and the decisions in responding disaster. It is located at the center and is responsible for the overall command of all organizations, individuals and the situation. This command center should be headed either by head of the government or individual designated by him. It will remain in close contact and communication with all field level command centers.

Besides natural calamities other disaster such as aviation disaster (specifically unlawful seizure of aircraft) could also be included under this command.

ii. **District or Field level Command Centre** (Operational Command Centers): This command center should be established at the district near affected areas. One or more affected areas could be included in one command center. This point is also responsible to control over all the Forward Control Centers. State should designate and be written in the plan document the coordinator of this command.

iii. **Forward Command Centre (Mobile Command Post)**:This control point should be established at or near one affected site. This point consists of team directly involved in search and rescue operation. Coordinator of this command should also be designated and written in the document.

At this point immediate care of injured persons may be needed. To segregate the injured persons on priority basis and to keep their record medical triage should be established for which casualty identification and prioritization may be necessary.

Commander centers specifically the field level command and Forward control centers (Mobile Command) should be commanded by a single professional having expertise of search and rescue operation , evacuation and crowd control.

The concept of all three layers of command centres is applicable for the highest level of disaster or crisis. State could be flexible in deciding the layers of command. In some cases may be one command centre (field level) could be enough, yet in some cases (like the recent disaster) all three layers may be essential.

The question may arise on the issue of immediate launching of search and rescue operation till the establishment of the command centres as mentioned above. At this point it is important to note from the National daily news paper "Kantipur " (30 May 2015) that in Sindhupalchok district the local Nepal Army unit (Bhim Kali Gulma) immediately activated search and rescue operation during the last earthquake disaster of 25th April 2015 without waiting the order. This is exactly the concept of disaster response action. The field level personnel should be authorized for the immediate response action particularly for the protection of lives until the command centres takes over the responsibility.

Testing of plan

Plan document should clearly specify the frequency of exercise to be conducted to test the effectiveness of the plan. Exercise must be participated by all responding organizations. Exercise could be conducted as full scale, partial exercise and table top exercise. Ideally, full scale exercise and partial exercises are conducted in every consecutive years.

Training

It is equally important to ensure the professional skill of the responding personnel, they should be provided with the appropriate trainings. Various types of crisis (such as wild fire, structural fire, electrical fire, natural calamities, earthquake etc) should be considered in designing training courses.

Three Cs in English alphabet are vital components in the effectiveness of a crisis response plan. Regardless of protocols command should be given to the organization or person commensurate to their nature of function or profession specifically in field level command.

Resources, equipment and facilities

A survey should be conducted to find out the equipment, facilities and personnel available to the responding organizations in responding the disaster as required by the plan.

Response during disaster

Search and rescue, evacuation, provision of on site medical care for the stabilization , medical triage for prioritization of medical care, transporting the injured persons to the hospital, clearance of approach roads, provision of temporary power supply etc are some of essential part of response action.

One of the important element needed during disaster response is the provision of food, water and other logistics to be made available to the responding personnel which is of course essential but often overlooked.

Clergy Service: To provide comfort to casualties, their relatives and general public performing religious as appropriate is necessary to restore public sympathy.

Post Disaster Action

Review of response action by various responding organizations and the plan itself should be done immediately after the disaster to find out the deficiencies and determine the corrective action. Review conference should be organized either by central command or the field level command centres depending upon the seriousness of the disaster.

It has been highlighted earlier that final part of disaster response plan is to bring the situation to normal. This part of plan includes the re-habilitation, re- construction and renovation.

Conclusion

During any disaster situation because

- Of surprising and panic nature of disaster of any kind
- Of the escalating flow of events which outpace the response actions.
- Of strong scrutiny from outside (media or general public).

There could be chance of development of siege mentality which may have adverse effect on response management. That is the reason why we need an effective written Disaster Response Plan document which should be agreed by all responding organizations.

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USOAP CMA Activities In Nepal- A Snapshot

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Background

In order to assess the safety oversight capabilities of Contracting States, International Civil Aviation Organization (ICAO), as part of its promoting global aviation safety, conducts audit called Universal Safety Oversight Audit Program (USOAP). ICAO has launched such mandatory audit program in almost all contracting States in its first cycle from 1999 to 2004. Pursuant to the resolution of 35th Assembly in 2004, ICAO embarked on the comprehensive systems approach (CSA) to incorporate all safety related annexes in the audit unlike its prevision version in which the audit cycle was limited to the standards and recommended practices (SARPs) of Annexes 1, 6 and 8 to the Chicago Convention. The 36th Assembly in 2007 adopted the resolution to continuously monitor the States with a program called continuous monitoring approach CMA.

History of USOAP in Nepal

Pursuant to the memorandum of understanding signed between Nepal and International Civil Aviation Organization (ICAO), Nepal received a mandatory ICAO USOAP audit in 1999 in the areas of personnel licensing, aircraft operations and airworthiness of aircraft. The outcome of this audit was moderate in terms of implementation of SARPs in Nepal since there was not a scientific way of determining the effective implementation of ICAO SARPs those days.Today different tools are available with ICAO to depict the performance of a State in various domains of audit with many variables to measure the performance objectively in a particular area or critical element or combination thereof. In order to validate the corrective action plan presented by Nepal, ICAO conducted an onsite validation mission in 2002 in which majority of deficiencies were resolved and hence considered satisfactory except few major issues like implementation of approved maintenance organizations (AMO) in Nepal which was resolved with certification of major Nepalese air operators' maintenance facilities in 2008. With the expansion of USOAP audit in all safety related annexes as CSA, ICAO conducted USOAP CSA audit of Nepal in May 2009 resulting in 57 % lack of effective implementation (LEI). The ICAO onsite coordinated validation mission (ICVM) in July 2013 in which Nepal demonstrated an impressive performance with LEI reduced to 45%.

Nepal's transition to CMA

While embarking on the continuous monitoring approach (CMA) from CSA in 2011, ICAO urged all member States to follow suit to embrace the new approach of monitoring States. Like many States, Nepal appointed National Continuous Monitoring Coordinator (NCMC) to liaise with ICAO and manage continuous monitoring activities.Various awareness activities were launched by NCMC for the senior management of CAAN and responsible officers of each audit domain. CMA implementation has already been started with the use of user interactive online framework (OLF) of ICAO. Paper based activities have been completely replaced by online system. With the extensive use of ICAO OLF in the management of various CMA activities like updating State Aviation Activities (SAAQ), completing compliance checklist/electronic filing of differences (EFOD),

managing Corrective Action Plan (CAP) and on-going self-assessment, the users of CMA OLF tool have gained confidence and useful features of interactive OLF tool have been explored. Local trainings and interactive session have been launched to educate the users of OLF so that the OLF can be used effectively.

Nepal's status on USOAP CMA

In order to implement the CMA in effective manner, Nepal has formulated a dedicated committee comprising the responsible senior officials so that the efforts are coherent to achieve the common goal of achieving better performance in USOAP thereby alleviating the Significant Safety Concern (SSC) and taking effective implementation (EI) above world average. The committee is headed by the Deputy Director General, Civil Aviation Safety Regulation Directorate, who is also the National Continuous Monitoring Coordinator. In order to efficiently manage the USOAP activities, Civil Aviation Authority of Nepal has designated officials from respective audit domains as nodal officers. The responsible entities for the eight audit areas are as following.

1. LEG- Legislation: ICAO, International Affairs and Air Law Department, CAAN
2. ORG- Organization: Human Resource Development Department, CAAN
3. PEL- Personnel licensing and training : Flight Safety and Licensing Division, Flight Safety Standards Department, CAAN
4. OPS- Aircraftoperations: Flight Operations Section, Flight Safety Standards Department, CAAN
5. AIR- Airworthiness of aircraft: Airworthiness Inspection Division,Flight Safety Standards Department, CAAN
6. AIG- Aircraft accident and incident investigation: Ministry of Culture, Tourism and Civil Aviation
7. ANS- Air navigation services- Air Navigation Services Safety Standards Department, CAAN
8. AGA- Aerodrome and ground aids- Aerodrome Safety Standards Department

Major activities of USOAP CMA

The major activities associated with the USOAP CMA are briefly described with Nepal's position in each area of activity.

a. State Aviation Activities Questionnaire (SAAQ)

This gives an overview of a State regarding the aviation activities undertaken by each State. SAAQ captures the aviation activities in any State in all eight audit areas and pertinent general informationin State's profile. Nepal has already completed the SAAQ in all domains of audit. Apart from initial completion, the SAAQ has continuously been updated to reflect the relevant changes in the activities of all eight audit domains including the State profile.

b. Compliance checklist/electronic filing of difference

In order to evaluate the implementation of Standards and Recommended Practices (SARPs) contained in various Annexes to the Chicago Convention, ICAO continuously monitors Contracting States to find out whether these SARPs have been adequately transposed into the national legislative framework and implemented accordingly. The States should either indicate the SARPs fully complied with reference to the particular standards in the national regulations citing them as 'no difference' in the given column in the OLF portal. Similarly in case of differences, they may be either more exacting if the intents of the national standards are more stringent than those in the SARPs or less exacting or partially implemented or not implemented as the case may be. For those standards having same intent of SARPs but in different in character or having other means of compliance should also be indicated as difference with ICAO SARPs. In all cases of differences, the nature of difference should be identified and notified to ICAO

electronically on OLF; the process is called Electronic Filing of Difference (EFOD). Nepal has already started completing the remaining items of CC/EFOD to address the new SARPs that are effective after issuance of new amendments to the pertinent Annex. Nodal officers and other concerned officials are constantly working to amend existing regulations and complete the CC/EFOD in each annex.

c. Corrective action plan

This area of OLF is intended to address the deficiencies recorded by ICAO in each Protocol Question (PQ) in the individual audit domain. The consideration should be given to the fact that the corrective action plan addresses the noted deficiency with target implementation date. The plan can be phased one so that the implementation is easier and level of implementation can be demonstrated in the subsequent phases. The progress of CAP can be demonstrated in phased manner of 25%, 50%, 75% and 100%. In the event proposed action cannot be completed within the previously planned implementation date, a new implementation date can be proposed and OLF can be updated accordingly. Nepal, with active role of nodal officers, has continuously updated the CAP in all audit domains to register progress to ICAO. The current data suggest that if the progress demonstrated by Nepal is validated by ICAO offsite for the PQs in critical elements 1 to 5, Nepal can achieve the global average of 39% LEI. This figure will further go down if Nepal resolves the Significant Safety Concern (SSC) in the forthcoming ICVM.

d. Self-assessment

This tool is the self-audit framework to assess oneself in each audit domain against a given protocol question. Nepal has progressed well in this direction as well apart from CC/EFOD and CAP updating. Nepal is planning to achieve the leading level of completion of self-assessment in South Asia.

Significant progresses in critical elements-a summary

Nepal has demonstrated significant progress towards addressing the deficiencies noted by ICAO in ICVM 2013. The pertinent civil aviation regulation, in particular 'Civil Aviation Regulation 2002' has been amended twice after ICVM. The specific enabling operating regulations have also been amended to address the indicated deficiencies. The inspectors are adequately empowered by delegation of authority. The inspectors are suitably trained locally, by local experts and international expert and from international leading training institutes as well. The inspector's handbooks, manuals, guidance materials, job aids have either been developed or amended adequately to enable the inspector to discharge the duties effectively. The surveillance programs have been launched within the published timeline to ensure that the approval holders and service providers comply with all regulatory requirements. The deficiencies noted during the regular surveillance have been resolved with constant monitoring with tracking mechanism and adequate enforcement actions have been taken.

Conclusion

With a dedicated USOAP CMA committee and a team of active nodal officers working during work days and off days, it can be expected that the LEI of Nepal can be lowered significantly at or below the global average bringing Nepal to the well performing States in South Asia. In the meantime the challenge of resolution of SSC can also be addressed by the dedicated teams of concerned department which will ultimately lead in the removal of Nepal from EU air safety list. However, there exists a challenge to keep the current momentum consistently in the coming days too which can be addressed by constantly motivating the team.

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Strengthening Civil Aviation Academy

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Civil Aviation Academy (CAA) is the only approved training organization (ATO) in Nepal to conduct aviation related trainings to fulfill the need of trained personnel in aviation sector. Since its inception as Civil Aviation Training Centre, it has been conducting specific trainings for the provision of air traffic services, radio maintenance, and rescue and fire-fighting services. After the establishment of Civil Aviation Authority of Nepal, an autonomous entity responsible for the development and regulation of civil aviation, the scope of Civil Aviation Academy has been expanded. Since a decade CAA is conducting few more trainings to enhance skills of civil aviation personnel and those engaged in aircraft operations. The regulatory provision has also increased the need of training for the aviation personnel whether they are working for the authority or for the aircraft operators. The initial and recurrent professional trainings as well as safety and security related training requirements in the industry has enlarged the scope of CAA.

After the implementation of ICAO Safety Oversight Audit Programme to empower contracting states for the compliance with safety related Standards and Recommended Practices (SARPs), the scope of aviation related training has been widened globally. Aviation trainings these days are not limited to enhance knowledge, skill and attitude to effectively perform the assigned tasks but to develop competency to ensure safety and efficiency. The area of aviation training now covers management of flight safety and aviation security; efficiency in airport operation and service delivery; effectiveness in human performance; and civil aviation management for national economic development. The upcoming training need is especially focused on effective service delivery as well as oversight of safety in operationally significant functional areas. CAA is so far, applying its efforts in developing and conducting new courses to fulfill the growing need of training of regulator and service providers.

International Cooperation in Training Development

ICAO focuses on international cooperation for training development with the possibility of responding adequately the needs of civil aviation training centers. It facilitates the TRAINAIR Plus members to conduct well developed training courses prepared in systematic manner, tested and validated for training delivery. To empower and strengthen the member training centers, ICAO has implemented Global Aviation Training Programme with the aim of conducting training courses for instructors, training managers and course developers. Besides, it facilitates members to organize TRAINAIR Plus symposium for sharing and exchange of new developments in aviation trainings. It has adopted a course development methodology which is a systematic method to produce Standardized Training Package (STP). The aim of TRAINAIR Plus programme is to improve safety and efficiency of air transport through the establishment and maintenance of high standards of training and the development of competent personnel on a global

basis.[1]

The advantages of developing international cooperation for trainings include: it reduces duplication in efforts; reduces the cost of training programme development; and promotes universal application of high-level quality standards in trainings. Besides, the benefits of TRAINAIR Plus methodology can be pointed out as follows:

- training oriented towards mastering tasks (competency-based/job-oriented);
- training designed to achieve specific training objectives;
- training based on the quality of the material (material dependent);
- use of appropriate training techniques and communication media;
- rigorous validation and revision of STPs;

Human Resources Challenges in Aviation

By 2030, passenger numbers and aircraft movements will double to 6 billion and 60 million respectively. This will – as projected by a recent ICAO survey – give rise to the demand for 352,900 new pilots, 739,000 new maintenance personnel and some 40,000 additional air traffic controllers. "The continued development of a safe, secure and efficient international air transport system depends on the availability of trained and competent manpower, who can adapt to the changing needs of aviation," highlighted Mr Yap Ong Heng, then Director-General, CAAS. Capt Mostafa Houmady, Manager, ICAO Global Aviation Training Office, echoed these sentiments and emphasized the need to take proactive steps to prevent a shortfall of aviation professionals. He said, "The training industry should be able to deliver in 15 years what had been delivered in more than 30 years previously." This underscores the need for an intensified focus on HR strategies to recruit, train and retain qualified aviation professionals – and more significantly, the necessity to build the competencies to facilitate these moves. [2]

The paragraph above specifies the challenges for developing human resources needed by the aviation industry and the increasing role of civil aviation training centers. To fulfill the growing training demand of the aviation industry, civil aviation training centers have to work overnight and strengthen their capacity to conduct a large number of trainings. The challenge for the academy is to expand their scope not only vertically but horizontally to ensure conduction of trainings ranging from pure technical courses to behavioral and management courses. Aviation training centers in many countries are collaborating with reputed university to jointly conduct courses on aviation policy, civil aviation management and behavioral sciences.

Need of Strengthening Civil Aviation Academy

In order to achieve regional and global recognition CAA is joining hands with ICAO under the TRAINAIR Plus umbrella. CAA became an Associate member of ICAO TRAINAIR Plus programme in 2012 with the main objective of conducting standardized training courses. It is in the course of becoming Full member of TRAINAIR Plus to get the benefits of international cooperation in training development. The Full members of TRAINAIR Plus get more benefits compared to the Associate members starting from membership fee to the privilege for exchange of STPs. Such members are also facilitated by ICAO to conduct training delivery of internationally demanded STPs. ICAO also award the better performing training centers as 'Centre of Excellence', which gives opportunity for conducting courses to fulfill regional and international training need.

To address the growing demand of trained and skilled human resources in Nepalese aviation industry, CAA needs to be transformed into centre of excellence. It must be manned with a

1 Training Development Guide, (Doc 9941),

2 SAA Review, Sept. 2015, p6

wide range of intellectuals ranging from training managers, course developers, instructors and active support personnel. Besides, the intellectual team must be led by a competent, visionary and energetic leader motivated for recognizing CAA regionally and globally. To empower and develop competency for efficiency in training development, ample opportunity of trainings should be provided to the intellectuals in order to groom them and develop a committed and motivated team. After the great disaster in Nepal, CAA is operating with insufficient facilities and logistics. The infrastructure development of CAA must be expedited to ensure availability of adequate training facilities and support. The 'Operational and Training Directives 2064' must be revised to ensure justifiable allowances for the instructors and the training management team. Last but not least management commitment; motivation and development of the training team members; and strengthening of CAA is crucial to fulfill growing training need of the industry.

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Safety Risk Management Technique for Changes in ATM System

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What is Safety Risk Management?

Safety Risk Management is the most essential component of Safety Management System (SMS). Safety risk management is the process of identifying the hazards in the aviation operation, assessing the associated safety risks and developing the appropriate mitigating measures to be applied during the delivery of services with the objective of reducing the associated safety risks to the minimum, at or below acceptable level.

In the context of Air Traffic Management (ATM) operation, it identifies the hazards that exist in the ongoing ATM activities or are introduced into the ATM system with the introduction of new changes in it, and suggests the mitigating measures to control the safety risks that are encountered in the activities for the safe operation of ATM system.

Phases of Safety Risk Management

Safety Risk Management, simply known as safety assessment, is the phase-wise process which involves the following phases (whole process of which shall be documented for future references and feedback):

1. System Description

This is the first phase of Safety Risk Management. In this phase, system change is defined in complete and correct ways. Following functions are desirable in this phase:

- Identify objective of change, e.g. enhance the capacity of ATC by introducing a new system
- Identify scope of change, e.g. ATM Provider and ATC, CNS provider and ATSEP, Pilots, etc. could fall under the scope
- Identify the change, e.g. introduction of new ATM system, and system detail
- Identify how the change will be used, e.g. change will be applied in ATM operation after an appropriate ATC training
- Identify change functions, e.g. new surveillance function to support ATC
- Identify the environment where the change will operate, e.g. change system will be operated in the ATC facilities
- Plan Safety Risk Management Activities, e.g. decide whether risk assessment is necessary or not, if necessary, decide what type of risk assessment methodology will be used and decide whom will you coordinate for the risk assessment activities, etc.

2. Hazard Identification

This is the second phase of Safety Risk Management. In this phase, a group or panel of subject matter experts trained and experienced in safety risk management is formed to identify the hazards, its causes and consequences. Panel of experts while involved in identification of hazards must give attention to the things like system design factors, human performance limitations, SOPs, organizational as well as regulatory factors, operational environment, human-machine interface issues, past history, experience and information about new system,

etc.

In order to identify the hazards in ATM operations, following sources of information should be referred:

- Safety Investigation, Audit and Occurrence Reports
- Past Safety Risk Management documentation for the introduction of similar type of new system, if available
- Daily reports of hazards in operations
- Safety Survey of ATM operations personnel and environment
- ATM System detail that include the system accuracy, availability and integrity
- Use of lessons learned, past experience and feedback from concerned stakeholders, etc.

Having been considered all the factors and the sources of information as mentioned above, a brain storming session of panel of subject matter experts is required to find all the hazards in the operational environment, prepare the list of all hazards and prioritize the hazards to do the risk analysis. Examples of some hazards with the new system introduction can be the non-user friendly system, system complication, ignorance about system, system malfunction, system location, system inaccuracy, lack of experience on system, lack of trained manpower, etc.

3. Safety Risk Analysis and assessment

In this phase, each hazard is evaluated in the perspective of existing control measures. ATS Operations Manual, Training, Radar Surveillance, Conflict Alert, Redundant System, etc. are the examples of some control measures that can be available in ATM operation. System operation with the existence of identified hazards is also analyzed. Find out the worst credible effect of each hazard.

Then, perform the following functions for the assessment of associated safety risks:

- Assess severity and likelihood of each worst credible effect by brainstorming within the group of experts. Severity is independent of likelihood and must be determined before the determination of likelihood. Give the values to each severity and likelihood with the help of Safety Risk Severity and Likelihood Table as shown in Fig. 1.
- Assess safety risk which is nothing but combination of likelihood and severity of the effect assessed above. Combination of the values associated with each risk gives Risk Index. With the help of Safety Risk Tolerability Matrix as shown in Fig. 2, one can sort out whether the risk is acceptable, tolerable or unacceptable to the ATM operation.

4. Safety Risk Mitigation

In this phase, it is decided whether the risk mitigation is required or not. If mitigation is required, following techniques are used:

- By stopping the activity either because the associated safety risk is intolerable orbelieved to be unacceptable in comparison to the associated benefits.
- By reducing the level of risk by lessening the severity or likelihood of the risk with the application of risk mitigation measures.
- To avoid the risks, causes of hazards can also be removed. For this some barriers need to be placed between cause and associated hazard.
- As the cost is involved to put the barriers or to apply the risk mitigation measures, Cost-Benefit analysis must be done, and therefore, to accept the risk with application of barriers or mitigating measures,

Severity	Meaning	Value	Likelihood	Meaning	Value
Catastrophic	• Equipment destroyed • Multiple deaths	A	Frequent	Likely to occur many times (has occurred frequently)	5
Hazardous	• A large reduction in safety margins, physical distress or • a workload such that the operators cannot be relied • upon to perform their tasks accurately or completely • Serious injury • Major equipment damage	B	Occasional	Likely to occur sometimes (has occurred infrequently)	4
Major	• A significant reduction in safety margins, a reduction in the ability of the operators to cope with adverse operating conditions as a result of an increase in workload or as a result of conditions impairing theirefficiency • Serious incident • Injury to persons	C	Remote	Unlikely to occur, but possible (has occurred rarely)	3
Minor	• Nuisance • Operating limitations • Use of emergency procedures • Minor incident	D	Improbable	Very unlikely to occur (not known to have occurred)	2
Negligible	• Few consequences	E	Extremely improbable	Almost inconceivable that the event will occur	1

Figure 1. Safety Risk Severity and Likelihood Table

Tolerability Description	Assessed Risk Index	Suggested Criteria
Intolerable Region	**5A, 5B, 5C, 4A, 4B, 3A**	Unacceptable under the existing circumstances.
Tolerable Region	**5D, 5E, 4C, 4D, 4E, 3B, 3C, 3D, 2A, 2B, 2C, 1A**	Acceptable based on risk mitigation. It may require management decision.
Acceptable Region	**3E, 2D, 2E, 1B, 1C, 1D, 1E**	Acceptable

Figure 2. Safety Risk Tolerability Matrix

a high level management decision of the organization is normally required.

- If the cost of barriers or mitigating measures is less than the benefit of employing such measures, accept the tolerable risks that can be lessened with the application of those measures and accept the change in ATM. Otherwise, normally no!
- Accept the risk if it is in the acceptable region of the tolerability matrix.

Qualitative Method of Doing Safety Risk Management in ATM, A Practical Example

In situations where safety data like target level safety, acceptable level of safety, etc. are not available for quantitative assessment of Safety Risk, qualitative approach which is based on the subjective judgement of panel of expert is the only feasible approach to do such assessment. In the example below, qualitative approach has been used to do the safety assessment of the change in ATM operations.

Let's assume that there is the need of introduction of a new safety-related system **'A'** in the ATM operation. As per ICAO Annex 11- Air Traffic Services and PANS ATM Doc 4444, a new safety-related change to the ATM system can only be effected after successful completion of a safety assessment and consultation with the users.

So, to initiate the safety assessment, the ATM provider has to form a panel of subject matter experts from ATM provider, Airlines, CNS provider, ATCs, Pilots, CNS engineers, Safety experts or any other concerned professional as needed. This panel, by performing the brainstorming session, has to identify the all possible hazards associated with the proposed new ATM system, its causes and the worst credible effects of the hazards. After having identified these things, the same panel can assess the corresponding risks associated with the hazards. The detailed procedure has already been mentioned above.

Now, let's assume that the ATM provider has done hazard identification and safety risk assessment. The figure below illustrates some examples of hazards associated to the new system, its causes, consequences, severity and likelihood found by the group of risk assessors.

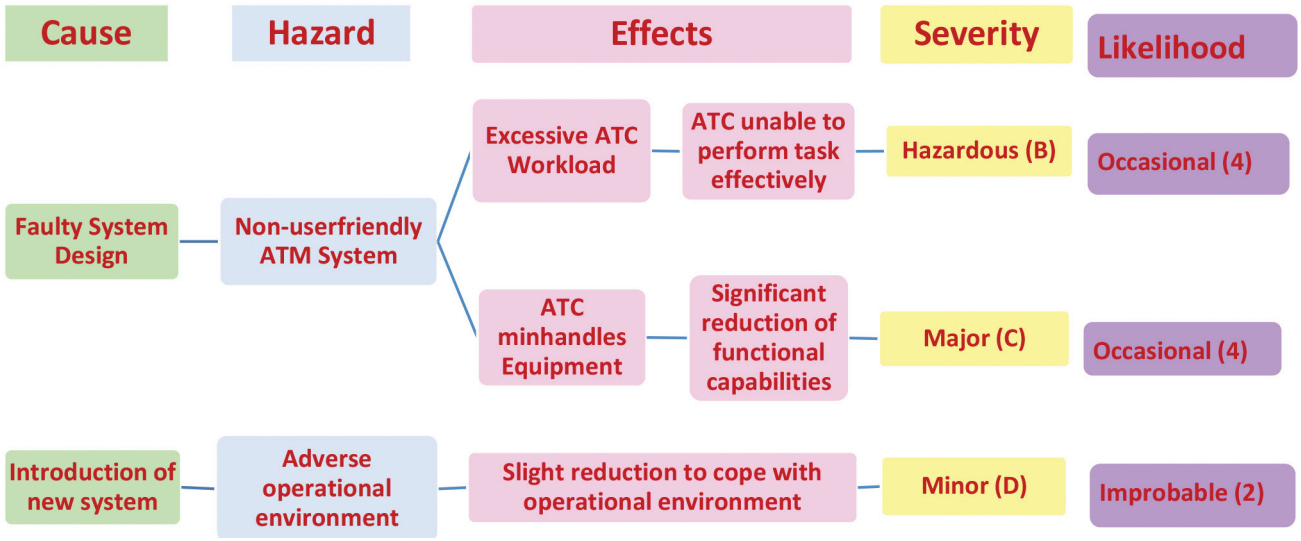

Figure 3. Assessment of hazards, its causes and consequences

Here in the above example, combination of first set of severity and likelihood for first worst credible effect gives safety risk index 4B, second set gives 4C and third set gives 2D. If we compare these indices with the Safety Risk Tolerability Matrix, we find that 4B lies in the intolerable region. Hence, the new ATM system is unacceptable in the operation in as is situation. In the above example, occasional inability of ATCs to perform task is unacceptable until and unless the system design is improved or mitigating measures are applied to reduce the ATC workload and the risk is reduced to acceptable region.

Risk index 4C lies in the tolerable region, and hence the risk can be accepted based on the application of mitigation measures. As there is the involvement cost in mitigating the risk,higher management decision of ATM provider may be sought to accept this risk. In the above example, occasional significant reduction of functional capabilities of ATM system can be acceptable if the equipment handling training is appropriately given to ATC as a mitigating measure.

Risk index 2D lies in the acceptable region. This risk can be acceptable in as is situation. In the above example, improbable slight reduction to cope with the operational environment can be acceptable without applying any mitigation measures. However, care must be given not to aggravate the risk to the higher level.

Above mentioned acceptable risks shall be accepted only after the consultation with the users of the system.

Safety Assessment practices in ATM in Nepal

In Nepal, ATM provider of the country is responsible to implement Safety Management System (SMS) at the airports country. In present context, for TIA, TIACAO itself is responsible to implement SMS whereas for rest of the airports of the country, Air Navigation Services Directorate (ANSD) at CAAN Head Office is responsible for it. However, neither ANSD nor TIACAO has implemented SMS in the airports of Nepal.

As per Rule 83a (2) of CAAN Civil Aviation Regulation 2002, SMS shall be implemented in Air Traffic Services and other safety related aviation activities, and Safety Risk Management is an integral and most significant component of SMS. Requirement 7 of SMS Requirement 2010 requires all the service providers to perform safety risk management activities for identification of hazards and associated risk as well the mitigation measures. As per the Requirement 2.27 of Civil Aviation Requirement 11- Air Traffic Services of Nepal, for any safety-related change to ATS system, ATM provider has to execute safety assessment so as to ensure that the acceptable levels of safety are met. As the acceptable levels of safety so far are not defined for any ATM operational activities, safety assessment in our case can be conducted in the same way as mentioned in the above example, i.e. on the basis of technical and operational judgement of the group of experts from different disciplines like ATM, CNS, Aerodrome Operations, Flight Operations, Safety, Aerodrome Engineering, etc. depending on the need of the change issue, as well as the brainstorming within them. So, the regulatory requirement indicates that without safety assessment or safety risk management, no safety-related change in ATM is acceptable.

However, in practice, it has not been experienced that the ATM provider is doing safety assessment for any safety significant changes. The new equipment for ATM support are being installed by the organization based on the brand name and specification of the equipment, goodwill of the manufacturer, some perceptions about the equipment, prescription or generic opinion of the vendor, or the combination of these factors. On this ground, this article has attempted to express some theoretical aspects of Safety Risk Management and the process how safety risk management is done in ATM.

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Genesis of Civil Aviation Authority in Nepal: A Perspective of Body Corporate

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Introduction

That was the year 1957 we saw the formal establishment of Department of Civil Aviation under the then Ministry of Works, Communication and Transport. The Nepalese aviation experienced this event followed by the establishment of Royal Nepal Airlines Corporation as a public sector undertaking one year later on 1st July 1958. These two events were actualized after the inception of civil aviation in April 1949 when a single-engine vintage Beech craft landed at Gauchar (pasture) in Kathmandu. Just after two years Nepalese aviation had a new experience of VVIP flight which began with the Late His Majesty King Tribhuvan returning to Kathmandu by plane on the 18th February 1951 from New Delhi. Civil Aviation Act 2015 (in 2015 B.S.), the first primary legislation was promulgated. The statutory regulations regarding civil aviation were introduced under the Act. As Nepal obtained the membership of International Civil Aviation Organization (ICAO) in 1960, Nepal availed of the opportunity to interface with the international aviation community. This may help to find the path towards the system that fully responds to the changing needs of aviation industry of the 21st century. The strength of the NextGen system depends on lower costs, improved service, greater capacity, and smarter security measures.

The Commencement of 'Civil Aviation Authority' in Other Countries

These events occurring one after another, though in slower speed, flashed some signs of evolution in Nepalese aviation. On the other, the development in science and technology had spillover effect upon international civil aviation. In consequence, this industry was experience changes with opportunities and challenges. Such change in civil aviation was preparing the aviation world in adopting new approaches to the regulatory and administrative systems. The independent autonomous aviation entity was expedient in the changing context. 'Authority' concept was seen in the aviation. To the very context, The Civil Aviation Authority was established in 1972 under the terms of the Civil Aviation Act 1971 in order to oversee and regulate all aspects of civil aviation in UK. The General Authority of Civil Aviation of Saudi Arabia in 1977, Civil Aviation Authority, Bangladesh (CAAB) in 1985, Civil Aviation Authority of Macau in 1987, Civil Aviation Authority of New Zealand in 1992, and Airports Authority of India (AAI) on first April 1995, The Airport Authority Hong Kong in 1995, The General Civil Aviation Authority (GCAA) in the United Arab Emirates (UAE) in 1996, South African Civil Aviation Authority in 1998, Civil Aviation Authority of Sri Lanka in 2002 were formed to oversee and manage the civil aviation. As the trend of formation of such authority happened to come, Civil Aviation Authority of Nepal (CAAN) was established as an autonomous regulatory body on 31 December 1998 under Civil Aviation Act, 1996 section 3. CAAN has been set up with the objective of making aviation safe, regular, standard and efficient. Its prime goal is to ensure flight safety

and sustainability of civil aviation. It is said that 'the concept of authority' came as "The High-way to effective self-governance". But it may be the subject of another research study which is not possible in this paper. However, civil aviation authority in different countries as referred above and two defined civil aviation authorities of US and UK as referred below may help us to come across of why the body 'authority' is conceived. We can deduce what it is.

Civil Aviation Authority in UK

A British organization that controls the operation of the air travel industry, especially by making safety rules and directing the traffic of planes in the UK. There is a similar organization in the US called Federal Aviation Administration.

It shall be the duty of the CAA to develop, promulgate, monitor and enforce a policy for the sustainable use of UK airspace and for the provision of necessary supporting infrastructure for air navigation, which is stated in the Civil Aviation Authority (Air Navigation) Directions 2001.

CAA UK has been established to oversee and regulate all aspects of civil aviation in the United Kingdom.

The US government department that is responsible for making rules relating to airports and aircraft: Under the new proposals, the Federal Aviation Administration would be able to impose "additional security on any airline at any time" running services to the US.

As we cited the above reference of the type of responsibility entrusted to aviation regulatory entities and the names of some such entities in different countries, this helps us to draw insight that there may be reasons to enhance the safety, security, governance and sustainability of civil aviation. This may be possible through preparing the aviation entity to work with more independence and autonomy. In order to achieve the very objective the concept of 'civil aviation authority' was introduced in place of department of civil aviation or other agencies for regulation of civil aviation. Civil aviation is a highly complex, security and safety sensitive, high-tech set of system the regulation of which also requires the capacity and militancy to render the responsibility. The entity entrusted with such responsibility needs to develop the quality and capability accordingly. To this end, the entity should be equipped with the authority to work in an environment of independence and autonomy. However, the act of supervision is required thereto. This is how the concept of authority is deemed to be brought. As we like to deduce the development of business firms or entities came one after another with some business (commercial) or service purposes. They all fall either as sole proprietorship, partnership firms or as company or authority. Such entities have played vital role in the national economic development and social service as seen in the world. Either they are the bodies of regulatory or service delivery type or the combination of both.

The Entities established as the Body Corporate

We can see different type of entities in the legal perspective as under.

Government Corporation or Company

A government-owned corporation is a legal entity that undertakes commercial activities on behalf of an owner government. Their legal status varies from being a part of government to stock companies with a state as a regular stockholder. There is no standard definition of a Government-Owned Corporation (GOC) or State-Owned Enterprise (SOE), although the two terms can be used interchangeably. The defining characteristics are that they have a distinct legal form and they are established to operate in commercial affairs. While they may also have public policy objectives, GOCs should be differentiated from other forms of government agencies or state entities established to pursue

purely non-financial objectives.

Chartered Company

It is the one which is incorporated under the special charter granted by the king or queen of England in exercise of prerogative power e.g. East India Company, Bank of England and Standard Chartered Bank. They are governed by provisions of the special charter under which they are formed.

Statutory Company

The terms statutory authority and statutory agency are generally interchangeable in most jurisdictions. These "public service" bodies are usually found in countries that follow the British style of government (such as Australia, New Zealand, etc). In the UK, these statutory authorities are often generically nicknamed "quangos" because of their semi-autonomous nature. (Quango is short for quasi non-governmental organisation.)

A statutory authority/agency is set up by specific legislation (referred to as "the original legislation" or "the enabling legislation). This authorises the body to enact legislation on behalf of the state. These subsidiary or delegated legislation are usually formally known as "Regulations" and/or "Rules."

The rationale for doing this (that is, parliament delegating the power to enact laws to a statutory authority) is basically for better legal efficiency, better allocation of resources, transparency and accountability.

Many of the original legislation that set up many of the statutory authorities. Some statutory authorities are part of the government setup while some are completely independent of it.

Laws made by Australian statutory authorities are known formally as Regulations. They are cited in a different fashion from an Act of Parliament -usually with specific initials and a number (both depending on the authority). Like all Acts of Parliament, all laws made by a statutory authority are published in the Government Gazette.

A company which provides a public service and has been incorporated by special statute, as distinguished from a chartered company or a joint-stock company.

Registered Company

A company which is incorporated under the company Act.

Private Company

As to the Companies Act 2006, the number of shareholders of a private company shall not exceed fifty.

A Private Limited Company cannot offer shares for sale on the stock market, whereas a Public Limited Company can. All limited companies must be registered at Companies House (registrar office in UK). All limited companies should submit an 'Annual Return' to Companies House each year as well as their annual accounts.

The basic features of a private company which is privately owned:

1. Limits the number of its shareholders from 1 to 50, excluding persons who are in the employment of the company, and
2. Prohibits any invitation to the public to subscribe in its shares.
3. Private company does not have any minimum capital requirements.

Public Company

Subject to the proviso to Sub-section (2) of section 3 of the Companies Act 2006, the number of shareholders of a public company shall be seven in minimum and a maximum of any number.

Public company may, therefore, be defined as an association of persons consisting of not less than the members as provisioned in the statute, which is registered therein.

Public companies are those businesses owned by individuals (and not by a government). If a public company is a corporation whose stock is traded on a stock exchange it is said that the stock is publicly traded or that the company is a publicly-traded corporation.

The basic features of a Public Company:

1. Has a minimum number of 7 shareholders (there is no maximum limit), and
2. Offers shares and debentures to the public through a prospectus which complies with the requirements of the Companies Act 2006 and Securities Act, 2007.
3. A minimum paid up capital of 10 Million Nepalese Rupees is required to register a public limited company (Company Act, 2006, S. 11).
4. Recruitment of Company Secretary is compulsory,
5. Banking and Financial institutions, insurance, mutual fund, Retirement Fund, Capital market related company should be registered as a public company,
6. If number of shareholders of private company surpass 50 the company should change to public company,
7. Must publish the details of the company (Bibaranpatra) in the time of public issue of share capital.
8. Can raise debenture.

Holding and Subsidiary Company

As to the Companies Act 2006, "Holding company" means a company-having control over a subsidiary company. "Subsidiary company" means a company controlled by a holding company.

Chartered company – it is the one which is incorporated under the special charter granted by the king or queen of England in exercise of prerogative power e.g. East India Company, Bank of England and Standard Chartered Bank. They are governed by provisions of the special charter under which they are formed.

Limited Company

A limited company is one in which liability of the members is limited i.e. the members are liable up to the limited amount, and beyond that they cannot be asked to contribute anything towards the payments of the company's liabilities.

As to the section 7 of the Company Act, 2006, the liability of a shareholder of a company incorporated under this Act in respect of its transactions shall be limited on to the maximum value of shares which he has subscribed or undertaken to subscribe.

Companies limited by shares - Because most companies are limited by shares, this 'stake' usually refers to the shares held by the company's shareholders. In such a company, the shareholders' obligation is to pay the company for the shares they have taken in it.

Companies limited by guarantee- In a company limited by guarantee, there are no shares - hence there are no shareholders. Instead, the company will have 'members'. The members of a company limited by guarantee are bound by a guarantee in the company's articles of association, which requires them to pay the company's debts up to a fixed sum.

Non-profit Company

A company incorporated for public benefit or other objects relating to one or more social or cultural activities, or communal or group interest.

Provision under the section 166 of the Chapter 19 of the Company Act, 2063 (2006)

Notwithstanding anything contained elsewhere in this Act, any company may be incorporated to develop and promote any profession or occupation

or to protect the collective rights and interests of the persons engaged in any specific profession or occupation or to carry on any enterprise for the attainment of any scientific, academic, social, benevolent or public utility or welfare objective on the condition of not distributing dividends.

Basic Features

1. Its members shall be at least five and after incorporation may be increased more than five.
2. No distribution of profit
3. It has no shareholders but members
4. Does not require any form of minimum capital.
5. Members also have limited liability; it may be up to the limit as admitted by them during incorporation. They cannot write 'private limited' or 'public limited' or 'company' after such entity's name without permission of the Registrar's Office.
6. It's a new feature of the Act in the history of Nepalese company law.
7. Unlike the system in other companies, its membership is not transferable.

Unlimited Company

An unlimited company is one in which the liability of the members is unlimited. They are also personally liable for the payment of the company's liabilities.

A company is any entity that engages in business and can be a proprietorship, partnership or corporation. One of the first and most important steps in starting a business is deciding how it will be structured. To make an informed choice, you will need to know how the different business structures work, as well as the advantages and drawbacks of each. It is advisable to seek the advice of an attorney when making your decision.

Conclusion

Whatever forms of the entities may be there established for the purpose of service delivery or regulatory aspect, they can gain success in obtaining their social and economic objective. Eventually, their efficiency and honesty do render a lot in the national growth. The autonomy provided to them to perform their function and the independence they have in fulfilling their responsibilities may help them develop efficiency there to. They may be boon for the national development if they are honestly built and let them do so honestly. Otherwise, they may be burden for the country. Here, we can locate where the position of CAAN. It seems to fall under the statutory corporate body which is established under the special statutory legislation, the CAAN Act, 2053, which has been conferred power to legislate rules and regulations as per the parliamentary delegated authority.

Reference

1. Legislations
2. Dictionaries
3. Books
4. Articles
5. Different websites

Baisakh 12 : Remembering the Black Day

Nabin Prasad Acharya
Manager, CAAN

Still we had the fresh memory of happiest moments of celebrating New Year 2072. Particularly on that day weather was cooler and windy, sky was cloudy and it seemed possibility of rain. Time was around midday and we were walking up to control tower and approach /ACC building for day shift duty. Suddenly, we lost the balance of our body, our legs were vibrating fearfully. At the first shock of earthquake suddenly our body was unbalanced and we were confused, what is going to happen,while continuously we felt powerful shock and vibration of building and equipment with the strange sound "Gaa.. Taa..Taa.. Taa..." then we were very afraid. At that moment we thought that we are going to die.

Yes we know that natural disaster happens suddenly. In this situation to save our own life as well as others should be the first priority. We were inside the building. The shock of 7.8 magnitudes was terrible. We held up the walls and railings of the building to save our own life. We informed the aircraft about this terrible shock. And we informed them that runway is being closed. We had left the building and we came outside open space because of continuous shock. But we were worried about the aircraft that were in the sky. After few minutes we came back to our hot chair fearfully. On that day, there were 3 international flights shortly entering Nepal airspace for landing. We advised international flights to divert to alternate airport and after few minutes of holding in the sky, they were diverted.

When we came back to our seat. We looked out towards Kathmandu valley from control tower by binocular, we saw dust everywhere in the sky. We could not see our historic monument Dharahara from Control Tower, and we thought that Dharahara might be collapsed. People were running in the street. Airlines passengers and staffs were outside from terminal building and they were gathering on open space in parking area.

Still we were worried about the aeroplane. There were 4 domestic flights, they were already entering Kathmandu valley and they were holding inside valley. Generally after the earthquake we must check the surface condition of the runway and taxiway to assure that is it safe for landing.At that time it was not possible to check the runway condition and equipments. Fortunately, our VHF communication with aircrafts was normal. But we had no contact on telephone and mobile or on intercom system to other sections. It was difficult for coordination. Pilots of domestic flights holding in the sky were also worried and they wanted to make safe landing. They were reporting that dust scattered over Kathmandu valley, Dharahara has collapsed, and they were afraid also. Pilots were reporting that they have no contact with other domestic airports like Biratnagar, Pokhara, Simara, Bhairahawa, and Bharatpur. They have shortages of fuel and they wanted to make landing at Kathmandu on emergency basis. In that critical situation, from control tower we had only one option remained. We advised pilot to make the lowpass over airfield, carefully observe the runway condition and land at your own risk. After more than 30 minutes of holding in the sky, one by one, all pilots made safe landing on

emergency basis.

After the safe landing of all flights, for a while we took deep breath of satisfaction and felt relaxed. Then we tried to contact our home and to our family and friends, but it was difficult. There was no contact, line was busy. Gradually we got the news from Facebook and other media about the devastating earthquake. We did the contact to other sections of TIA and to our friends and family by different means.

We had the next challenge ahead, to make the flight operation normal at TIA as soon as possible. The engineering team of TIA led by general manager was mobilised for Runway condition and equipment check. All the units of TIA did excellent coordination and completed their task seriously. So, we could able to resume normal flight operation at TIA after around 3 PM of that day.

After the terror of that powerful shock we all know that we were suffering by strong aftershocks continuously. It was really dreadful. When we did the operation normal at TIA, both International as well as domestic operators resumed their flights. Rescue flights of helicopter and military were started after few hours of earthquake. The damage was massive, so a large number of rescue teams and helicopters were needed to cope that terrible situation.Then gradually the movement of rescue flights increased, at the same day at around 6 pm. The Indian military rescue flights arrived at TIA .We the team of air traffic controller were doing our duty for 24 hours continuously on that day of national tragedy. We had biscuits only for eating for the whole night.

From the second day of the earthquake, the movement of flights at TIA were increasing rapidly. Medical as well as rescue aid flights and cargo flights from all around the world were coming to Kathmandu. We have limited parking bays. Indian and Chinese military helicopter were involved in rescue operation. To assist safe operation of all flights in the air and to manage the parking space and facilities on the ground was very challenging task for ATCs as well as for TIA management team. There were holding aircraft in the sky all the time and they were waiting for the clearance from control tower for landing. We had no parking space available after landing, all parking bays were occupied because of large number of cargo and relief flights. Not only on parking bay, as far as possible on that critical situation, we allowed to park the aircraft on taxiway also.

After the earthquake of 25 April, the following 15 days were very stressful. Aircraft were holding in the sky all the time, there was no parking space available on the ground. ATC stress automatically increase sif aircraft continuously hold in the sky. There were heavy movement of helicopter flights as well as cargo and relief flights from different countries around the world. There were additional flights of International airlines to pick up their passengers. Those days were really challenging for TIA management. We had limited ground handling equipments.With that limitation, bay management unit including terminal duty office of TIA did their best. All units of CAAN were helping each other and worked their best.We managed the slot system and CAAN gave the permission accordingly. DGCA had supervised closely the whole operation. Round –the-clock, me as well as our team of ATCs were continuously involved for safe orderly and expeditious flow of all air traffic.

In the following 2 month period of the earthquake, there were highest number of flight movement in TIA till now. As per the data of TIA, there were 17,397 flight movement in the Two months period. Nepal had received the aid from 49 countries and 5 INGOs. Similarly, cargo flights movementwere 1053, Commercial flight movement were 3471. In the single day of Baisakh 20, there were 437 flight movements at TIA that was the highest number till now.

In the context of Nepal, the role of helicopter service is always important. Flying helicopter in Nepal is a challenging job. We have high terrain and hills as well as changing weather pattern.The helicopter pilots including Nepal army helicopters and fixed wing pilots, they were involved in rescue and relief operation, they did maximum efforts.We must praise them. They saved life of the people. There were military helicopters from India and China to assist rescue and relief operation. There were 5,935 movements of helicopters in 2 months after the earthquake. In that mission we missed 2 helicopters, they were missed in accident. First one was US army helicopters and second was of Mountain Helicopter company. All the passengers and pilots were killed. That news had made us very sad. After the 3 months by Shrawan 2072, all flights operation were resumed normal at TIA.

Now we are sharing those remembrance of tragic destruction of Baisakh-12 quake and its aftershocks. That day will be the black day in the history of Nepal. That quake has killed 10,000 people including foreigners. More than 20,000 people were injured, and more than 50,000 houses are collapsed. Quake has destroyed our world's heritage sites and historic monuments. We cannot forget those gloomy days for long in our life. In the history of our civil aviation, those days were really challenging and remarkable for us. We have learned the new lessons that we must have prepared any time for such type of natural disaster. And by proper cooperation and coordination between our departments and stakeholders, we can achieve our objectives.

TIA could hardly manage the traffic during emergency.

Tourism and Environment

Manju Paudyal (Gyawali)
Manager, CAAN

Tourism and Environment are intrinsically related with each other. The development and up gradation of the tourist sector depends on a clean environment, free from all hazards

Environmentally responsible tourism is a new concept the world over. There are two aspects of the relation between tourism and environment. Tourism depends heavily on an un spoilt natural environment. The world over, location of scenic beauty and un spoilt natural splendor have replaced heritage monuments in tourism trends.

Therefore for tourism to survive, protection of these natural environments becomes a pre-requisite. At the same time providing amenities of potable water and other infrastructure to tourists often become a cause for environmental degradation. Unrestrained commercialization has harmed many a fragile ecosystem.

The Earth Summit in Brazil discussed the issue of "sustainable tourism"-i.e. tourism without harm to environment, within the context of overall sustainable development. In India, an environmental impact assessment is now being insisted upon as a prerequisite for all major tourism projects. In Nepal we need to develop the environmental impact assessment.

In small country most of the tourists come for trekking, hiking and for pilgrimage.

Tourism, if it is to be a vehicle of culture, prosperity and peace, must conserve without damaging, protect without plundering, and create without destroying and at the end of it all, we must remember that in this we are trustees of the future.

One of the most controversial and 'active' subjects today is environment. And, tourism is intrinsically related to environment.

Tourism represents around six per cent of world trade, and almost 13 percent of the total global consumer spending. Like any commercial venture, investment in the industry has to be commensurate with profitability.

But unlike most other industries, tourism is essentially based on a good environment, and should therefore be more concerned about its proper protection, preservation and further development, in its own interest, if not out of altruistic motives.

Tourism depends heavily on an socio-cultural environment and an un spoilt natural environment. A discerning observer of the world tourism scene would sense a certain change that is gradually taking place in the order of preferences of the: international and domestic tourist.

Heritage monuments have yielded place to locations which afford opportunities for leisure in an atmosphere of scenic beauty and cultural novelty. In Nepal, we suffer from what can only be termed as an embarrassment of riches in this regard.

The upsurge witnessed in tourism demands vast infrastructural facilities like hotels, restaurants

and roads, which affect the environment. Even when care is taken to minimize this adverse impact, tourists by their very numbers and behaviour, create certain problems.

Environmentally responsible tourism is a new concept the world over. Its formal enunciation emanates from the 1989 Hague Declaration on Truism, which advocates rational management of tourism so that it contributes to the protection and preservation of the natural and cultural environment.

Availability of water is also a major problem in the hill stations. Overcrowding and indiscriminate construction, particularly in our Himalayan hill-stations, not only create ugly blots on the landscape, but also give rise to problems of sewages and sold waste disposal.

Another crucial issue is that of energy consumption. Tourist facilities should so designed as to be energy efficient, taking advantage of sun in hill-stations and wind directions and breezes on the plains and coastal areas, to reduce heating, cooling and the air-conditioning requirements to the barest minimum.

They would have to think of ways of using natural light as a preferred means to artificial lighting, solar heating to geysers, and often solar cookers to electric ovens. Non- conventional sources of energy and water conservation have to be in the future the hallmark of all tourist projects.

A large number of tourists, both international and domestic, are attracted to national parks and sanctuaries which afford them glimpses of wildlife. Mountains, jungles, rivers and lakes also allow for the newfangled 'adventure tourism', hiking, skiing and other similar activities.

Conclusion

At last this is very well, and certainly deserves to be encouraged, since quite apart from the income generated by tourism, it also increases public awareness about nature and all its beauties. The mistake is when we confuse wildlife and adventure tourism with picnics. A national park is not the place to spend a pleasant Sunday afternoon, playing games or sipping martinis.

More than just the architecture of the buildings, it is the tourist activities that must blend into the surroundings. Underlying everything we do must be empathy for wildlife and a respect for its habitat.

We find empty bottles, empty cans and plastic bags not only marring the beauty but also threatening animals who have been known to choke and die from trying to eat the food of discarded plastic wrappers or containers.

Why cannot we have battery-operated vehicles cutting down both on noise and harmful emissions instead of having conventional vehicles?

In every case it is necessary to do a detailed study about the carrying capacity of any tourist location, be it a hill-station or a beach resort or a wildlife sanctuary. By 'carrying capacity' is meant the load of people that a particular area can take.

The carrying capacity would further determine the optimum number of people required to sustain it both economically as well as environmentally.

It would be a good idea if the tourism industry itself undertakes such carrying capacity studies in its own enlightened self-interest. The government would certainly be willing to cooperate with information and guidance.

Until recently, tourism in our country was mainly religious tourism. Pilgrims who visited the holy places were humble and had great respect for the local communities living in these places.

In turn, the visitors were welcomed with open arms and open minds and given all cooperation and assistance. There was nothing obtrusive in the attitudes of the pilgrims which could offend the sensibilities of local inhabitants. But the present scenario is different.

It is not the intention to paint a dismal picture or say that tourism is something which should to banned. Tourism contains within itself the potential of developing into one of the most eco-friendly industries-provided that there is a re-orientation of perspectives and an acceptance of the basic tenets of conservation.

How effective be CAAN after Seventeen Years?

Sanjay Kumar
Manager, CAAN

Background

Today, CAAN, the only organization responsible to develop and maintain a safe, reliable and efficient air transport system in the country, is celebrating its' 17thanniversary. CAAN family feels honor to announce that in the year 1998, when CAAN inaugurated its first establishment year, had transported about 1.7 million air passengers. However at the end of the year 2015, it transported about 5.1 million people, which is about 300% increment to the base year. Since 1998 to 2015, CAAN has facilitated more than 50 million air travelers to fly within and outside the country.Within the same period it has handled around 1.4 million flights successfully.

As the national economy, foreign employment and Nepalese livelihoods are getting integrated and dependant on air transport, the role and function of CAAN becoming more crucial and pervasive on national and international forum. The present development paradigm that is highly depend on the liberal and globalized international market cannot move forward without ensuring a safe and efficient air transport system in response to ever growing air travel demand. Hence, the CAAN is not limited to an aviation organization and it cannot be evaluated merely on the organizational profit and loss basis but how it affects and impair the other industry and people inside and outside the country when it couldn't perform as per expectation. During Turkish air crash in March, 2015 the only four days interruption of international flight in TIA created havoc and the operation of record beating number of rescue and relief flights during earthquake showed the real importance of Airport operation in national and international context. Not only in normal conditions of flight but also in abnormal situation like natural disaster Air operations plays a vital role. In an organization like ours there involves multidisciplinary manpower and every unit of it are of equally responsible to maintain and improve the service of the organization resulting to national development.

CAAN's Situation

As per the provision of present CAAN acts, regulation and organization structure, the responsible authority of decision making, actual working employee/entity and working location are sprayed around the country from an airport to the CAAN head office and ministry of culture, tourism and civil aviation including other ministries like finance, home, defense, etc. Hence, there are some legal, political, individual, administrative and technical reasons which can delay for the decision making in CAAN according to the ICAO standards and recommended practices. In 1998, CAAN was established as an autonomous entity so as to make quick decisions in aviation sectors. Since 1998 to 2015, worldwide a drastic change has been observed in aviation organization with the evolution and innovation of ICT and it has pervasively used various managerial tools and techniques in work execution, work evaluation, HRM and decision making. Today, the aviation industry is not same as it was. It has gone through an exceptional transformation that has driven the market towards high level of competition. However, after seventeen years, CAAN could not run as per international requirement. Our motion seems slow. CAAN, the only regulator of the State overseeing the entire aviation sub-sector of Nepal has a big role to play to contribute to national economy while responding to the globalization pace. CAAN has to do a lot of developmental & creative works to cope with

the international demands in line with ICAO & other contracting nations. CAAN is on the way to separate into two entities regulator and service provider in a near future and also going to have integrated CAAN Act.

CAAN's Effectivity

CAAN is the blending of seventeen different disciplines and the work forces of various level, qualification, nature and background. Due to the sensitive and dynamic nature of its work and activities, it is indispensable to maintain a required level of competency and working attitude in each individual and a cohesive work friendly environment to execute assigned task. It is possible only if the organization is fully intactful and being effective to meet its mission and vision because organization is always the driver of progress and productivity

Focuses mainly on the cultural dimension, and does not adequately take into account the other dimensions of an organization. To transform an organization it is necessary to take consideration in structures and nature of work as well as the culture and processes. 'Focusing exclusively on training activities in order to foster learning… favors this purely cultural bias' **Favors individual and collective learning processes** at all levels of the organization, but does not connect them properly to the organization's strategic objectives. Popular models of organizational learning assume such a link. It is, therefore, imperative, 'that the link between individual and collective learning and the organization's strategic objectives is made' This shortcoming, Finger and Brand argue, makes a case for some form of measurement of organizational learning – so that it is possible to assess the extent to which such learning contributes or not towards strategic objectives.

The exact functions of organizational learning need to be more clearly defined.

This kind of connection supports collaboration, commitment, ready access to knowledge and talent, and coherent organizational behavior. This description of social capital suggests appropriate organizational investments – namely, giving people space and time to connect, demonstrating trust, effectively communicating aims and beliefs, offering equitable opportunities and rewards that invite genuine participation, not mere presence. (Cohen and Prusak 2001: 4). In this formulation we can see many of the themes that run through the approach to the learning organization that writers like Watkins and Marsick (1993) take. The significant thing about the use of the notion of social capital is the extent to which it then becomes possible to tap into some interesting research methodologies and some helpful theoretical frameworks.

Work place in CAAN

Technology allows us to work anywhere, on any device, work is something people do — not just a place to which they go. This shift demands that businesses are managed and operated so that they can attract the right people, retain them, and ensure they can do their best work.

- The result: the reimagined workplace. An environment where employees demand a seamless work experience no matter where they are and the tools to make that happen. New ways to improve business productivity, flexibility, and agility are no longer just nice to have: they are essential for the modern workplace
- As companies design their workplaces for the future, adopting the right technology and putting the right policies into place are key to business strategy and organizational success. Companies that can build and protect strong cultures that foster diversity, collaboration, and innovation, while supporting work-life balance and flexibility, will clearly gain the competitive advantage.
- This is a fundamental shift in thinking about the workplace: Offices are becoming more open and walls are….

5th ATS Coordination Meeting of the BOBASIO Subregion and Cross Border ATFM Workshop

Shreeker Prajapati
Manager, CAAN

History

This is the 5th edition of this sub regional meeting that brings together the states from APAC and MID region. The First ATS Coordination meeting of the ANSPs within Bay of Bengal, Arabian Sea and Indian Ocean Region (BOBASIO/1) was held in New Delhi from 5th to 6th May, 2011. The Second ATS Coordination Meeting of the BOBASIO Region (BOBASIO/2) was held at Trident Hotel, Chennai, India from 11th to 13th April 2012. The Third ATS Coordination Meeting of the BOBASIO Region (BOBASIO/3) was held at Hyderabad, India from 22nd to 24th October 2013. The Fourth ATS Coordination Meeting of the BOBASIO Region (BOBASIO/4) was held at Kolkata, India from 22nd to 24th September 2014. The Fifth ATS Coordination Meeting of the BOBASIO Region (BOBASIO/4) was held at New Delhi, India form 31st August to 2nd September 2015.

Objective, Terms of Reference and Membership

The objective is to bring the integration of both the BOB subgroup and the ASIO subgroup, so that the issues of seamless service and resource sharing in the BOBASIO sub region of the APAC Region of the participating states can be enhanced to better proportions, thus resulting in high levels of user satisfaction.

ANSPs of states from APAC and Mid Region meet as combined group with the concept of working together through a collaborative approach for seamless ATM in Bay of Bengal, Arabian Sea and Indian Ocean. The meeting focused on development of objective for establishing a comprehensive coordination mechanism among the states in supporting a strong regional ATM system for seamless sky.

Hence, the objective of BOBASIO meeting, as adopted in the 2nd ATS coordination meeting of BOBASIO held at Chennai, India, is to accelerate the implementation of ANS program among the states in the sub region through greater

- Collaboration
- Co-ordination
- Co-operation
- Communication

The terms of reference of BOBASIO sub-regional group are

a. Effective coordination amongst member states for implementation of ICAO air navigation plans for adoption of uniform standards and procedure.

b. Define coordination mechanism amongst member states on matters of common interest on air routes, air traffic flow management, contingency procedure, sharing of ANS facilities, airspace utilization, aeronautical telecommunication, search and rescue and aeronautical information services within area of responsibility of the member states.

c. Maintain close cooperation and collaboration in implementing contingency plans and procedures to permit international flights to transit through FIRs of the BOBASIO subgroup

In order to achieve the terms of reference BOBASIO group shall

a. Identify operational issues and difficulties for seamless flow of traffic between member states and develop solutions to resolve the same through coordination

b. Maintain close cooperation with the

member states to optimize the use of available expertise and resources

c. Designate contact points for close cooperation with the member states on various ANS issues

d. Share the expertise/information/ technology on any latest ANS related developments in any of the member states

e. Arrange visit of ANS officials between member states for updating/sharing latest ANS developments for mutual benefits

f. Pursue and revise the SAR agreements and coordination procedures among the member states once a year

g. Conduct of joint SAR exercises between member states

Membership of BOBASIO sub-group shall include but not limited to ANSPs of India, Pakistan, Nepal, Bangladesh, Myanmar, Thailand, Malaysia, Singapore, Indonesia, Sri Lanka, Maldives, Seychelles, Mauritius, Somalia, Yemen and Oman. Members of the BOBASIO sub-group may also include airlines and airspace users of the member states and IATA, IFATCA and CANSO.

5TH ATS Coordinatin Meeting

The venue of the program was Hotel Radisson Blu Plaza, New Delhi India. The meeting was conducted and the documentation prepared in English. Thirteen (13) Working Papers (WPs) and Seven (7) Information Papers (IPs) were presented to the meeting. The list of working papers and information papers are detailed in Appendix A. The meeting was divided into 7 sessions over a period of two days, followed by the adoption of draft report, which was scheduled for the third day. The proposed agenda of the meeting is listed in Appendix B.

The meeting started, by acknowledging an extraordinary resolve and courage in the moment of crisis by Air Traffic Controllers from Nepal when a massive earthquake wreaked havoc in the country. With their never say die attitude, these air traffic controllers stood to the occasion and worked tirelessly to provide air traffic services to the relief and evacuation flights. With their selfless services to the nation in general and humanity in particular they have not only made their country but whole community of air traffic controllers across the world very proud.

Over the course of two days and 7 sessions, the meeting discussed various agenda items and presented working and information papers.

The Agenda No 2 reviewed the progress on action items of BOBASIO/3 and BOBASIO/4, the working paper was presented and was taken up for discussion. The meeting noted the outcomes of the Fourth ATS coordination meeting BOBASIO/4. The meeting agreed to have a tracking mechanism for follow up of action items. It was agreed that updates on action items would be provided by the States/ ANSPs/ Organizations as proceedings would progress.

The agenda Item 6 outlined ATM Coordination (Airspace restructuring, AIS and SAR agreements), one information paper and two working papers were presented. A working paper was presented by India regarding letter of agreement for operational matters between SAR service providers. The paper presented by India highlighted the need for establishment of Letter of Agreement/Arrangement on Operational matters between Search and Rescue Service Providers of neighbouring States. The next working paper presented emphasised establishment of upper airspace UPR zone over Bay of Bengal, Arabian Sea, Indian continental and Oceanic airspace. The paper presented by IATA proposed a strategic approach for airspace management in the Bay of Bengal-Arabian Sea- Indian Continental and Oceanic (BOBASICO) airspace based on optimum utilization of improved ground and airborne capabilities to enhance flight efficiencies, moving from Fixed ATS route network to UPR tracks for FL 380-390-400-410.

Regarding, the Agenda Item 8, SBAS implementation in the region and possibilities of entering into MOU with the concerned states of BOBASIO region, working papers titled GAGAN-Equatorial IONO advantage and GAGAN for everyone were presented by India and proposed the potential applications of Indian SBAS – GAGAN in the BOBASIO region. The paper informed that the Indian SBAS- GAGAN

(GPS Aided GEO Augmented Navigation) has been certified by DGCA for RNP0.1 and Precision Approach with Vertical guidance (APV1) services on 21st April 2015.

Cross Border ATFM Workshop

The Cross border ATFM workshop was held on the 3rd and 4th September under the aegis of ICAO and IATA at Radisson Blu Hotel, New Delhi, India. The workshop boosted the expert presentation from ICAO, CANSO, IATA, EUROCONTROL, CAAS, JAAB, AEROTHAI, AAI, CHINA. They each shared their experience and expertise so that the dream of global ATFM can be realized through implementation of regional ATFM unit.

The history, concept and future of ATFM/CDM (collaborative decision making) were shared in the workshop. It was emphasized that the one central ATFM authority in the APAC region was not possible for the current period, so, the idea of multi-nodal ATFM, where each ANSP operating an independent, virtual ATFM/CDM node supported by an interconnected information sharing framework was taken as realistic measure.

The importance of cross border ATFM during adverse and extreme conditions such as weather, natural disaster, incident, accident was also showcased and shared.

Things to do (Action Items of BOBASIO/5)

- Establish POC (point of contact) for coordination and communication.
- All BOBASIO States to consider developing structured program for BOBASIO Geographical Area for Upper airspace UPR development. The deadline is BOBASIO/6.
- All BOBASIO States to consider the Letter of Agreement template for the ATM Contingency Plan Level 2. The deadline is 31st October 2015.
- BOBASIO states to establish a procedure for supervisors or controllers on duty of transferring and accepting ATS units to discuss and investigate, in a timely manner, the occurrences relating to the breakdown in coordination, and then report the LHD to the corresponding RMAs. The deadline for draft procedure is 31st December 2015.
- All concerned states to review the draft Letter of Agreement for the coordination/ co-operation on operational matters of SAR services with India. The deadline is 31st December 2015.

Recommendations and Conclusion

- It is highly recommended that since Nepal is member of this sub regional group, we do participate in this meeting regularly and actively.
- POC should be appointed so as to coordinate and communicate with this sub regional body.
- Regular participation must be ensured in future meetings also. There should be representation from the controllers who are active in operation with in depth knowledge and preparation.
- To implement the action items within the given timeframe

The ATFM is the need of hour in Nepalese aviation sector. The TIA has witnessed events (SAARC meeting), accident (Turkish airlines accident), natural disaster (earthquake) that summarised the need of a system that can manage safe, orderly and expeditious flow of air traffic, and the solution is ATFM/CDM. We can start initially through domestic ATFM system that collaborates with all the stakeholders and integrates all other component into one unit that can plan and manage flow of traffic on air or at ground/aerodromes. Cross border ATFM can be implemented after maturing and getting expertise from the domestic ATFM.

For ATFM, AMHS system should be expanded to all the stakeholders with better and reliable network. There should be active participation from all the stakeholders. The ATM system should be integrated well for better services.

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Aviation Security and Our Context

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In primitive age, people used to travel in search of food and water. They used to hunt animals with rudimentary weapons, made of wood and stones. They had threat from other groups of people and animals. They originally used rocks, branches, and other natural resources to keep themselves out of harm. Therefore, it can be said that sense of security was developed at the same time.

Abrham Maslow has stated security need of human being as lower order or basic level need among five needs in hierarchy of needs theory of motivation. Knowingly or unknowingly we all are involved and surrounded in security matters. Security is every one's concern. Everyone wants to be secured at any moment. It is unlearned behavior of human being.

A generic meaning of security is freedom from danger.The safety and security seems similar. But in aviation sector these two words have distinct meanings. As per ***ICAO Annex-19***, *safety means 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*. Likewise, ***ICAOAnnex-17*** says, security as *safeguarding civil aviation against acts of unlawful interference.*

The concept and meaning of these two words can be clearly understood from different ways. Safety is the comprehensive phenomena whereas security is one of the means to keep safe. It is also said that security is on the ground and safety is in the air. In security there is risk of unlawful interference or human intention whereas safety risk can be arisen from non-intentional human error or error from machine, equipment etc.

In spite of separate structures within International Civil Aviation Organization (ICAO), a separate cooperative programme called Cooperative Aviation Security Pogramme – Asia Pacific (CASP-AP) has beenestablished under it. The programme aims to assist members in ensuring compliance with International Conventions, ICAO SARPs and guidance material related to aviation security of this region. From ICAO to state level, there are separate structures or offices to deal with aviation security matters. Even though security and safety are different matters but these are equally important and supporting to each other. Some of stakeholders of aviation sector are not fully aware about these things. General people think aviation security is job of police. Aviation security is essential in aviation world and must be understood as such by all concerned.

Nepal has become member of ICAO in 1960. Along with Chicago Convention 1944, Nepal has ratified Tokyo Convention 1963, Hague Convention 1970 and Montreal Convention 1971 relating to aviation security and become liable to comply the provisions of the conventions. ICAO also conducts audit called the Universal Security Audit Programme (USAP) to assess state compliance with Annex 17 (Security).

Aviation security is a business of multinational

character. Any errors or lapses of one country will affect security system of other countries. Regardless of developed or developing country, every country should establish security setup specified in ICAO documents in the form of standards and recommended practices (SARPs).

ICAO has stated in Annex 17 that the security *objective is achieved by a combination of measures and human and material resources*. Civil Aviation Authority of Nepal (CAAN), thus has to concentrate on these three following dimensions to strengthen aviation security system.

ICAO Annex 17 and ICAO Doc 8973 are major documents of aviation security. Some other relevant provisions of other ICAO Annexes and ICAO Docs are also useful for security maintenance. ICAO advises all contracting states to follow provisions throughout world. All contracting states are required to develop and implement necessary regulations. There are some legal documents such as Civil Aviation Act, 1959, Civil Aviation Authority Act, 1996, Civil Aviation Security (Management) Rules, 1989 and some other rules for aviation security as primary legislation in Nepal. To fulfill provision of ICAO annex 17 and doc 8973 Nepal also has developed National Civil Aviation Security Program (NCASP), National Civil Aviation Security Quality Control Program (NCASQCP), National Civil Aviation Security Training Program (NCASTP), Tribhuvan International Airport (TIA) Security Program, TIA Emergency Plan (AEP), Hub Airport Security Program, Domestic Airport Security Programme, Domestic Airport Emergency Plan, Standard Operating Procedures (SOPs) for various security activities. Civil Aviation Authority of Nepal is regulator for aviation security activities. Director General of CAAN is an appropriate authority for aviation security in Nepal. New amendment of Aviation Security (Management) Rules, 1989 is in final stage of government approval which incorporates almost all new requirements of present scenario.

ICAO has taken human resource as one of vital resource to mobile other resources and implement security measures effectively. Initial training, advanced training and certification of human resource has been made mandatory to work as security personnel. In modern management, employees are taken as human resource that they are strategic resource and should be competent. There should be human resource policy. Human resource plan is prepared to support organizational plan. Successor Plan is developed to fulfill objective of human resource plan. Training and development are acts of making employee competent and skillful. Human resource department of CAAN is facing some difficulty to move ahead. Employees feel that trainings are taken as incentive rather than a need. Professionalism may be suffering due to this reason. Succession planning is necessary to assess to whom, which types of trainings are needed. Committee and such mechanism may not be effective for this purpose. Proper chain of command is needed to work effectively for security personnel.

Human resource department or management should consider that those who take security training must remain in security units and training should be given to only those who remain in security units. There might be various alternatives to make aviation security personnel professional, dedicated and accountable. One of the alternative, in my opinion, is creating separate aviation security group can be a solution. Likewise, Nepal police that has deputed its manpower in airports for implementing aviation security policy and program has the same problem. Untrained police are transferred at airports and when they got trained they also transfer to other places. There is always lacking of adequate number of well trained police. Therefore, a separate wing in

Nepal Police is realized from long period. But, this solution is also not materialized till now.

Security is becoming complex and challenging day by day. On top of traditional threat, modern and new types of threats are emerging. Chemical, Biological, Nuclear and Radiological (CBNR) weapons, man-pad are some examples of modern threats. They have been great challenge for security world. Manual methods of security may not be effective to cope with modern challenges. Advanced security equipments should be installed and operated. Generally X-ray machines walk through metal detector (WTMD), handheld metal detector (HHMD), and Close Circuit Television (CCTV) are basic security equipments. Security Tampered Evident Bags (STEBs) are used to transport liquor. TIA and some domestic airports also are applying these security measures. Some domestic airports are based on manual search.

Different types of security equipments are introduced to check Liquid, Aerosols and Gels (LAGs). Some countries have introduced body scanner, Multimode Threat Detector (MMTD), infrared system and such other sophisticated and costly equipments. But these may not be practicable for all countries.

Access control area is defined and system is developed to control access into these areas in all airports. Airport permit for person and vehicle are used to enter into the restricted area. Access gates are kept minimum numbers and installed security equipment in each gates. Body search, baggage search, vehicle search are general basic process of security search. As a modern concept, airport is considered not only a venue for aviation activities but also a venue for commercial activities. It is also said city inside city. People come to airport for shopping, wedding, etc. For instance, city people visit Narita Airport for shopping. Kobe airport has built spot to stay and celebrate honeymoon couples in airport beach area.

Finally, message of no search no fly should reach to all passengers and general public. Facilitating security search is a responsibility of all concerned. We all should understand, realize and behave accordingly that safety and security is equally important and these are two sides of a coin and dependent on each other. Any flight cannot be imagined without provision of aviation security at any airport. Objectives of aviation security also cannot be achieved without joint effort of all concerned stakeholders. Thus, aviation security is not only result of security personnel but it is a result of joint effort of all concerned involved in aviation field.

Conclusion

It is necessary to update all aviation security regulations and documents according to amendment of ICAO Documents, prepare human resources to cope with modern challenges, arrange advanced equipments and maintain them in time as situation demand, harmonize all activities of aviation security and make the system passengers friendly to achieve targeted goal.

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Awaiting Aviation Sport's Edict: Nepalese Viewpoint

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Concept

Aviation is known as aircraft and its operation to move the people and goods from one place to another. It deals with the entire air transportation system as human necessity. This field can be divided into three parts: infrastructure, vehicles and operations. Infrastructure consists of the fixed installations necessary for transportation that may be aerodrome, ATS route, navigation aids etc. A vehicle traveling on this network is aircraft. Operation deals with the way that vehicles are operated and the procedures, legislatives, policies set for this purpose including finance. Whereas sports are referred as activities, competitions or games involving physical exertion and skill in which an individual or team compete against each other for entertainment. It is played according to rules for enjoyment and/or as a job. It's neither a basic need nor a compulsion; it's only for fun or job for the player himself and an issue of honor or esteem for a nation itself.

Now, an aviation sport is a sporty activity within the airspace using air equipment. It is an adventure recreational activity through air vehicle consuming airspace and aviation infra structures and is governed by rules, regulations and procedure set for general aviation and recreational activities. Any activities done within certain airspace by air equipment for amusement or competition is called aviation sports. Normally, such activities are done for enjoying another or for another's fun with getting some price. It is a kind of business. Hence, it depends on where it is used or the motive of the users either commercial or for sport.

The air equipment having the Maximum Takeoff Weight (MTOW) of 1000 Kg or less, activities remaining within certain airspace (from point A to A) and having maximum extent up to two individuals is known as air sport aircraft/ equipment. Generally, these types of equipment are the Ultra/Micro-light aircraft, Para glider, Hang glider, Para motor, Hot air/Threaded gas balloons etc. These can be used in Pleasure flights, Training flights, Sport activities such as: skydiving, free falls, Para gliding, hang gliding, Para motoring etc., Television documentary and Video shooting, Aerial photography and Ecological monitoring of terrain, Expeditions, Forums, Camps, Patrol, Showing the mountain and their peaks, Film shooting, Advertising (banner towing, flyers, flowers and gift hampers distribution) and more…

Background

Nepal has high tourism probability with its social, cultural and bio diversity, the natural beauty. Rather than transport, the additional usages of aviation on recreational activities are increasing accordingly. In such a context, a company named AVIA CLUB had started its services based in Pokhara with Ultra-light aircraft to provide sightseeing tours and professional services to movie sets, scientific research and expeditions in 1996.That's the pioneer of sports aviation in Nepal. And in 2001, the Sunrise Paragliding had started its services with non-powered Para glider in Sarangkot area of Pokhara valley that starts the formal Para gliding antique. In those decades, the government had provisions to promote aerial sports activities. In order to fill this gap, in 2002, the operators had formed a Nepal Air Sports Association (NAA) to self-monitor the quality of services which was appreciable at a point. Altogether 55 aviation sports companies

including 3 ultra-light and 52 paragliding are operating till now. Out of them, only 6 paragliding are operating outside the Pokhara valley and rest all are Pokhara centered.

Policy and Legal provisions

Policies: To develop civil aviation as appropriate means of reliable service industry, recreational and adventure activities, is the objective of aviation policy 2063. Besides, simplified process of company license and operator certificate and a minimum of ten million rupee as paid up capital investment to establish aviation Sports Company. Likewise, tourism policy 2063 adopted the policy that encourages the private sector to operate aviation sports activities in different areas of the country. Nepalese air sports are being governed under the following principles.

Acts: Civil aviation act 2015 is in existence and civil aviation authority act 2053 has the provisions to establish the CAAN and its right and duties. Under the authority of these Acts, CAAN has promulgated the following regarding aviation sports.

Rules and Civil Aviation Requirements: Civil Aviation Rule 2058, Airport Services Charge Rule 2067, Aviation Sport Regulation 2069. And the Requirements are: Air Operators Certificate(AOCR),Airworthiness of Aircraft, Pilot Licensing (PELR), Paragliding Pilot License, Paragliding Pilot School Certification, Aeronautical Information Publication (AIP) Nepal.

Player/Actors

The actors involved in aviation sports undertaking are:

The state: That has complete and exclusive sovereignty over the airspace above its national territory, by which, the states can impose limitations or any condition on air sport activities and operation. Ministry of Tourism and Civil Aviation (MOTCA) is exercising these powers by issuing License with operating conditions.

The Civil Aviation Authority: That has the technical and managerial power regarding the regulation, development and expansion of the civil aviation. Civil Aviation Authority of Nepal (CAAN) was established as an autonomous regulator entity. It has been set up with the objective of making aviation safe, regular, standard and efficient. Its prime goal is to ensure flight safety and sustainability of civil aviation. Besides, it is liable for the regulation of emerging aviation sports activities. The promotion and regulation of these sport activities desired extremely to support the national tourism promotion. CAAN has obliged in this regard to issue, renew and terminate the Air Sports Operator's certificate, company, Flying School and sports pilot license and monitor the overall activities thereof. To perform these tasks and to make recommendation to DGCA, air sports regulation committee chaired by deputy director general (DDG2) having 7 members, 4 from CAAN and 3 from private air sports operator, is established under Aviation Sports Rules 2069.

The aviation sports operators: these are major actors of the aviation sports operation. They are responsible for getting license and Aviation sports Operator Certificate (ASOC) to operate the air sports activities for providing sporty platform to the adventurer.

The Aviation sport operator's association: It is an umbrella organization of the air sport operators**.** Nepal Air Sports Association (NAA) is an umbrella organization, established in 2002 with the objectives of institutional development of air sports by uniting common interests and protecting professional rights and benefits of all entrepreneurs, pilots and sportsmen involved. It aims to provide constructive suggestions to respective agencies of government for formulation/modification of existing acts, laws, policies and regulations of air sports.

The Air spotier (Pilot) and the adventure: These are the principal entities of the overall aviation sports and are supposed to operate their sports activities in defined airspace in safe, and lawful manner. Till now, 15 have got Nepalese commercial ultra-light pilot license and 107 have got the Nepalese commercial Tandem paragliding pilot License. Besides, some foreigner license holders in both categories also have got Nepalese authorization. Basically, these pilots are licensed

to operate commercial activity using air sport equipment. But no Nepalese have got standalone sports license from CAAN.

National Sports Council (NSC): National sports council is only a governmental authentic sports organization of Nepal. It has great contribution to develop and uplift the Nepalese sports. But the leading air sports association (NAA) neither got the affiliation with NSC nor any aviation sports competition or games are sponsored by NSC. But a couple of associations–Aviation Sports Association and Nepal Hang Gliding and Paragliding Association have got affiliation with NSC.

Issues and complications

Conceptual: it is a fundamental issue in Nepalese air sport industry. Basically, the operator companies are supposed to operate their activities for fun, recreation and competition between the sportsmen but all of them are established with business motives never for sports. They are utilizing air sport equipment/aircraft for their business to earn money. The pilots are doing their job and adventurers are getting fun by paying its cost not for competition. But the companies are defined as air sports companies.

Legislative: It is the most awaiting key issue of this segment. The activities had been growing since 19 years but there is not appropriate, complete, clear and concise set of aviation sports regulation. The companies are defined as aviation sports but they are grouped with commercial airlines. Nepalese paragliding pilots are provided with the temporary tandem pilot license on ad-hoc basis but for solo and sportsman pilot license and Ultra-light pilot license with maintenance has provisioned less. Specific guidelines, Aviation Sports Operating Certificate Requirement (ASOCR), License issue and its authorization for foreigner, equipment's registration, airworthy and its maintenance requirement and flying school related requirements are some apparent inadequacies.

Practical: there are complications not limited within its concept and legislations but more in fact with its practical operation. There is an absence of expertise with regulator and less emphasis on it. Most of sports activities are focused only in Pokhara area that's saturated and door locked situation for upcoming companies. Besides, arises issue of relocation of sports activities after upcoming Pokhara Regional International Airport in operation. Fleets (Paragliders) are supposed to have with the companies but most of the cases it belongs with the pilot only. Issue also exists with Landing and takeoff site of Para glider in Pokhara. There is a challenging question about uneven influences from power centers in extreme level for either getting license or operating certificate of a company or any other day to day operational matter for individual benefits. The regular monitoring is another complication and there is arising complication on the question of revenue collection, corporate tax and remuneration tax paying system, customs duty on fleet import, insurance of pilot and adventurer, work permit and non-tourist visa for foreigners and many more..

Conclusion

Industry promotion and its regulation is the basic obligation of regulatory authority. CAAN also obliged by this compulsion with growing aviation sport industry in Nepal since couple of decades. The promotional as well regulatory role of state with complete legislation and the continued craze on aerial sport fun among foreigner, local tourists and sportsmen ensure a bright future for air sports. That could keep pace with the air sport industry. Nepali companies, employees and sportsmen might reap the benefits of this growing trend. It has to be encouraged to open more spots all over the country not only in Pokhara area. Besides, all types of air sports' being imported is likely, considering the economic success of air sports and tourism promotion. There is an urgent need for clear policies in this sector with clear distinction in between commercial companies using air sport activities and the club of sportsman for solitary aviation sports. Appropriate, complete, clear and concise set of aviation sports regulation should be formulated and implemented through differentiating with the provisions of ICAO.

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A Statistical Analysis of Aviation Accidents between 1955 and 2015 in Nepal

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Abstract

Air crash has been the subject of real concern since the development of aviation. Although airplanes, helicopters, jet planes etc. are ensured with a high level of safety, aviation accidents are likely to occur anytime and result in loss of life. Several researches and investigations have shown that human errors have been the most contributing factor of air crashes. This paper presents an analysis of all the accidents involving different kinds of aircrafts such as commercial jet planes, military aircrafts, cargo carriers etc. from 1955 to 2015 in Nepal. The probable causes stated by AAIC reports and preliminary reports are studied and analyzed, and classified under four categories namely: human factors, environmental factors, structural factors and system factors. In addition, the statistics of fatalities and accident rates is also presented in the paper.

Keywords: air crash, human action, preliminary, accident rates, fatalities.

Nomenclature

AAIC Aircraft Accident Investigation Commission

STOL Short Take-off and Landing

ICAOInternational Civil Aviation Organization

Introduction

A deeper look into the aviation system of Nepal puts us in the worst conditions in the world. Issues regarding minimum safety standards in aviation still have not been resolved that prevent Nepalese airlines from entering European airspace (Bhuju & Ghimire, 2013). Apart from lacking minimum infrastructural requirements as per ICAO standards, operation of faulty aircrafts and the occurrence of preventable human errors seem to be the contributing factors of aviation accidents in Nepal. Such accidents are compounded if most of the STOL airports in a mountainous country like Nepal are operated with compromises in safety measures.

The first aircraft accident in Nepal occurred in 7th May, 1946 when Douglas C-47A-20-DK Dakota C.3 owned by Royal Air Force overran the runway while attempting to land at Simara Airport (Poudel, 2012). The airplane fell down a 14 foot drop. However, there were no casualties. The crash of Thai Airways International (Wikipedia, 2015) on 31st July, 1992 killed 113 lives, of which 14 were crew members. Nepal suffered the most-fatal air crashin 28th September, 1992 when Airbus 300B4-203 crashed into a steep cloud-covered hillside resulting in loss of 167 lives, 19 of which were crew members (AirSafe, 2015).

In this paper, the aircraft accident data of Nepal were mainly obtained from ASN Safety Database (Foundation, 2015) where some of its missing pieces of information were filled through other various sources, and finally a compiled set of data was made ready for analysis. A thorough study of AAIC reports and preliminary reports was conducted in order to identify the probable causes of the accidents and classify them under various categories. The data regarding air traffic movements required for the analysis of accident rates were obtained from CAAN Annual Report

2013(Nepal, 2013), and after detailed analysis, the statistics of fatalities and accident rates is also presented in the paper.

This study consists of five sections. The first discusses the contextual general literature. The second describes the sources of data and the classifications of causes of accidents while the third is solely used for tabulating the accident data in a proper manner. The fourth can be divided into three sub-sections which present detailed statistical analysis of causes of accidents, accident rates and fatalities. Lastly, the final section summarizes the findings of this study.

Materials and Methods

Most of the data of aviation accidents of Nepal were obtained from ASN Safety Database and other sources for study and analysis of causes of accidents and their classification. It is to be noted that the data regarding aviation accidents does not include accidents occurred as a result of war, hijacks or any other political factors. Air traffic data of Nepal from 1998 to 2012 were obtained from CAAN Annual Report 2013.The classification of causes of accidents given below is based on methodology of Cowan (Cowan, et al., n.d.).

Classification of Causes of Accidents

After analysis of accidents through the study and examining of AAID final reports and preliminary reports, the identified causes of accidents were classified under four categories as follows:

A. Human Action

Accidents classified as resulting from "human action" were caused by the actions of persons either directly or indirectly responsible for the operation of the aircraft, including passenger and criminal action. The types of human action are further broken down as follows:

- Airport Ground Crew
- Airline Procedures
- Manufacturer Procedures
- Pilot (Captain/First Officer)
- Flight Crew
- Maintenance Person
- Passenger
- Flight Attendant
- Terrorist/Criminal
- Airport Operator
- FAA
- Air Traffic Control
- Pedestrian
- Mechanic

B. Environmental Factors

Accidents classified under "environmental factors" category were caused by circumstances related to the environment in which an airplane operates. The types of environmental factors are classified into twelve categories as follows:

- Wind Gusts
- Turbulence
- Ground Vehicle Failure
- Deer Strike
- Dark Night
- Snow
- Rain
- Rough Landing Surface
- Icing
- Fire
- Microburst
- Lightning /Thunderstorm

C. Structural Failure

Accidents classified as resulting from "structural failure" were caused primarily by problems related with some part of the structure of the

aircraft, and for which the aircraft is typically designed to tolerate. The types of structural failure causes are distinguished as follows:

- Aging/Corrosion
- Fatigue
- Overstress
- Maintenance/Inspection
- Foreign Object Damage (excludes bird strike)
- Unknown
- Other (Door Latch, Failure of Passenger Stairs, Air-stairs)

D. System Failure

Accidents classified under "system failure" category were caused by problems with systems necessary for operation of the aircraft. The types of system failures are divided into four sub categories as follows:

- Steering System
- Electrical Unit
- Hydraulic Unit
- Fuel Tank

E. Unreleased cause

For some accidents, the cause of the accident has not been determined by AAIC investigators. Such accidents have not been included in this study.

Results

The number of accidents, departures and computed accident rates in Nepal from 1999 to 2012 is presented in Table 2. Fig. 1 shows a graphical representation of statistics of the number of accidents by causes namely: human factors, environmental factors, structural factors and system factors. Fig. 2 summarizes the accident rates i.e. accidents per 100000 departures from 1999 to 2012. The number of fatalities from 1955 to 2015 expressed in percentage, have been classified according to their respective causes as shown in Fig. 3. Finally, Fig. 4 presents the frequency of fatalities each year from 1955 to 2015.

Table 2:Accidents departures and accident rates from 1999-2012

Year	Accidents	Departures	Accidents per 100000 departures
1999	4	66570	6.008712633
2000	1	64103	1.559989392
2001	0	63159	0
2002	2	54825	3.647970816
2003	0	60648	0
2004	1	75533	1.323924642
2005	1	80379	1.244106048
2006	3	72348	4.146624648
2007	0	77342	0
2008	1	83562	1.196716211
2009	0	91892	0
2010	4	99317	4.027507879
2011	1	102052	0.979892604
2012	3	94197	3.184814803
Average	**1.5**	**77566.21429**	**1.95144712**
Total	**21**	**1085927**	

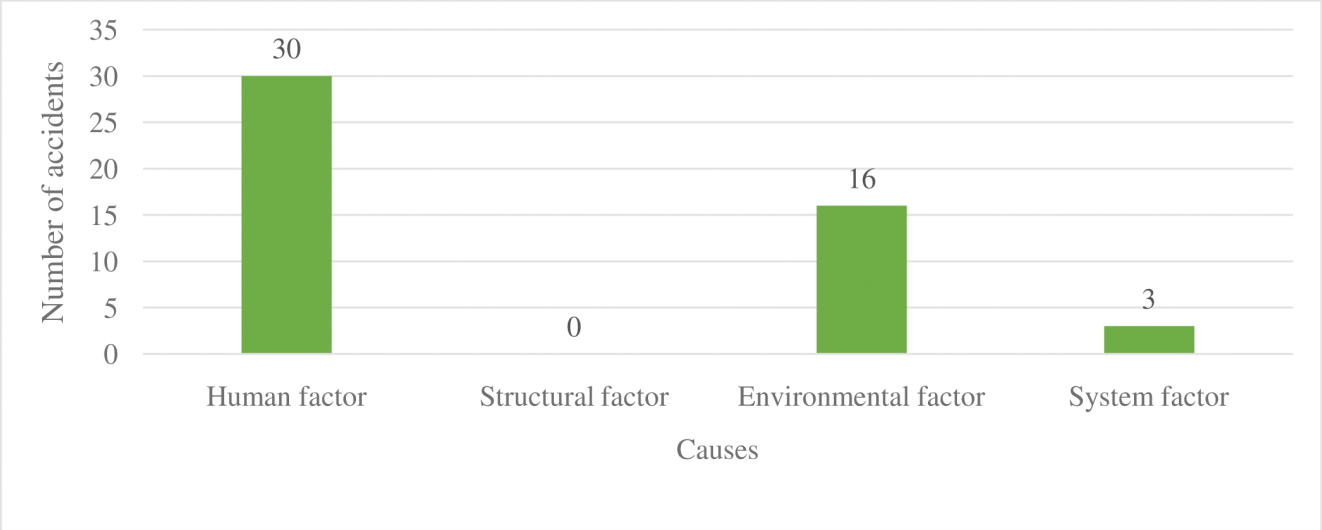

Fig. 1 Number of accidents by causes

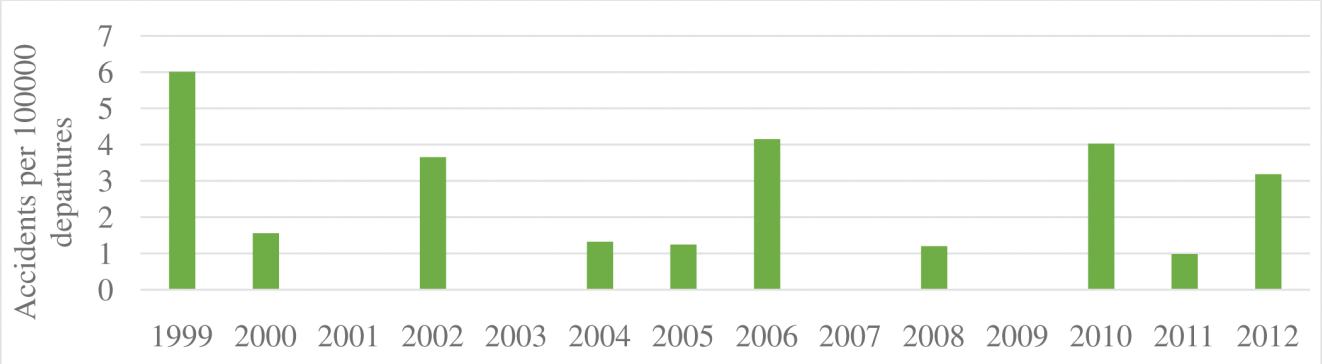

Fig. 2 Accidents rates from 1999-2012

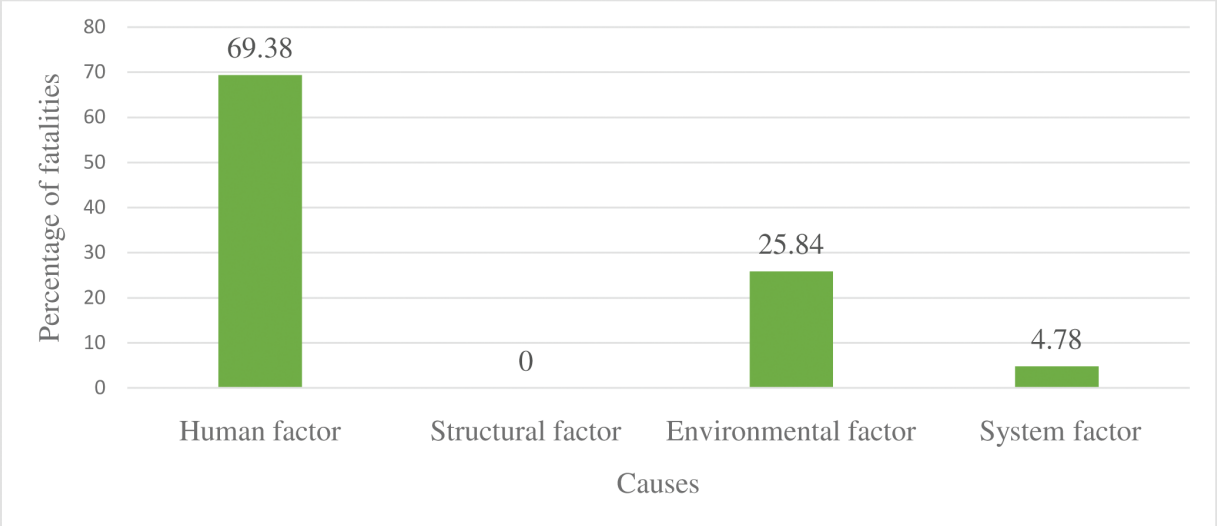

Fig. 3 Percentage of fatalities by causes

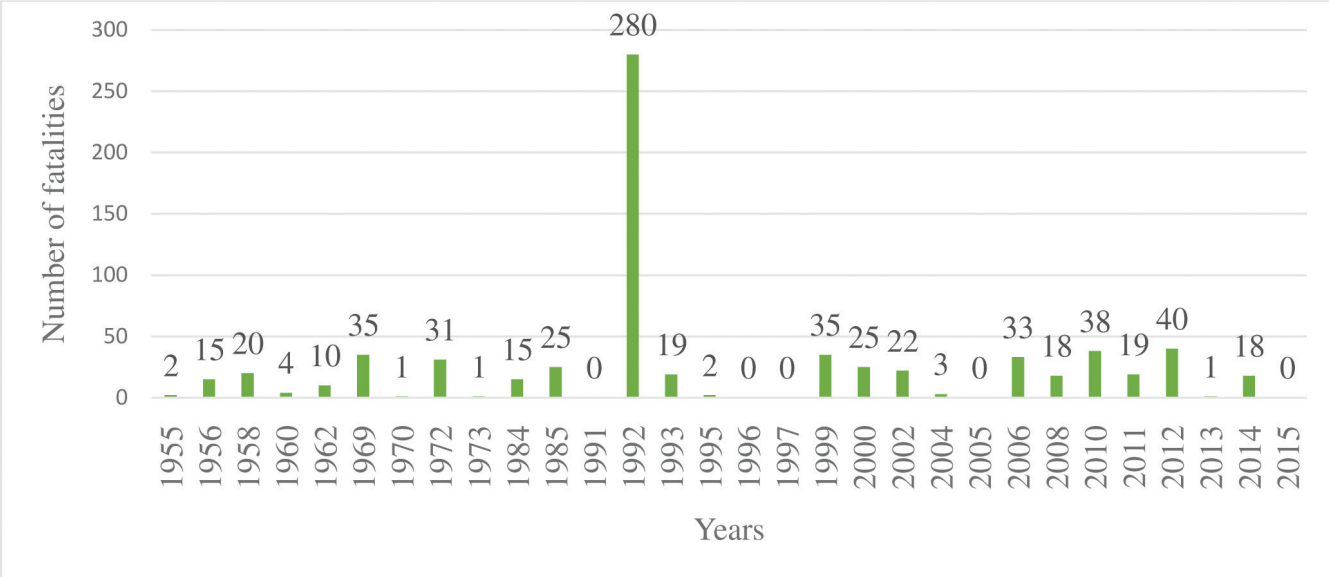

Fig. 4 Number of fatalities by year

Discussions

Statistical Analysis of Causes of Accidents

This study shows that human factors are the highest contributors to aviation accidents in Nepal. Out of 49 air crashes, 30 occurred due to human factors such as PIC, flight crew etc. Structural factors did not account for any air crashes in Nepal. Environmental factors are the second highest contributors, accounting for 16 accidents whereas system factors are only responsible for 3 accidents in Nepal.

Statistical Analysis of Accidents Rates

The computation of accident rates from 1999 to 2012 in Nepal was based on departure data extracted from CAAN Report 2013. Results show that there have been 21 accidents, with an average of 1.5 which is approximately 2 accidents per year. Over 14 years, the number of departures sums up to 1085927 with an average of 77567 departures per year. Calculations show that the accident rate of Nepal averages to 1.95 which is approximately 2 accidents for every 100,000 departures. Apart from years with no accidents, the highest accident rate was found to be 6 in 1999.

Statistical Analysis of Fatalities

The total number of fatalities in Nepal from 1955 to 2015 sums up to 712 out of 1484 occupants. Calculations show that passengers' fatality ratein Nepal aviation approximates to 48% which is almost half of the total passengers. In 1992, 280 passengers lost their lives, which is the worst figure in the history of Nepal aviation. In 2012, 40 passengers died in air crashes.

Of all the fatalities in Nepal, analysis shows that human factors stand out as the highest contributor to number of fatalities in Nepal. Nearly about 70% of the casualties were as a result of human errors. This study shows that structural factors do not account for any casualties in Nepal, whereas, environmental factors is the second highest contributor responsible for 25% of casualties. System factors are the least contributors accountable for 5% of casualties in aviation accidents in Nepal.

Conclusions

The main aim of this work was to provide a quick insight about the status of Nepal aviation through

the statistical analysis of air crashes and its causal factors, fatalities and accident rates.

The following main conclusions can be drawn from the study:

1. This study strongly suggests that human factors are mainly responsible for aviation accidents in Nepal.
2. For the past 15 years, the status of Nepal aviation has been extremely poor due frequent occurrence of accidents and resulting fatalities.
3. Nepalese aviation sector lacks efficient and informative aviation database management system.

Limitations

The limitations of this research study are enlisted below:

1. Dating from 1955 to 2015, there have been more than 70 aviation accidents in Nepal. However, the research study has been limited to analysis of 56 accidents due to lack of descriptive database and information on remaining accidents.
2. The analysis of accidents has been conducted by the thorough study of preliminary reports and AAID reports. The causes of accidents stated by the preliminary reports may have limitations. However, the research study adopts the use of preliminary reports and considers its report conclusions to be true.
3. Research studies the current study shows that the official accidents reports of all accidents occurred in Nepal should be made available for impartial discussion of the causes.
4. The analyses of accident rates have been done using the passenger movement data from 1999 to 2012. The study would produce better results if data such as number of departures, flight hours, passenger movement etc. were available.

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Importance of ICT in the Organizational Context

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Effective Communication and using ICT (Information Communication Technology) is very important nowadays. Information is important to who lacks it most. Hope the dream to connect each of remaining 3200 villages of 75 districts of Nepal via high speed internet using fiber optic cables or satellite technology become true at earliest. The cost of laying these cables and linking to satellites are costly and time taking . Nepal need to remember while planning and being in operation and maintenance that electrical energy and resources like internet bandwidth is rare resource for the country. So we need to plan with alternative methods. One of the alternative telecommunication technology would be to utilize Audio Notice Board by all Ministries, departments, commissions, authorities or any entities of government as well as non government organization (NGO)s of Nepal.

Nepal unexpectedly had to face some tragic air accidents. Whether in normal days or at difficult times one need to know about flight timings, unavoidable delays or postponement or even cancellation. Earlier telephoning was one option, however when panic starts people find difficult to access right information. There is limit to number of calls that can be answered simultaneously. However, with availability of Audio Notice Board facility, the passengers and their relatives and other concerned find ease to call and directly get the authentic information as earliest as possible from every nook and corner of Nepal across 75 districts.

Therefore, along with information service utilizing Facebook, twitter or other social media for those who can access, we should not neglect to use, utilize and update Audio Notice Board as per requirements of time .

Let's appreciate launching and updating of NAC (Nepal Airlines Corporation) Audio Notice Board 1618070757010 for information of domestic flights and NAC Audio Notice Board 1618070757020 for information of International flights .

Wonder why so many operators operating flights domestically and internationally find it difficult to co-operate and co-ordinate to reserve cost less Audio Notice Board and use it updating regularly to facilitate passengers, travelers considering Nepal face day to day load shedding, limited availability of broadband access like Internet. And some illiterate people also remains.

Government of Nepal, Ministry of Science, Technology and Environment, Department of Hydrology and Meteorology has also launched Audio Notice Board 1618070733333 to provide weather information to all. This can also be helpful at times.

Similarly, CAAN TIA (Tribhuvan International Airport) has launched Audio Notice Board 16181014113234 ... to pass information of flights and status of the airport in Kathmandu. It need to be continuously updated to facilitate passengers. Importance of this number was realized after lathe charge at the airport after international flights were blocked due to some technical reasons in May 2015. Thanks for then director general, chief of airport authority and concerned staff who co-operated and coordinated at that time.

Due to difficult terrain of Nepal, people in remote still need to rely on flights. All major airports of regions and remote airports also need to utilize Audio Notice Board and update it regularly to facilitate and inform passengers and their relative or concerns with authentic information at times. This will help reduce panic and stop rapid spreading of rumors. Usually we plan late and implement late. Instead I suggest just as a matter of goodwill to utilize Audio Notice Board to inform public about general public information.

Leadership Capability in Organization

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Leadership capability defines as ability to influence the individual, group and social aspect towards the achievement organizational goals. Capable leadership is one of the most important factors to creating and maintaining organization achievement and sustainable result. In fact, today's complex and changing environment, the need for strong orsuccessful leadership is required for promotion of the organizational plan and programme.

Leadership can be formal and informal that depends upon the nature of business organization. Formal leadership creates managerial position with certain authority or right provides accordance with rules and regulations of organizational system. Director General of Civil Aviation Authority of Nepal (DGCAAN) is formal executive leader using the CAAN rules and regulations. Authority or right does not ensure to lead effectively known as informal leadership but they can perform their work as indirectly for organizational strengthens.

Leadership has to work with internal or external environment as necessary to meet the target of organizational goals. A combination of man, machine and material (3M) is key elements for successful organization so that mass production and sound economic conditions can be achieved by them. Maximum mobilizations of resources in an organization is key challenge for leadership especially in the competitive environment. The organization plan and program should be prepared in advance from the leadership or their sub-coordinators to overcome the achievements of the organization.

It is also necessary to have effective personal traits for the sake of leadership capability so that whole process could be smoothly run in accordance to the organizational goal. Decision-making, problem solving, motivation of staffs, conflict management, utilization of recourses, time management, competitiveness, responsible toward staffs and professional capability are the effective personal traits of leadership. Every leadership has to be in ethical norms or values in the organization management. They should not be use unnecessary power with their own sub-ordinates and counterpart in the organization. So this type of unnecessary action will create conflict between management and personnel. Ultimately, it will influence the organizational behavior.

Resource mobilization or allocation of budget of organization is another challenge for executive leader. It is also known as a future plan and program of organization to spend goods and service delivery. How to use financial resources, where to allocate it, what is the corrective action plan, which ideology adopted to do it are the main themes of resource mobilization or budgetary system. In the Civil Aviation Authority of Nepal (CAAN), allocation of budget or expenditure system must be reformed. Because leadership cannot be successful without transparency of financial transaction and proper expenditure system in the present situation.

Human resource development is another important factor to increase the productivity of organization. How to increase production and

deliver goods or service of organization in the competitive market, leader have to consider in this regard. Leadership capability may demonstration as much as when positive skill, knowledge and attitude (KSA) manpower will be prepared for organization. Largest economic countries in the world such as China spends more than $ 500 billion per year on training and positive change for their people. So America spends approximately more than $ 300 billion on training and research functions.

Therefore, leadership must be aware towards proper training, workshop and seminar to make their staffs competent. Nobody can perform their role and responsibilities without effective, efficient and proper training. As Civil Aviation Service is high-tech or multi-disciplinary one so safety and security of passengers in the airport is first priority. New staffs may enter in the organization from the different way such as open competition, political power, in sources and out sources. They have to be participated on proper training to perform their work in according to the nature of goods and service.

Another high interest given issue is moral dimension for leader to perform the executive power toward subordinates or staffs. They should not use their charisma or abuse power over sub-ordinates or employees to provide equal opportunities such as economic benefit, promotion and self esteem in the organization. Although leader may take actiononly against their personnel as though violation of rules or regulation, adversely effect production, intolerance in functions, any kind of strike and so on. Therefore, moral dimension has been essential for every leader in their respective organizational perspectives.

Participatory management make positive environment along with personal motivation in the organization. If leader wants his managers or staffs make proactive to deliver goods and service, they must be participant in decision making process. A different level of employees in the organization must be invited to attend each meeting or discussion programme because they feel self esteem. Participation of employees'in decision level will bring an equilibrium perspective an account of sharing of knowledge.

Now a day, information technology provides great opportunities and can play important role in the competitive environment such as political, economy, social and culture. Therefore leader should grab all kind of internal and external activities in many ways to get excellent performance result. Some leader attempt to achieve a high performance without sharing of knowledge, planning and program, it is quite difficult to meet organizational goal. Various types of organization spend more than 20 to 25 per cent amount in advertisement additional to production cost so that goods and service will be delivered easily in the competitive markets.

The personal accountability research is a key tool for leadership capability practices to build new infrastructure of organization. It is also known as a formal meeting between a leader and subordinates to review and help them improve their work performance. This kind of activities represents an opportunity for the leadership capability to hold personal accountable and also provide them with the resources and support they need in order to succeed. It is a time to make sure that persons are using their time widely and make a good business decisions.

Another guideline for improving the capability of leadership is to create and accomplish his work as member of teams. Among the teams of organization provide as opportunities for much greater integration and coordination. Leader should act as a team member by setting common goals and meeting regularly to develop plans and assess how they are doing the work. Leader can also find out different kind of intolerance activities such as duplication of efforts, poor communication, narrow perspective and lack of

ownership.

Leadership capability should be launched through discussion programmes at managerial level in which staffs come together to learn and support in development process. There are various discussion forum such as mini-lecture, exercise, simulation, presentation which represent an opportunities to review and reinforce the organizational procedures. Of course, leader will not demonstrate high performance behaviors if the discussion system would not carried out with facilitators and managers regarding the values and norms of organization.

A social service oriented organization like air transportation service facing intensive threats or challenges to provide goods and service to their customer in the aviation field. Most of the accident/incident happens due to human error or geographical environment. Nepalese sky is more dangerous for flight safety. Although leadership capability must be demonstrate with confidential perspective as if organization management will stand up as assertive.

Indeed, leadership must be aware towards planning, organizing, staffing, directing, coordinating, reporting, budgeting (POSTDCoRB) with a view to administrative management. Participatory management, information technology, organization planning, effective personal traits, moral ethics, accountability, responsibility, answerability, resource mobilization and competitiveness are important factors for leadership capability either it may be social or business. Therefore, successful completion of leadership capability will depend upon the performance of work as per organizational rules and regulations.

Review of Real Emergencies on Tribhuvan International Airport, 2015

Suneeta Shiwakoti "Bhardwaj"
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Scenario: 1

Date: March 4, 2015 Wednesday

Turkish skidded off the runway centerline blocking the runway for 4 consecutive days

It was a regular and a normal morning at Tribhuvan International Airport (TIA), Kathmandu, 4th March 2015 and the day was Wednesday. The only abnormal thing this morning was a extremely dense fog with the visibility less than minimum. On those days Turkish airline used to be the first international aircraft entering the airspace of Nepal.

As per the flight schedule wide body aircraft with 224 passengers and 11 crew member, Turkish TK726 after the 7 hours overnight flight from the capital city of Turkey, Istanbul enters the Nepalese airspace at 6 am early morning. Before making an approach to TIA, it was asked to hold over Simara for about 45 minutes. Thereafter, TK726 asks for the approval of making an approach when visibility was 1km on the Southern side of Runway (02) and 3 Km on the Northern side of Runway (20). Till then it was 7:10 AM and the aircraft was approaching KTM via RNP-AR (Required Navigation Performance Authorization Required) procedure and it was cleared for landing Runway 02 after the visibility increased to 3000 meters by the Control Tower. At this point, the aircraft was at 6300 feet and the Runway height is 4390 ft above the sea level. Unfortunately, the visibility suddenly reduced to less than a kilometer and TK726 missed the approach, goes around and returns to Simara via Dharke and there makes the circles and it again prepares for the second approach and enters Kathmandu tower's airspace when visibility still no more than 1 Km. Here, the Tower asks the Pilot if he could see the runway, the Pilot in command answers negative and also adds he would continue the approach anyway. It was near 7:41 am the airbus 330 misses the centerline of the Runway 02, skidded off the runway in foggy Kathmandu weather and crash landed nose down with severe bumps in a grassy field blocking the runway with part of its huge wing.

Figure 1: Passengers running out of the stuck Turkish aircraft in the foggy morning, TIA grass shoulder

The runway was slippery after two days regular rain and less fortunately the grassy shoulder was bit wet, soggy and moist probably that may have saved the aircraft careening towards the terminal building and control tower. The aircraft got stuck

just about 500 feet away from the Nepal Oil Corporations fuel tanks. All the passengers and crew members were safely evacuated by Rescue and Fire Fighting (RFF) team through the escape chutes and ladder. RFF reached within minutes to the crash site as well as the Nepal Police and Nepal Army assisted the whole rescue operation as swiftly as required.

This was the first ever worst case scenario experienced by the Tribhuvan International Airport in its history that resulted in blocking of only single runway of our sole international airport unleashing the real disaster on the whole country. Its landing gear got collapsed with nose and front part of both engines got rest little below the ground between taxiway Delta and Echo.

Now, the TIA had to start its aftermath of the incident, TIA has the clear document on the Removal of Disabled Aircraft (RODA) which provides the Standard Operating Procedure but lacked the Recovery Kit and necessary equipment for the removal of disabled aircraft.

On that same day, the domestic flights for smaller aircrafts were resumed from 2 PM local time utilizing only half of the runway as it has total length is of 10007 feet. Now the scenario was that the Himalayan country Nepal had cut off from the rest of the world.

On the other day, 5th March 2015 without any delay arrived Indian Air force's Hercules C130J at TIA using the serviceable part of the runway with an aircraft removal Kit at 12:30 PM. As soon as it arrived, the Indian team started their major duty to unblock the runway without any delay. The team was assisted with required number of Nepal Police, Nepal Army and more than 200 people including CAAN staffs and other workers too. TIA had a bunch of energetic managerial team for that time (DGCAAN Mr. Ratish Chandra Lal Suman, GM Mr. Birendra Prasad Shrestha, all the DDG's, Academy chief, FOD chief Mr. Narendra Thapa, AOD chief Mr. DCL Karn, and all the department chiefs) who had been very supportive and motivated throughout the procedure.

Despite of the whole team did lots of efforts through day and night, the disabled aircraft still the blocked the runway and TIA remained closed for four consecutive days which disrupted all the international flights at TIA and left more than 80 thousand passengers stranded at Kathmandu airport and inbound transit airports.

It was 7th March2015, a Turkish technical team also arrived at TIA. On this day the aircraft was finally pulled off the grass area and dragged into the runway from where it could be now easily moved out from the runway. With the uncountable efforts of whole the team and using over 20 equipment, containers and cranes the airport was now opened and all the International flights were resumed.

Scenario: 2

Date: April 25, 2015 Saturday

Mega Devastating Earthquake of 7.8 Magnitudes

Generally, the Saturday is the national holiday of Nepal, on this day people are busy on their usual household schedules. Unlike the other days, TIA was busy with its normal landings and take offs as shift operations has made it open almost all round the clock. Morning Shift was about to end with ongoing another shift, the day shift and the time exactly 1156 am at Nepal.The worst natural mega disaster striked the capital city of Nepal. The magnitude of the devastating earthquake was 7.8 with epicenter east of the district of Lamjung and its hypocenter was at a depth of approximately 8.2 km. The earthquake killed over 9000 people and injured more than 23000 people in Nepal.

Now concentrating towards the only international airport of Nepal, TIA, it has developed its own

Disaster Response Plan (TIADRP) in 2012, and the plan was tested and demonstrated on the mid of September 2014 which had included more than 100 civilian and military authorities. The TIADRP is a civil military disaster preparedness and response initiative between the governments of Nepal and TIA Civil Aviation Office. The document specifically deals with emergency response and management procedures following a large scale earthquake at Nepal's lone international airport.

Following the mega disaster at Nepal, most of the tourists wanted to flee out of Nepal's territory as soon as they can and the only outlet was TIA. Due to the reason, thousands of people were waiting at landside of TIA to be evacuated from the quake-ravaged country. It was fully chaos and so much messed up which could not be described or we can say it was like out of imagination. Along with those people who were desperately waiting for the evacuation, the relief materials were started to be piled up on airside with the various never seen and never handled aircrafts throughout the world. It was really very difficult to realize and calculate what is what, who is who and what's going on inside the TIA territory.

Figure 2: People waiting desperately to be rescued outside of TIA terminal building.

Kathmandu airport may have first ever experienced the massive congestion either on air or on bays (aircraft parking stands) or on taxiways. Almost all the space at airside was filled up and messed up with relief materials, their authorized personnel either they be International Red Cross or USAID or United Nation Food Program or European Union or country wise relief and rescue teams and logistic clusters. Dispersal of the relief materials couldn't be carried out on proper time due to the various unidentified constraints.

As Tribhuvan International Airport is crowded even on a normal day, due to the all reasons mentioned above, the problem was getting worse day by day after the earthquake. But at the same time, we were much more fortunate that all of structures along with the runway of the only international airport remained safe despite this mega disaster so that we were connected to the rest of the world and we could share our grieves and sorrows which we had faced during those worst days. Every staffs at TIA along with management team were pressurized and on top of that staffs at control tower were working on most vigorous pressure. Airside staffs including me had to decide what to do and what not to do within the fractions of minute at the field.

The largest aircraft that landed at the TIA was Boeing 747-400 which is also called Jumbo jet and queen of the Sky from Israel, similarly an Airbus from France and the heavy military transport aircraft, the Illusion IL-76 and nevertheless Airbus 350 also landed at TIA for the first time. Due to limited parking bays, a number of aircrafts were kept on hold above the Kathmandu sky and some of the aircrafts were parked on the taxiways too. The relief aid materials were also offloaded on taxiways due to which fuel browsers, military trucks, push backs and tow bars were provided on each taxiways where aircrafts were parked. On the very case, once the passengers of one of the commercial airlines were vacated on taxiway Delta and then they were escorted via grassy area towards the arrival gate and this was the extreme condition.

Despite all the odds and constraints, everything went very normal and it was the greatest achievement of TIA and its system. And again here I must add, at this real case scenario, we all were motivated towards our duty time to time by our General Manager Mr. Birendra Prasad Shrestha, FOD chief Mr. Narendra Thapa and AOD chief Mr. DCL Karn who was also the overall field coordinator for that period.

Preparedness for Natural Disasters and Airport Emergencies

The Kathmandu, the country's urban core, sits in an old lake bed and is vulnerable to liquefaction. Its land-locked position could easily cut the country off from emergency services and aid as TIA is only the international airport till the date. In case of any natural disasters like earthquake there is the highest probabilityof rendering the airport inoperable.This time we were lucky enough to get the airport safe even after the mega devastating earthquake.

But during the Turkish air incident and following its after effect that had disconnected Nepal from the rest of the world for 83 hours has now proved it more clearly how desperately we need a second international airport. Aviation experts have long been emphasizing the need of an alternative international airport as TIA has already reached its saturation point.

Not only there is need of second international airport, every airport should have helipads for emergency purposes and to be prepared for natural disasters.We require aircraft like Hercules which has short take-off and landing capacity and could carry heavy load and could be used for emergency rescue operations.

Regarding these both scenario, and ongoing through all the procedures during these emergency situations, now TIA has identified the both, its efficiency and its constraint. These emergencies not only triggered the importance of our necessities but it has also left much more lessons to be learned for forthcoming days.

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"Let's go Eco" with "Little Things We Do"

Pramod Shrestha
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Every home is a heaven for the ones living in, I guess. Every member efforts his/her brain to work harder to make it even better either by cleaning stuffs around, by fixing and maintaining in-house materialistic problems and recalls to switch off electrical/electronics/mechanical equipment to save operating costs. Besides we try our best to re-use every possible item.

CAAN is our second best home, I guess. My point is that what we do for our benefits, then why not try for betterment of CAAN. Like we have responsibility towards our home and office, the same applies towards our mother nature earth because she has given us such a fine life and a place to live in. Instead of taking care of her, we have changed by destroying natural resources and turned heaven into a living hell. Therefore, by thinking and doing little things we can change a bit.

Here's something we should do:

1) Change the attitude
2) Change the thinking
3) Change the behavior

Not taking my suggestions and advice as instructions and order here are few things I would like to put categorically to every departments, divisions, units and every individuals.

For admin/mgmt departments and line staffs

Directors/managers can always encourage or monitor or instruct which itself is a great act. Line staffs can always save paper, toner ink by rechecking the documents before printing and use the used paper for trial and stack the unnecessary papers for recycling purpose. And take care of helping hands like computers, desk ,chairs pens, etc…

For technical dept and line staffs

Directors and managers can always direct in a good path by encouraging to reuse undamaged parts of damaged equipments . Where redundant technicians should short out the best way to fix things like rooms, corridor, street lights which could be coupled with light sensors, movement sensors and run by solar so as to save energy consumption reduce cost which could be used by the needy ones.

For Drivers and Cleaners

Every driver can do a lot by taking short-cut roads and if time permits gear down to neutral down –slope. Yes cleaners have significant role in sorting the things out by separating disposable /non-disposable items and reusable items.

For Air Traffic Controllers

With deep respect to experienced senior ATCO'S, how about making our brain exercise little bit far by sequencing arrival/departure if needed by applying departure separation while on ground rather than in air .We can definitely save fuel burn thus saving cost and reducing carbon emissions . In this context I would like to pen down some energy related equations (tentative but not exact data).

Type of aircrafts	On gnd at taxiway	On air holding
B738 and equivalent	10-13 litres/minute	50-70 lit/min
AT72 and equivalent	8-10 lit/min	40-50 lit/min
AT43 and equivalent	7-9 lit/min	35-45 lit/min
B190 and equivalent	6-8 lit/min	30-40 lit/min
D228 and equivalent	5-7 lit/min	25-35 lit/min

It concludes that fuel burn is approximately 5 times more in air than in ground. Therefore we have immense task to make aircraft hold as less as possible which would be of great relief to mother nature . It's like planting a hundreds of trees by reducing just a hold .

Here I would like to introduce a new slogan

"LET'S START AN ECO AIR TRAFFIC CONTROLLING"

In general to every individuals

Most of us use two or four wheelers. We use items that are not eco friendly such as plastics, rubber etc etc….so in the name of god let's start a new beginning by using the products that are eco-friendly, gear-down our 2 or 4 wheelers down the slope, switch-off the appliances when not necessary and reuse the plastic products whenever possible and payback even a bit in reply compared to a lot we get from nature. Remember doing these small things is worth a million and is equivalent to planting a tree per week.

"LITTLE THINGS WE DO"

will

definitely pay-off someday

and

"LET'S GO ECO"

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Green and Clean Pokhara Airport

Electrical Safety - Basic Information

Er. Ratan Das
Electrical Officer, CAAN

Why is it so important to work safely with or near electricity?

The voltage of the electricity and the available electrical current in regular businesses and homes has enough power to cause death by electrocution. Even changing a light bulb without unplugging the lamp can be hazardous because coming in contact with the "hot", "energized" or "live" part of the socket could kill a person.

What do I need to know about electricity?

All electrical systems have the potential to cause harm. Electricity can be either "static" or "dynamic." Dynamic electricity is the uniform motion of electrons through a conductor (this is known as electric current). Conductors are materials that allow the movement of electricity through it. Most metals are conductors. The human body is also a conductor. This document is about dynamic electricity.

Note: Static electricity is accumulation of charge on surfaces as a result of contact and friction with another surface. This contact/friction causes an accumulation of electrons on one surface, and a deficiency of electrons on the other surface.

Electric current cannot exist without an unbroken path to and from the conductor. Electricity will form a "path" or "loop". When you plug in a device (e.g., a power tool), the electricity takes the easiest path from the plug-in, to the tool, and back to the power source. This is also known as creating or completing an electrical circuit.

What kinds of injuries result from electrical currents?

People are injured when they become part of the electrical circuit. Humans are more conductive than the earth (the ground we stand on) which means if there is no other easy path, electricity will try to flow through our bodies.

There are four main types of injuries: electrocution (fatal), electric shock, burns, and falls. These injuries can happen in various ways:

- Direct contact with exposed energized conductors or circuit parts. When electrical current travels through our bodies, it can interfere with the normal electrical signals between the brain and our muscles (e.g., heart may stop beating properly, breathing may stop, or muscles may spasm).
- When the electricity arcs (jumps, or "arcs") from an exposed energized conductor or circuit part (e.g., overhead power lines) through a gas (such as air) to a person who is grounded (that would provide an alternative route to the ground for the electrical current).
- Thermal burns including burns from heat generated by an electric arc, and flame burns from materials that catch on fire from heating or ignition by electrical currents or an electric arc flash. Contact burns from being shocked can burn internal tissues while leaving only very

small injuries on the outside of the skin.

- Thermal burns from the heat radiated from an electric arc flash. Ultraviolet (UV) and infrared (IR) light emitted from the arc flash can also cause damage to the eyes.
- An arc blast can include a potential pressure wave released from an arc flash. This wave can cause physical injuries, collapse your lungs, or create noise that can damage hearing.
- Muscle contractions, or a startle reaction, can cause a person to fall from a ladder, scaffold or aerial bucket. The fall can cause serious injuries.

What should I do if I think I am too close to overhead power lines?

Do not work close to power lines. Recommended distances vary by jurisdiction and/or utility companies. Check with both your jurisdiction and electrical utility company when working, driving, parking, or storing materials closer than 15 m (49 feet) to overhead power lines.

- If you must be close to power lines, you must first call your electrical utility company and they will assist you.
- If your vehicle comes into contact with a power line:
    - **DO NOT** get out of your vehicle.
    - Call your local utility service for help.
    - **Wait** for the electrical utility to come and they will tell you when it is safe to get out of your vehicle.
    - Never try to rescue another person if you are not trained to do so.
    - If you must leave the vehicle (e.g., your vehicle catches on fire), exit by jumping as far as possible - at least 45 to 60 cm (1.5 to 2 feet). Never touch the vehicle or equipment and the ground at the same time. Keep your feet, legs, and arms close to your body.
    - Keep your feet together (touching), and move away by shuffling your feet. Never let your feet separate or you may be shocked or electrocuted.
    - Shuffle at least 10 metres away from your vehicle before you take a normal step.
- Do not enter an electrical power substation, or other marked areas.

What are some general safety tips for working with or near electricity?

- Inspect portable cord-and-plug connected equipment, extension cords, power bars, and electrical fittings for damage or wear before each use. Repair or replace damaged equipment immediately.
- Always tape extension cords to walls or floors when necessary. Nails and staples can damage extension cords causing fire and shock hazards.
- Use extension cords or equipment that is rated for the level of amperage or wattage that you are using.
- Always use the correct size fuse. Replacing a fuse with one of a larger size can cause excessive currents in the wiring and possibly start a fire.
- Be aware that unusually warm or hot outlets may be a sign that unsafe wiring conditions exists. Unplug any cords or extension cords to these outlets and do not use until a qualified electrician has checked the wiring.
- Always use ladders made with non-conductive side rails (e.g., fibreglass)

when working with or near electricity or power lines.

- Place halogen lights away from combustible materials such as cloths or curtains. Halogen lamps can become very hot and may be a fire hazard.
- Risk of electric shock is greater in areas that are wet or damp. **Install Ground Fault Circuit Interrupters** (GFCIs) as they will interrupt the electrical circuit before a current sufficient to cause death or serious injury occurs.
- Use a portable in-line Ground Fault Circuit Interrupter (GFCI) if you are not certain that the receptacle you are plugging your extension cord into is GFCI protected.
- Make sure that exposed receptacle boxes are made of non-conductive materials.
- Know where the panel and circuit breakers are located in case of an emergency.
- Label all circuit breakers and fuse boxes clearly. Each switch should be positively identified as to which outlet or appliance it is for.
- Do not use outlets or cords that have exposed wiring.
- Do not use portable cord-and-plug connected power tools with the guards removed.
- Do not block access to panels and circuit breakers or fuse boxes.
- Do not touch a person or electrical apparatus in the event of an electrical accident. Always disconnect the power source first.

What are some tips for working with power tools?

- Switch all tools OFF before connecting them to a power supply.
- Disconnect and lockout the power supply before completing any maintenance work tasks or making adjustments.
- Ensure tools are properly grounded or double-insulated. The grounded equipment must have an approved 3-wire cord with a 3-prong plug. This plug should be plugged in a properly grounded 3-pole outlet.
- Test all tools for effective grounding with a continuity tester or a Ground Fault Circuit Interrupter (GFCI) before use.
- Do not bypass the on/off switch and operate the tools by connecting and disconnecting the power cord.
- Do not use electrical equipment in wet conditions or damp locations unless the equipment is connected to a GFCI.
- Do not clean tools with flammable or toxic solvents.
- Do not operate tools in an area containing explosive vapours or gases, unless they are intrinsically safe and only if you follow the manufacturer's guidelines.

What are some tips for working with power cords?

- Keep power cords clear of tools during use.
- Suspend extension cords temporarily during use over aisles or work areas to eliminate stumbling or tripping hazards.
- Replace open front plugs with dead front plugs. Dead front plugs are sealed and present less danger of shock or short circuit.

- Do not use light duty extension cords in a non-residential situation.
- Do not carry or lift up electrical equipment by the power cord.
- Do not tie cords in tight knots. Knots can cause short circuits and shocks. Loop the cords or use a twist lock plug.

What is a Ground Fault Circuit Interrupter (GFCI)?

A Class A Ground Fault Circuit Interrupter (GFCI) works by detecting any loss of electrical current in a circuit (e.g., it will trip at a maximum of 6mA). When a loss is detected, the GFCI turns the electricity off before severe injuries or electrocution can occur. A painful non-fatal shock may occur during the time that it takes for the GFCI to cut off the electricity so it is important to use the GFCI as an extra protective measure rather than a replacement for safe work practices.

GFCI wall outlets can be installed in place of standard outlets to protect against electrocution for just that outlet, or a series of outlets in the same branch circuit. A GFCI Circuit Breaker can be installed on some circuit breaker electrical panels to protect an entire branch circuit. Portable in-line plug-in GFCIs can be plugged into wall outlets where appliances will be used.

When and how do I test the Ground Fault Circuit Interrupter (GFCI)?

It is important that you follow the manufacturer's instructions with respect to the use of a GFCI. Test permanently wired GFCIs monthly, and portable devices before each use. Press the "test" and "reset" buttons. Plug a "night light" or lamp into the GFCI-protected wall outlet (the light should turn on), then press the "TEST" button on the GFCI. If the GFCI is working properly, the light should go out. If not, have the GFCI repaired or replaced. Press the "RESET" button on the GFCI to restore power.

If the "RESET" button pops out but the "night light" or lamp does not go out, the GFCI has been improperly wired and does not offer shock protection at that wall outlet. Contact a qualified electrician to correct any wiring errors.

What is a sample checklist for basic electrical safety?

Inspect Cords and Plugs

- Check extension cords and plugs daily. Do not use, and discard if worn or damaged. Have any extension cord that feels more than comfortably warm checked by an electrician.

Eliminate Octopus Connections

- Do not plug several items into one outlet.
- Pull the plug, not the cord.
- Do not disconnect power supply by pulling or jerking the cord from the outlet. Pulling the cord causes wear and may cause a shock.

Never Break OFF the Third Prong on a Plug

- Replace broken 3-prong plugs and make sure the third prong is properly grounded.

Never Use Extension Cords as Permanent Wiring

- Use extension cords only to temporarily supply power to an area that does not have a power outlet.
- Keep extension cords away from heat, water and oil. They can damage the insulation and cause a shock.
- Do not allow vehicles to pass over unprotected extension cords. Extension cords should be put in protective wireway, conduit, pipe or protected by placing planks alongside them.

Reference

Canadian Centre for Occupational Health and Safety.

Aviation and Climate Change

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Introduction

Aviation is a fast, reliable and safe means of transport which allow freedom to transport and access to mobility for both short and long haul passengers. It is a catalyst for growth, a vital conduit for world trade and a major global employer. It supports 3.5 % of gross domestic product (GDP), access 35% of world trade by value carried, impacts 2.2 trillion dollar USD global economy, provides job of 56.6 million people worldwide and facilitates 2.9 billion passengers per year (International Civil Aviation Organization (ICAO), 2013).

Analysis of Impact of International Aviation Emissions on Environment

Along with mode of transportation and global economy aviation is also a contributor to global emissions possessing impact on the environment through climate change. In 2012, aviation produced 689 million tonnes (mt) of carbon dioxide (CO_2), or around 2% of the global human made emissions (ICAO, 2013) and in 2013, flights worldwide produced 705 mt of CO_2 (IATA, 2015). International aviation accounted for 65% of total fuel consumption in 2010, resulting in an estimated 448 metric ton (mt) of CO_2 emissions, having grown from 185 mt in 1990 (IPCC, 1999).The growing role of aviation in the global economy, trade and business, ICAO expects international aviation emissions to rise to (682–755)mt $CO_2$by 2020 (ICAO, 2013).The average annual passenger traffic growth rate was 5.3% yr^{-1} between 2000 and 2007, resulting in an increase of passenger traffic of 38% (Lee et. al., 2009) which will further increase emissions.

Attempts are being made to limit global aviation emissions. The Intergovernmental Panel on Climate Change (IPCC) has strongly suggested, and the international community has agreed through the united nation framework for climate change (UNFCCC) process, that the world should seek to limit total warming to less than 2.0°C (Organization for Economic Co-operation and Development (OECD), 2012). Staying below this threshold is necessary if we want to prevent dangerous anthropogenic interference with the climate system. Estimates suggest that this will require concentrations of greenhouse gases to be stabilized at or below 450 ppm (Hansel et. al., 2008). Furthermore, unless significant additional mitigation measures are undertaken prior to 2020, the costs of delayed action may be so high that achieving the 2°C goal may become unaffordable (OECD, 2012).

Realizing the potential risk on the climate, under the 1992 UNFCCC, the 1997 Kyoto Protocol tasks ICAO to secure the reduction of greenhouse gases (GHGs) from aviation. After the introduction of measures to include aviation in the European Union (EU) European Trading System(ETS), more notable movement from ICAO may be observed (Gehring and Robb, 2013). In 2004, ICAO adopted three major environmental goals, one of which was “to limit or reduce the impact of aviation greenhouse gas emissions on the global climate.”There are numerous global, regional and national industry associations representing different sub-sectors within the global aviation sector. Two of the most important private sector organizations, in terms of creating industry responses, rules and

targets for reducing carbon emissions are the International Air Transport Association (IATA), representing most of the world's airlines, and the Air Transport Action Group (ATAG) which includes key supply chain companies, e.g. the large airframe builders and the major jet engine companies.

The whole aviation sector signed a declaration in 2008 that committed to what is known as the four pillar strategy for reducing emissions (ATAG, 2010). Of the four pillars, technology has by far the best prospects for reducing aviation emissions. Improved operational practices, including reduced auxiliary power unit usage, more efficient flight procedures, and weight reduction measures, could achieve further reductions in CO_2emissions. Infrastructure improvements present a major opportunity for CO_2 reductions in the near-term. While efforts from the first three pillars will go a long way to achieving the goal of carbon-neutral growth from 2020, the aviation sector may need to turn to the fourth pillar – positive economic measures – in the medium term to help close the gap. In 2008, the ATAG, a coalition of companies and member organizations from the air transport industry, agreed to further improve fleet fuel efficiency by 1.5% per year from 2008 until 2020; cap net emissions from the sector at 2020 levels; and reduce net emissions by half from 2005 levels by 2050 (ATAG, 2014). ATAG schematic figure of emission reduction is shown in figure below:

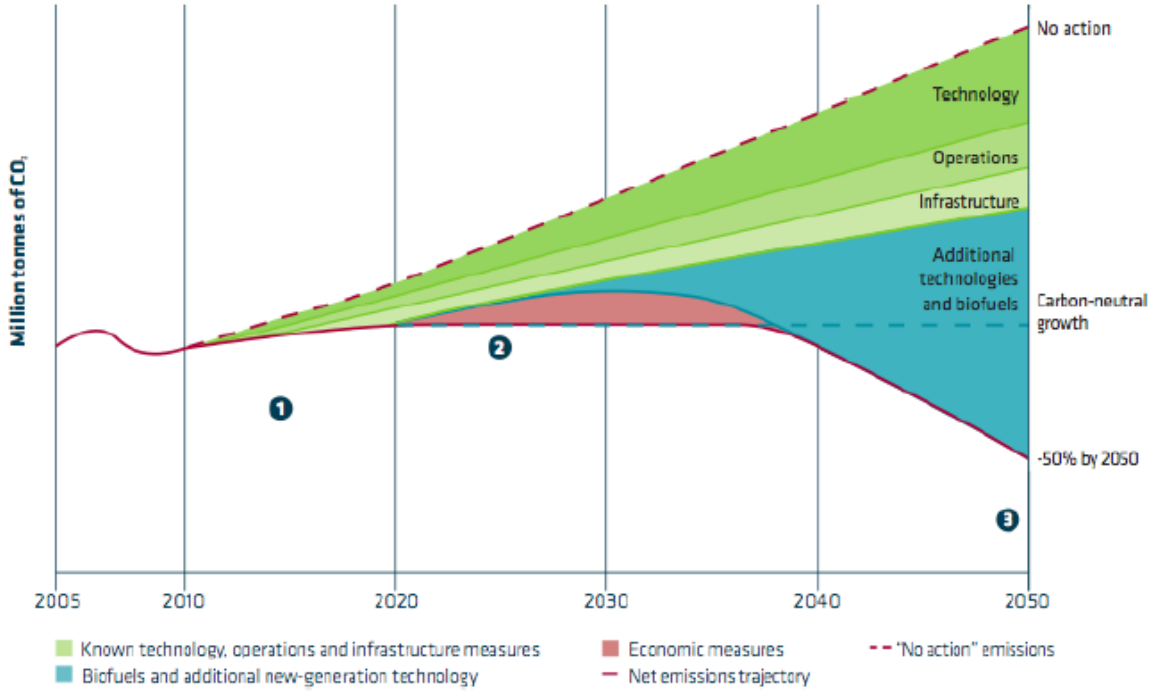

Figure 1: Emission reduction roadmap (Source: ATAG, 2010)

In 2010, Member States of ICAO resolved to achieve a global annual average fuel efficiency improvement of 2% through to 2020, and an aspirational goal of a global fuel efficiency improvement rate of 2% per annum from 2021 to 2050 (ICAO, 2010). In July 2012, the ICAO Council's Committee on Aviation Environmental Protection (CAEP) adopted an Aircraft Carbon Dioxide (CO_2) Emissions Calculation System as the first building block towards a global CO_2 standard for new aircraft (Gehring and Robb, 2013). Besides these attempts made by conventions and organizations, efforts must be made to further reduce in-sector emissions by incentivizing investments in energy efficiency and alternative fuels, and through ambitious industry standards (Gencsu and Hino, 2015).

Conclusion

Since role of aviation is critical in economic growth and contributor of climate change it is necessary to maintain its sustainability in terms of transportation, economy and environment with more effective efforts and measures.

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If you want to reach your goals and dreams, you cannot do it without discipline.

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Bird's eye view of Simikot Airport

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