

A leaf from Australia's disaster management focus on dangers to high-rise buildings

by Florence Wickramage

Against the backdrop of the recent devastating floods and a series of landslides that killed many people queries are made as to how effective is the National Disaster Management Centre. Recent reports have indicated that the Institute of Engineers of Sri Lanka (IESL) has called upon the Government to scrap the present Disaster Management Centre and to put in its place a Disaster Mitigation and Management Authority (DIMMA) with effective mechanisms to deal with landslides. It is believed that such an authority would be able to greatly reduce loss of lives, damage to property and the cost of rehabilitation.

While Sri Lanka was concentrating on devising plans on prevention and mitigation and on predisaster preparation for landslides and flooding, other countries in the world have gone a step further and are now concentrating on disaster management with focus on danger to high rise buildings.

Given the Sri Lankan scenario where high-rise buildings are mushrooming in the cities and urban areas, this should be another factor which would require urgent attention.

A country in the forefront of this exercise is Australia and in 2001 a Research Group on Advanced Protective Technologies for Engineering Structures was formed at the University of Melbourne headed by a Sri Lankan Associate Professor Priyantha Mendis who is recognised as one of the top experts in Australia 'on High Rise Buildings'.

Under his guidance the main research team of the group will assess the performance and vulnerability of critical infrastructure, (including major bridges, telecom-



Prof. Priyantha Mendis

munication centres, main power and water supply stations, landmark structures, commercial tall buildings) under both natural and technical hazards (accidents or terrorist attacks).

The objective is to develop innovative and effective mitigation technologies for the protection of critical, high-risk facilities, from extreme events (blast, shock, impact, earthquake, etc).

The Research Group interacts daily with the Australian Prime Minister's Science, Engineering and Innovation Council. It is also affiliated to the World Council of Tall Buildings and Urban Habitat (CTBUH).

The current research programme in Australia is in response to the threat of terrorist attacks around the world.

Structural engineers are seeking and developing new methods and modelling techniques for assessment and prevention of damage to high-risk, infrastructure and landmark facilities, with the emphasis on severe blast, high impact and intensive fire. The group on the short term benefit front has also identified that many methods used presently to strengthen structures in high seismic areas, such as FRP (Fibre Reinforced Plastics) can be used/adopted to strengthen existing structures against terrorist loading.



High rise buildings - looming dangers

This work is continuing at the University of Melbourne.

According to Professor Priyantha Mendis Australian tall buildings are only designed to withstand the low-intensity lateral forces from high

winds or minor earth tremors. A bomb blast or collision is a short duration and high-intensity load which Australian buildings are not designed to withstand. While engineers and building owners were

becoming aware of the risks, Mendis believes that building codes needed to be upgraded to enforce stronger construction.

While agreeing with commercial engineers that it would be impossible to construct every high-rise with the strength to bounce off jet liners, Professor Mendis stated that rules should demand extra steel reinforcement for floor slabs to prevent the sort of disintegration that occurred in the World Trade Centre.

In the Sri Lankan scenario an urge currently is evident to plan out measures to mitigate if not prevent such disasters - whether it is a NMDC (National Disaster Management Centre) plan of the Social Services Ministry or a DIMMA (Disaster Mitigation and Management Authority) process prescribed by the Institute of Engineers matters little to the people.

What matters is that plans should be action oriented and damage and destruction caused by nature and by man are prevented if not reduced in force. Whatever the controversy, can it be said that Sri Lanka is secure and ready to counter all types of disasters by nature or man made? A query currently in the limelight is whether those responsible in Parliaments and in the public services are able to anticipate, visualise, assess disasters, casual, accidental or deliberate and prevent/reduce the damage that can happen to normal facilities in infrastructure, the current constructions and land development works done in rural settings.

It is accepted that there is an urgent need to resolve the disaster management issues in cities, urban and suburban areas when noting disasters that can cause specific damage to constructions and resi-

dents in the fast growing high risk tall buildings. Earth-destruction, soil erosion and landslides have rightly held the floor currently. However there are also other impending targets, say structures like buildings constructed in haste for a 'fast return'.

The multitude of high rise buildings/apartments that have come up and still being built on the by-roads pose the challenge whether these buildings could withstand disasters caused by earth-quakes/tremors, cyclones or by Man made/Terrorist destruction.

Builders need to review the work. Such high rise building programs in city areas need to set a top place in pre-disaster intelligence planning. A simple observer adds that he feels the need to highlight the need for care, safety and sustenance on a predisaster preparedness plan in respect of high-rise construction for housing, business etc.

It is accepted that there is a need in the country for high rise buildings due to lack of land space and the urgent demand for residential and business buildings all over the city and in other areas.

This has now become a global problem - tall commercial buildings are built in response to the demand by business activities to be close to the city centres, thereby putting intense pressure on available land space. Not only tall commercial buildings are built at the moment, many tall residential apartment buildings are planned for major cities.

This situation therefore focuses on the need for vital re-thinking about the importance of an action programme for disaster management concerning dangers posed to high rise buildings which would have direct impacts on the lives of the people and society.