Capacity Development of Civil Aviation Authority of Nepal

STRA战IC ANALYSIS OF AIR TRANSPORT AND AIRPORTS NETWORK IN NEPAL SWOT ANALYSIS

FEBRUARY 2013
The present document is embedded into the Project “Capacity Development of Civil Aviation Authority of Nepal”, more specifically into the part “2A- National Plan for Civil Aviation Development”.

The main aim of this document is to analyze the current situation of the air transport and the airport network in Nepal, studying their following:

a)  \textit{Strengths}

b)  \textit{Weaknesses}

c)  \textit{Opportunities}

d)  \textit{Threats}

This first analysis of the current state of operation will be used to determine the required actions to achieve in the air market. A 20-years strategic plan will be defined in this matter.
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1. **INTRODUCTION**

The present analysis aim is to identify and evaluate both the positive and negative aspects of air transportation system in Nepal, considering the conclusions obtained in the past documents “National Air Transport Plan – Current Situation and Diagnostic” and “Airports Plan – Current Situation and Diagnostic”, from a double perspective of:

- **“Internal” perspective**: Positive aspects would be the strong points (Strengths), while negative aspects would be the weak points (Weaknesses)
- **“External” perspective**: Positive aspects would be the business opportunities that the external environment, where the air transport system is developed can offer (Opportunities), while negative aspects would be the threats that can show up in that environment (Threats)

The main purpose of this analysis is to propose strategic lines of development that:

- Are supported by the Strengths to obtain benefits from the Opportunities and to minimize the Threats
- Mitigate or suppress the Weaknesses, since they do not allow to access to the Opportunities, or since they multiply the potential of the Threats

All the strategic lines are linked, considering these four factors:

- **Strengths**
- **Opportunities**
- **Weaknesses**
- **Threats**

The elements compounding each of these factors will be extracted from the diagnostic of the system, comparing the current situation with that desired to be achieved in a 20 years horizon. Then, the following analysis is an extension of the conclusions of the diagnostic, oriented to the future, which will be used to define the 20-years strategic plan.
## 2. SWOT Chart

### STRENGTHS

- Institutional aim to improve
- A lot of airport infrastructures spread around the country
- Main touristic nucleus have an airport in the vicinity
- Important airport leading the market: TIA
- Each administrative region has a top Regional airport
- Projects of new airports
- Air transport: country’s coverage
- Experienced airlines manage the domestic market
- Liberal sky policy of the Government
- Ongoing modernization projects
### WEAKNESSES

- Shortage of minimum facilities in airports
- Lack of safety: infrastructures below standards and in bad conditions
- Some airports location & topography
- Lack of a clear definition of an airport management model
- Lack of infrastructures planning and Investment Plan
- Lack of Maintenance Plan
- Conditions of TIA
- Problems of domestic and international traffic coexistence in TIA
- Restrictions in operational hours at TIA
- Obsolete fleet and need for new aircrafts
- Domestic market overwhelmed
- NAC’s situation critical
- Lack of internal connectivity
- Necessity of enduring airlines inspection and supervision
- Shortage of international flights
- Official aeronautical information (AIS) not updated
- Lack of reliable statistics data
- Inadequate aeronautical authority structure
- General obsolescence of navigation and surveillance infrastructure
- Limited operation capacity
- Lack of a clear ATM/CNS Plan
OPPORTUNITIES

- Bilateral and multilateral agreements with many countries
- Increasing commercial relations with India and other buoyant economics
- Easy entrance to the country for foreign people
- Increased restrictions to occidental travelers for entering in Tibet
- Densely populated country
- Touristic potential of the country
- Growing demand for adventure travel
- Increase of religious travels market segment
- Touristic potential in areas currently not developed
- Rising number of touristic packs including Nepal and its neighbors
- Nepali people is steadily accepting and using air transport more often
- Development of new international routes
THREATS

- Slow economic progress of the country
- Social and political instability
- Strong competing touristic destinations
- Lack of a political strategy about social airports
- Lack of a global infrastructure plan for the country
- Existing road plan
- Severe meteorological conditions affecting air transport
- Feeling of risk about Nepali air transport
3. **SWOT Explanation**

### STRENGTHS

- **Institutional aim to improve**

There is a strong aim by the authorities and CAAN to improve the air transport network and infrastructure optimizing the resources and enhancing safety in operations.

- **A lot of airport infrastructures spread within the country**

There are a total of 48 airports distributed along the country. Although not all of them are currently operative or in the best conditions to operate, if there were a need of them, they would be easier to adequate than to build a new one. So having many airport infrastructures can mean a starting point for air transport to serve the country.

- **Main touristic nucleus have an airport in the vicinity**

Nepal has a great dependence in tourism, as it is the largest industry in the country. It can be divided into four major business areas: cultural tourism, national parks and reserves, pilgrim places and adventure sports.

Tourists have to be able to reach those places, which is not so easy in Nepal taking into account the orography and the roads development. But thanks to the Nepali air transport network, each main tourism nucleus have an airport near enough for tourists to go.

Some examples can be noted: *Tenzing-Hillary* (Lukla) is considered the gateway for Mount Everest, Jomson Airport lies in the world famous Annapurna round trek route, *Gautam Buddha* (Bhairahawa) serves as the gateway for air passengers coming and going from Lumbini, Lord Buddha’s birth place. Nepalgunj Airport is located besides Royal Bardla National Park, etc.

- **Important airport leading the market**

*Tribhuvan International Airport* is the main airport in Nepal and, currently, the only gateway for international travelers to enter the country by plane. Comparing its passenger traffic with all the airports in Asia Pacific area, it is located in the 81st position, but taking only into account the airports located in the capital of neighbor countries, TIA moves up to upper positions.

Considering South Asian Association for Regional Cooperation (SAARC) countries, the table and figure below can be consulted. Lhasa airport, also important for its proximity to TIA, is situated some positions below with about a 30% of its traffic.
### Table 1. SAARC countries' capital's airports and Lhasa airport classification by passenger traffic

<table>
<thead>
<tr>
<th>Asia Pacific airports classification</th>
<th>Airport</th>
<th>Country</th>
<th>Passenger 2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>12</td>
<td>Indira Gandhi International</td>
<td>Delhi, India</td>
<td>35,002,000</td>
</tr>
<tr>
<td>63</td>
<td>Bandaranaike International</td>
<td>Colombo, Sri Lanka</td>
<td>6,146,000</td>
</tr>
<tr>
<td>81</td>
<td>Tribhuvan International</td>
<td>Kathmandu, Nepal</td>
<td>4,291,000</td>
</tr>
<tr>
<td>83</td>
<td>Zia International</td>
<td>Dhaka, Bangladesh</td>
<td>4,254,000</td>
</tr>
<tr>
<td>94</td>
<td>Male International</td>
<td>Male, Maldives</td>
<td>3,207,000</td>
</tr>
<tr>
<td>97</td>
<td>Chaklala</td>
<td>Islamabad, Pakistan</td>
<td>1,356,000</td>
</tr>
<tr>
<td>285</td>
<td>Kabul International</td>
<td>Kabul, Afghanistan</td>
<td>N/A</td>
</tr>
<tr>
<td>341</td>
<td>Paro</td>
<td>Timbu, Bhutan</td>
<td>N/A</td>
</tr>
<tr>
<td>129</td>
<td>Gonggar</td>
<td>Lhasa, China</td>
<td>1,582,000</td>
</tr>
</tbody>
</table>

### Table 2. Passenger traffic distribution by SAARC countries's capital's airports

- Kathmandu, Nepal: 62%
- Delhi, India: 8%
- Dhaka, Bangladesh: 6%
- Islamabad (Pakistan): 6%
- Male (Maldives): 6%
- Colombo (Sri Lanka): 7%
- Biratnagar: 11%

Each administrative region has a top airport

Four of the five administrative regions in which Nepal is divided have a principal airport which acts as a regional hub receiving passengers from Kathmandu and spreading them into other domestic airports in the region. Far West is the only region with no main airport, but flights there are served from Nepalgunj, while Western region has two regional airports: Pokhara and Bhairahawa (*Gautam Buddha*). Biratnagar serves traffic in Eastern region and Nepalgunj in Mid-Western area.

These regional airports serve as the growing driving force for the region, and they make the city where they are sited the main one in the area to which people can go for health care, business, food, etc., thanks to those radial flights.
• Projects of new airports

There are some projects on the table for the construction of two new airports: Second International Airport (SIA) and New Pokhara airport. Both of them would mean an improvement and expansion of the existing infrastructures, which would lead to safer operations, more comfort for passengers and airlines and even an increase in traffic.

In comparison with the current TIA, SIA would accomplish all international standards and would have an increased capacity and safety. It would have another two advantages with regard to TIA: possibility of expansion (TIA is fully surrounded by private neighborhoods) and inexistence of limitations in the MTOW due to obstacles nearby (take-off in TIA, in the direction 02, has a MTOW limitation due to the mountains of Shivapuri National Park, placed less than 10 km away).

Regarding to the construction of a new airport in Pokhara, it will bring to substitute the existing nowadays. This new modern airport will have increased performances, compared with the current one, and it would be possible to open it to the international traffic too.

• Air transport country’s coverage

Air transport coverage in the country has been evaluated and it has been concluded that the most populated areas in Nepal (mainly Terai) can reach an airport in a maximum of two hours time.

Himalayan region, with a minor roads development, has a lot of scattered airports, which serve as the only means of transport in the area.

• Experienced airlines manage the domestic market

Currently within Nepal there are 13 different airline companies operating domestic flights, with different traffic volumes, services and aims. They are specialized in short distance flights, being Nepal Airlines, Buddha Air and Yeti Airlines are the three main operators, in view of the number of flights and passenger traffic volume.

The three of them have been moving people throughout the country for more than 15 years, so they have a deep knowledge of the air business and how it works in Nepal. Improvements on the air transport network should rely on this kind of airlines for leading the change.

• Liberal sky policy

Nepal adopted a liberal sky policy in 1992, and since then it is gradually pursuing a totally open sky policy. Currently it has signed Bilateral Air Service Agreements and Memorandums of Understanding with 36 countries, despite the fact that until now 22 of them have still no direct flights to or from Nepal.

Continuing with this policy and giving a boost to flights to those countries with no direct flights to Nepal and to new airlines to connect with the country, touristic traffic can be increased and air transport network reinforced.
• **Ongoing modernization projects**

CAAN is currently developing some projects in order to improve the Air Navigation Services and enhance the capacity and safety level of Civil Aviation within the country. The main projects are: “Supply and Installation of CNS/ATM Equipment at TIA and Lukla” and “Implementation of AMHS System”. Both of them represent a modernization and an improvement of the existing ATM/CNS systems, which will increase the efficiency, capacity and safety in the flight operation.
WEAKNESSES

- Shortage of minimum facilities in airports

Despite the fact that Nepal has a large airports network, not all of them have a minimum offer of facilities. Most of them do not have a taxiway or a defined apron for aircrafts to stop, such as Chaurjhari or Syangboche.

Regarding to landside facilities, some airports like Rara or Dang do not even have a terminal building for passengers to be processed.

- Lack of safety: infrastructures below standards and in bad conditions

International standards (ICAO), and even recommendations, are not fulfilled by any of the airports. Although only TIA has to comply with them, because of being the unique international airport in the country, all of them should apply some safety measures. It would be recommendable to develop a national regulation on this matter.

Likewise, there is not a safety management system that deals with most of safety requirements in the operation according with ICAO recommendations. Therefore, there is a lack of an incident reporting and investigation process which could allow the analysis of any necessary corrective action to be taken.

- Some airports location & topography

Due to the country’s topography, a lot of airports in Nepal are located in narrow valleys between high mountains or even on the mountains. This location makes them dangerous for flight operation, and safety is difficult to be implemented because of the location itself. Some radio navails, for example, which could make the flights safer, would be impossible to install because of the terrain conditions.

For the same reason, the expansion of some of these airports would be very expensive and almost impossible to achieve. This is the case of Lukla or Taplejung airports.

- Lack of a clear definition of an airport management model

To be able to manage all the airport, and even one airport, it is necessary to have a clear management model, so that decisions will be coherent and will lead to a common objective, without any waste of time or resources.

- Lack of infrastructures planning and Investment Plan

For what has been observed, there is no airport infrastructure plan for most of the airports in the country. Currently, there are some Master Plans (*Tribhuvan* and *Gautam Buddha*) and development projects for some airports (Rara, Simikot and New Pokhara), but in general there is not a long term planning for them.
Although not all the actions to achieve in all the airports could be justified by the passengers demand, having a planning for each airport would help to have a more global vision of the airport itself for the following years and a better distribution of the resources between all the network.

- **Lack of Maintenance Plan**

There is no maintenance plan for airports, until a replacement or a repair need is detected. This is a risky way, because sometimes deficiencies are not discovered until an accident occurs, so it is recommendable to have a global maintenance plan, with emphasis on some airports.

Similarly, there is lack of proper maintenance and replacement policy for the CNS infrastructure. Thus, most of the facilities are well beyond the end of their lifespan and are obsolete, which makes maintenance difficult because of the lack of spare parts. On the other hand, there are many locations with difficult and remote access, which increases the time to repair and lower the availability of the equipment.

- **Conditions of TIA**

*Tribhuvan International Airport*, the only air gateway to Nepal for international tourists and also the main distributor of domestic traffic in the country, is not in the best conditions to offer a high quality service to air passengers.

Some bumps have been observed in the runway, due to pavement distress, the domestic terminal building doesn't have some essential facilities (arrival passengers pick up their baggage out of the building in a shed), both terminal buildings need a clean-up, etc.

No wonder, TIA is considered to be among the world’s most hated airports.

- **Problems of domestic and international traffic coexistence in TIA**

In the daily operation at Tribhuvan International Airport some problems have been detected in the coexistence of both domestic and international traffic. Due to meteorological conditions, the domestic flights have a very restricted schedule of operation and frequently they suffer some delays. International airlines complain about these delays affecting their own operations, and domestic ones about not being able to check out these delayed operations when they are possible to be operated.

- **Restrictions in operational hours at TIA**

Currently, *Tribhuvan International Airport* is open for scheduled flight operation until 11 pm. However, due to its congestion, international airlines are being asked to operate at night, but as the airport is so close to the city, it can bring noise problems to the population.
• **Obsolete fleet and need for new aircrafts**

Some of the airline companies operating in Nepal present a clear obsolescence and a necessity of modernization in the equipments of their aircrafts. It would be necessary for the most of domestic airlines to renovate or to incorporate new and modern equipments to their fleet. Furthermore, there is a lack of a clear and mandatory Nepalese program of improvements in the capabilities of the aircrafts that operate in Nepal.

Nepal's civil aviation policy prevents from importing aircrafts that have exceeded 20-year life, for security reasons, and there are also import tariffs for aircrafts spare parts. Moreover, aircrafts insures/reinsurers have placed Nepal in the danger zone for aviation and therefore increased the insurance premium amount. Due to those reasons, it is not affordable for many private air companies to acquire additional aircrafts for their small fleet. Bringing in new aircrafts is almost incompatible with making profits when operation costs are so high.

• **Domestic market Overwhelmed**

The size of Nepali aviation market is limited, as not all the people in the country can afford air travel. It is not possible for an unlimited growth in the number of airlines operating on it. Moreover, rise in fuel prices, aircrafts insurances and the value of foreign currency can hit this sector limiting the number of airlines which can attain benefits and remain into the business. For a small country like Nepal, the number of airlines has probably reached a peak with a total of 13 different airline companies operating domestic flights.

• **Nepal Airlines Corporation situation: Critical**

State-owned NAC is currently in a critical condition, with financial problems. It can neither add aircrafts for domestic purposes nor procure them for international destinations. The two Boeing 757 aircrafts, its biggest aircrafts, are over 24 years old, and therefore NAC’s credibility has decreased in the market.

• **Lack of internal connectivity**

There are not cross sector flights in Nepal, but people have to fly from Kathmandu to a regional hub and then to their final destination. It is conceived as a semi-radial network where those regional airports have the mission to spread passengers within the area, as there is no offer of flights between smaller airports.

Although this system can be sensible, it means an excessive dependence on TIA, where some congestion problems have been observed. We should try to find new feasible routes linking some areas in the country in an affordable and integrative way.

• **Necessity of enduring airlines inspection and supervision**

The airline companies, both private and public, should be evaluated by an authorized commission periodically, to ensure that all the minimum requirements related to safety in air transport are being followed. Since this is a requirement to enhance flight safety, to reduce the number of aircraft accidents and to decrease the price of insurance premium prices, this question must be studied in detail.
• **Shortage of international flights**

Currently only 14 countries have regular direct flights with Nepal. A large portion of this international traffic is held by India (32%) and United Arab Emirates (18%). Qatar (11%), China (9%), Bahrain (7%) and Thailand (7%) have also a high percentage of this traffic.

However, Nepal could be connected with many other countries, specially taking into account the Bilateral Agreements it has signed with 22 other countries, apart from these 14.

Connecting the country with more international flights would help to increase the air traffic demand in Nepal. In addition to that, new Himalayan routes crossing the country could easily increase the over flights in Nepal.

• **Official aeronautical information (AIS) not updated**

Some data are found erroneous in the available official documents and sources. Furthermore, some official documents are not upgraded.

It is important that official aeronautical information, like the AIP but not only it, is complete and upgraded because it is the source that air transport actors have to know about airports and procedures in Nepal. Any change must be notified and expressed in the related documents to achieve safe flight operations.

• **Lack of reliable statistics data**

A lack of historical traffic data has been observed in most of the airports. This kind of information is important to characterize each airport and know about its traffic evolution, which definitely helps when predicting its future trend and planning its development.

It is essential to have information about the global traffic in Nepal too, to be able to understand the market and optimize air transport business with the proposal of new routes, promotion of some destinations, etc.

• **Inadequate aeronautical authority structure**

Currently Civil Aviation Authority of Nepal (CAAN) is taking different roles into the air transport:

- Regulator
- Airports Operator
- ANS Provider

In order to be compliant with the international best practices, CAAN should be restructured. Furthermore, it should be facilitate an easier entry of private sector into the airport and/or air navigation operation, under PPP or other formulas.
• **General obsolescence of navigation and surveillance infrastructure**

The main drawback of the navigation and surveillance infrastructure in Nepal, as a whole, is the fact that it is becoming obsolete (considering a standard lifespan of 15 year).

Four out of the six DVOR/DME are way beyond their lifespan: Bhairawa Nepalgunj, Pokhara, and Simra were commissioned during 1994/1995. The two DVOR/DME facilities in the main airports in Biratnagar and Katmandu have been recently renewed in 2010.

With respect to the five operating NDB facilities, those operating in Kathmandu and Biratnagar are far beyond their lifespan. The remaining three NDBs at Bharatpur, Janakpur and Nepalgunj were commissioned in or after 2000 and they are still inside their lifespan. However, as per ICAO's recommendation, CAAN has adopted a policy to retain the NDBs in Nepal so long they are operational and to replace once unserviceable.

Both primary and secondary radar facilities (collocated and sited inside TIA were commissioned in 1997 and both of them are well beyond the limit of their lifespan.

It is strongly advisable that a roadmap for the substitution of obsolete equipment is developed, considering economic constraints, operational needs, equipment of the target fleet, etc.

• **Limited operation capacity**

The airways network is designed to handle mainly the traffic from/to Kathmandu Airport and international overflights. This structure is not flexible enough and would limit the capacity if other Nepalese airports had international flights. Moreover, the traffic among national airports is based on bidirectional routes and most of them are not controlled, which is also limiting their capacity. Furthermore, the airways network is based on a radial model centered on TIA, which involves that this area is congested and the other areas are underused.

In addition to that, the operation is mainly based on visual operations. Although initially this operation provides flexibility, its capacity is limited, the level of safety is low and it is strongly conditioned by the weather.

• **Lack of a clear ATM/CNS Plan**

Once a clear management model is defined, it is necessary to define an ATM/CNS plan to guarantee the needed levels of capacity and safety. This plan must be global and adapted to the foreseen operation.
OPPORTUNITIES

- **Bilateral and multilateral agreements with many countries**

Nepal takes part in two multilateral agreements (SAFTA and SAARC) with eight neighbor countries. Also, it has signed bilateral Air Service Agreements with 36 different countries.

These agreements can help the country to achieve more economic development, making people and cargo transportation easier, and increasing trade and business relations between them.

- **Increasing commercial relations with India and other buoyant economics**

Due to commercial agreements between Nepal and India, the cargo importation and exportation is free of taxes, and there are no controls or limitations for the people and vehicles traffic through their common frontiers.

Likewise, there are reduced customs duties between Nepal and other countries (Maldives, Bhutan, Pakistan...), and a lot of commercial relations with many more (Thailand, UAE, Qatar). The increasingly developed situation of those countries gives an opportunity to Nepal’s economy to follow their steps.

- **Easy entrance to the country for foreign people**

Government policies put few impediments to the tourist and foreign travelers for flying to the country. The tourist Visa can be obtained in Tribhuvan International Airport when these international travelers arrive, after the payment of USD 30 in the bank office placed in the terminal building.

This facilitation can promote and increase the international air traffic to Nepal, because the tourists do not find a slow bureaucracy that could restrict their possibilities of entering into the country, as it happens in other nations.

- **Increased restrictions to occidental travelers for entering into Tibet**

During the last years, the Tibetan region in the north of the country has witnessed many political and social demonstrations and protests against a claimed Chinese occupation of Tibet. Those protests have had as a result a permanent militarization of the Tibetan plateau, and more restrictions for occidental tourists within this country. Currently it is possible to enter in that region only in groups of five people of the same nationality, always accompanied by an official Chinese guide.

Also, it is on the table to restrict or even to forbid traffic of foreign travelers in the road that lies between Lhasa and Kathmandu, called the “Friendship Highway”, the main entry road to Tibet from another country.

These restrictions can imply a decrease in the interest of international tourist for visiting Tibet, and, due to geographical and touristic similarities, they could prefer to travel to Nepal instead of Tibet.
• **Densely populated country**

Nepal is a highly populated nation. 30 million inhabitants occupy an area of 147,181 square meters. To put forward an example, Nepal is only a bit larger than Greece, which is home of only 10 million inhabitants. All this population implies a significant number of possible air transport users, if they felt the necessity of using this service.

• **Touristic potential of the country**

Nepal hosts an incredible environment. It is one of the richest countries in the world in terms of bio-diversity, and is the place of many unique natural sites, like, for example, eight of the world’s ten tallest mountains, including the highest peak on Earth, Mount Everest (Sagarmatha), and many savage national parks. Its climate ranges from subtropical to Arctic conditions.

Nepal is also a top cultural destination. In its 147,181 sq. km it is home of more than 125 ethnic groups and 100 spoken languages. Its cultural heritage is also splendid, and there are two places within the country considered as World Heritage Sites by UNESCO (Lumbini, and Kathmandu valley), besides two other natural world Heritage Sites namely, Chitwan and Sagarmatha National Parks.

• **Growing demand for adventure travel**

Nepal is a unique destination for mountaineering, trekking, rafting and many other adventure sports. As adventure travels and sportive tourism around the world are continually growing, Nepal offers a wide diversity of activities to fulfill that demand (air sports like paragliding and flying in ultra-light planes, trekking routes like the Great Himalaya Trail, fishing, canoeing, etc.). This increased demand can imply more traffic volume for domestic airports placed near those areas (social airports in the Himalayas, Mugu Airport near Rara Lake, Pokhara...).

• **Increase of religious travels market segment**

Nepal hosts many ancient pilgrimage places of different religions (Hinduism and Buddhism, mainly). Lumbini, for example, is the birthplace of Lord Buddha. As the World Tourism Organization (WTO) states, travels for religious and spiritual purposes have been growing during the last years, and they represent around 27% of the total market worldwide (its classification embraces travels for religious and health purposes in the same group). This organization estimates a number of between 300 and 330 million of people per year visiting the main pilgrimage destination places around the world. This makes Nepal a highly recommended option for this type of tourism. Again, rise in this kind of tourism shall signify an increased demand for flights to some airports placed near those religious sites, like Bhairahawa Airport, Janakpur...

![Figure 1. Tourism worldwide by purpose, 2010](image-url)
• **Touristic potential in areas currently not developed**

There are many areas within the country currently not explored by the tourism, but with many potential to become desired destinations. For example, Rara National Park is not included in many touristic travel packs, and it has a beautiful and unexplored natural environment. Other case could be Simikot, placed in the North-West part of Mid-Western Administrative Region, that it is the beginning of a trekking and 4x4 route to Mount Kailash and Mansarovar (Tibet).

Moreover, there are some regions in the country, where stretches of the Great Himalaya Trail are included, that are currently not exploded by tourism agencies.

![Figure 2. Great Himalaya Trail route](image)

• **Rising number of touristic packs including Nepal and its neighbors**

Lately, Nepal is becoming more and more part of touristic guide packs that include visits to its neighbor countries (Bhutan, India…). The growing tourism in those nations can imply a rise in the number of international tourist flying to Nepal, since people can take advantage of its trip to visit some wonders within Nepali territory.

To put forward some examples, currently it is popular a guide pack to the North of India, visiting places like Benares, Delhi, etc., that also contains a three or four days tour to Kathmandu Valley and a mountain flight to the Himalayas.

• **Possible development of commercial and industrial areas inside or around the airports**

It has been observed than the terminal buildings in Nepal are only used for aeronautical reasons. Normally, all the main airports around the world supports their economic accounts not only by means of aeronautical revenues (taxes and charges to aircrafts, airline companies and passengers), but also by other commercial measures, like franchises of restaurants, kiosks, boutiques, souvenirs shops, rent-a-car offices, construction of malls, business centers and congresses (conferences) near or inside the airport, etc. Likewise, it is common to take benefit from the economic possibilities offered by the existence of an airport on the area by creating industrial areas near it (factories, maintenance hangars, warehouses of delivery companies, etc.).

There is a plan for a new commercial area near Pokhara Airport, which reflects the importance that this business can imply in the regional economy.
• Several market segments in air transport business (paragliding, helicopters, mountain flights, aerial works...)

Nepali air transport currently offers several differentiated options to the public. There are scheduled air routes between most of the airports, cargo flights, mountain “panoramic” flights, trips in helicopter to isolated areas, air sports like paragliding or ultra-light flights, medical, rescue and surveillance works, charter operations under request, etc.

All these activities imply a wide offer to the clients, who have a great number of possibilities and can choose the option that suits better their necessities.

• Existence of areas within the country where air transport is the only or the cheapest means of transportation to the population

Due to the topographical features of the country, there are many villages and rural areas where road transport is very difficult and costly to develop. In those cases, air transport appears to be the only available and cost effective means of transportation for people, food, items and medical supplies.

• Rising number of emigrant workers and students flying abroad

There has been a rise in the number of Nepalese emigrant workers during the last years, mainly to the Arabian Gulf area and Malaysia. There are also young people going to study abroad in an increasing number in recent years.

If this trend continues in the nearly future, that can imply an increase of this market segment, and the air transport system in Nepal could take advantage of it.

Figure 3. Arrivals of Nepalese population by origin countries, 2010
• **Nepali people is steadily accepting and using air transport more often**

With the expansion of air transport business, Nepali population is becoming more familiar with this means of transportation, and it is using it more often than before. That can be observed in the continuous growth of domestic air traffic during the last years (except in 2002 and 2006, because of internal disturbances and political instability).

• **Development of new international routes**

New routes crossing Nepal (avoiding the congested area in its vicinity) could provide multiple benefits to the international operators in terms of distance, fuel and time consuming, which will minimize the operating cost of the airlines. This could be a way to increase the current incomes obtained from the overflights in Nepal.
THREATS

• Slow economic progress of the country

Nepali economy, in terms of GDP per capita at purchasing power parity (PPP), has shown a continuous improvement during the last decades, as it can be seen on the figure below. However, this growth has been considerably lower than those in the neighbor countries (nations of “Developing Asia”, according to IMF classification).

![GDP evolution of Nepal and Developing Asia](image)

This slow increase of the economic welfare of the population, compared to the other countries, represents a disadvantage that the Nepalese companies shall face.

• Social and political instability

The protracted political instability, with a long-running civil war for a decade, represents a clear obstacle in the development of the country. However, it is reasonable to think that the country is driving to a stable social period. Once this stability is firmly established, economic development of the country will tag along, and all the rest of the businesses will do it as well.

• Strong competing touristic destinations

Some South Asian countries near Nepal can represent a competition in terms of tourism. Because most of them (India, Bhutan, Tibet, Cambodia…) offer really interesting touristic options, international pleasure travelers with limited time for vacations can opt for visiting those nations rather than Nepal.

• Lack of a political strategy about social airports

Air services to the rural / social sector (to airports in those regions where there is not so much population or where air traffic is the only feasible way to attend the necessities of this population) usually suffer from the lack of flights. This shortage of services can be attributed to different reasons, but one of the most is the reluctance of private airlines to perform this kind of operations, due to the economic reasons.

Aiming to solve this, the Government has tried to implement some measures, like a requirement to the private airlines to schedule at least 40% of their services into the rural sector, or a subsidy called “Remote Air Service Fund”, to regard airlines flying to rural areas with a subsidy which supports their financial losses.

However, these measures have not been accomplished or even implemented. This lack of a clear and firm strategy to encourage this market segment is an obstacle for the successful solution to this matter.
• **Lack of a global infrastructure strategy for the country**

In Nepal there are different organisation and institutions to manage, control and finance the air transport infrastructures within the country (Ministry of Culture, Tourism and Civil Aviation, Ministry of Physical Planning and Work, Civil Aviation Authority etc). All these organisation limit their actions to their businesses areas, but there is a problem in the coordination between their actions.

There is no common transport plan for the country as a whole, which takes into account the different means of transportation in an integrated manner, strategically planning the inversions to achieve common goals. It would be necessary to evaluate and rank the preferences in the construction, maintenance and management of transport infrastructures within the country in a national mobility strategic plan.

• **Decreased air traffic volume due to existing road plan**

In 2000 a national road transportation plan, called “Twenty Year Road Plan” was established by the Ministry of Physical Planning and Work. The main aim of this project is to indicate the infrastructures (roads) that are going to be financed and built by the Government during the following 20 years.

This road plan, which does not take into account further projects related to other kinds of transport, includes new highways and roads that will link areas of the country currently isolated. This fact can imply a decrease in the number of domestic air passenger traffic and in the air cargo movements within the country.

• **Severe meteorological conditions affecting air transport**

Climate conditions in Nepal are quickly changeable and restrictive, and therefore they affect the normal functioning of air transport. Nepal has a typical monsoon or the wet season from June to September. During that season many airports have to be closed, due to the difficulties and dangers of operating aircrafts under such conditions.

Also, there are problems in the daily operation of many airports, related to strong winds and fog, especially on those placed in high mountainous areas. For example, flights to/from Lukla airport can be only carried out during the morning, since it has heavy winds in the afternoon.

• **Feeling of risk about Nepali air transport**

The high number of air accidents that have happened in the Nepal during the last decades is a subjective limiting factor to the public. This slight sensation of risky operations has also relation with the noncompliance of international safety standards by the airlines and airports.

This perception of insecurity can be observed in the continued growth of insurance premium prices, established by the insurance companies operating in Nepal due to the number of air accidents.