

Addressing airport vulnerabilities



Ratindra Khatri says that Nepal's only international airport would be a vital hub for the reception and distribution of incoming aid in the event of major disaster, but the airport itself is vulnerable, in a critical condition and in urgent need of attention

LAST YEAR, A SITA AIR DOMESTIC flight crashed while taking off from Tribhuvan International Airport (TIA) in Nepal and all passengers and crew were burned alive. Most on board were foreign tourists flying to Lukla before moving onwards to climb Mount Everest. Existing emergency management resources on site were mobilised, but rescuers could not reach the victims – who were seen crying for help through the aircraft's windows.

This unfortunate incident gives a clear picture of the poor state of the emergency response capacity at TIA. Furthermore, on several occasions, cracks or holes in the runway have grounded flights until repairs could be completed. And if a runway is weak and vulnerable in normal circumstances, what would happen if a large-scale earthquake struck Kathmandu or its contiguous areas?

On February 7, 2012, a massive fire broke out on the eastern part of TIA premises.

The flames spread through the grassland of the airport, but did not damage any airport property. To prevent the fire from spreading to the vital installations, all available fire services of the Kathmandu valley were mobilised, with more than 300 firefighters and ten fire appliances being deployed.

Kathmandu, the capital city of Nepal, is highly vulnerable to earthquakes and fire hazards. Ancient and badly planned, the city has 975,453 inhabitants in the metropolitan area alone, an area of 50.67 km² (19.56 square miles) – a population density of 19,250 per square kilometre. A further 2.5 million people live in the wider city area.

There are two other cities within the Kathmandu valley, Lalitpur and Bhaktapur, which both have similar risks to Kathmandu. In fact, Bhaktapur is even more hazardous as its roads are narrow and crowded with compact buildings and narrow bottlenecks accessing the main road.

In essence, the cities of Kathmandu valley are a living museum with an arts and crafts heritage stretching back more than two thousand years; most areas are listed World Heritage Sites. Local people still live and work in these sites and it can be a challenge to protect the historical aspects of the city from potential disaster in the face of rapid urbanisation. Indeed, the rate of growth has heightened pressures on the urban environment, ultimately increasing the risk of disaster.

Kathmandu already has its fair share of existing vulnerabilities – upkeep and maintenance of buildings are crucial as 80 per cent are constructed without proper engineering considerations.

Kathmandu also has poor infrastructure with specific problems in the supply of water and electricity, including issues with sanitation and drainage systems. Ecologically fragile areas have been swallowed by expanding

urbanisation, resulting in the loss of biodiversity and disrupted balance of eco-systems. In Kathmandu, the subsidence rate is very high, owing to over exploitation of underground water. This process will certainly create problems in the future, inviting further risk of disaster, and will also directly affect TIA's ground surface.

TIA is Nepal's only international airport and lies in the heart of the capital city. It has a single runway to handle all fixed and rotor wing flights, both domestic and international. A military base also located at TIA, relies on the same runway.

The particular climate of the area means that early morning is the peak flying time for TIA; domestic flights also try to fly at this time because of difficult flight conditions in the mountainous areas in the afternoon. Simultaneously, air traffic control has to manage international flights as a priority. It is recognised that existing resources and facilities are insufficient to manage all these demands efficiently – a mix of different types of aircraft waiting on the taxiway creates a hotchpotch environment where one small mistake could lead to a serious disaster. Immediate steps, therefore, are needed to enhance capacity.

A few years ago, the then government decided to build a new international airport in Nigadh, around 75 km (46 miles) south of Kathmandu. A fast track road was to be constructed, providing direct access to the capital and the military have built a pilot track for the road. However, the airport was not completed after the government stepped down.

If we compare Kathmandu's present earthquake threat with that of Port-au-Prince, perhaps we might find the latter to be in better shape, as there are multiple access points from the outside in Haiti's favour. As an island country, Haiti has several sea ports for naval use, whereas Nepal is landlocked between two Asian giants – China and India.

Owing to Kathmandu's high mountainous configuration, the terrain is very rugged and difficult, with very limited ground access linking the city to the Indian and Chinese borders. Most of these roads pass through mountains, over a number of old rotten bridges across rivers and mountain streams. These bridges and roads are simply incapable of withstanding a high magnitude earthquake, landslide or major flood.

By contrast, after the earthquake in Haiti, the main highway linking Port-au-Prince and Santo Domingo, the capital city of neighbouring Dominican Republic, was declared a humanitarian corridor and used purely for the transport of relief materials. On top of that, Port-au-Prince International airport was rendered operational by the US military within

30 minutes of taking control of the airport.

TIA would be the only viable option for the transport of immediate relief materials and rescue workers after a high level disaster scenario. Unfortunately, the airport itself is vulnerable and in a critical condition. Against this background, retrofitting TIA or finding an appropriate alternative is imperative and should be implemented as soon as possible.

Bearing in mind the airport's current condition, three main priorities are envisaged. The first is to carry out a proper assessment of runway, critical facilities and infrastructures. Second is to work on capacity building, such as retrofitting of all vulnerable structures and arranging necessary rapid repairs and equipment, as well as airport handling personnel and equipment. The last is to enhance emergency management systems and update these periodically.

A series of workshops and exercises have been conducted with participation of all concerned stakeholders, with the assistance and supervision of international experts. These platforms have helped to establish the necessary information to identify gaps and challenges and the initiatives have made valuable recommendations to the Government of Nepal.

Seismic assessment

Experts say that TIA is extremely vulnerable owing to potential damage from liquefaction in the event of an earthquake and the Civil Aviation Authority of Nepal (CAAN) has requested subsurface investigations as well as studies of the pavement capacity and condition of the runway. Seismic assessment of various infrastructure has also been necessary.

Based on these facts, the Nepal Government was advised to carry out a detailed study of the airport and, recognising the importance of this issue, US military engineers provided assistance with the task. A technical team performed detailed geo-tech studies of TIA runway and a report was presented to the government. At the same time, another expert group developed the Earthquake Emergency Response Plan (EERP), which was submitted almost five months ago but is still pending at the ministry level.

The engineering component of Nepal Army is stationed at the TIA itself. However, most of the resources are deployed outside of the capital for the purpose of development work. The army has skills and manpower, but is experiencing a lack of resources.

Rapid repair equipment should be held at the airport on standby for use during a crisis situation.

Another important issue about TIA is



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the lack of sufficient warehouse space available at the airport. In order to hold substantial amount of stock for the receipt and distribution of aid, construction of such types of warehouse is considered to be another priority. Furthermore, aircraft fuel management is another factor that needs to be examined closely. Fuel dumps, carriers and refuelling systems should be reviewed and improved as a matter of high priority.

Personnel are also vital. Skilled management essential for the smooth functioning of TIA is equally important to enhance the airport authority's resilience. For the management group, along with the technical personnel who handle various equipment at the airport, emergency rescue workers, radar and air traffic controllers, need to be more efficient and skill oriented.

Implementation can be a serious problem in Nepal. Over the last couple of years many plans and methodologies have been developed in the field of disaster management, but have not been materialised properly on the ground. Even if implemented, maintaining such initiatives on a sustainable basis presents further challenges. A new government act to replace the *Natural Calamity Act* of 1983 has been stuck somewhere in between ministry and parliament for over three years.

Ongoing political instability is one of the prime factors in the unnecessary delay in implementing such high priority issues. As the nation remains in political crisis, many other important issues are sidelined and have become pushed down the list of priorities. **CRJ**

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