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ABSTRACT

Seismic Risk in Pacific Cities: Implications for Planning, Building Code Legislation, and Urban Search and Rescue Services

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Many of the urban areas of the Pacific Basin face what is probably the highest risk of any in the world. The risk arises from a combination of some of the highest levels of seismic hazard along the Ring of Fire, and the vulnerability of the building stock and populace due to poor planning, unlegislated building standards, often poor foundation conditions and a low level of preparedness.

The fragile economies of the Pacific Island Countries are based largely on the security of these cities, and hence the risk to the sustainable development of the nations themselves is high, and their future uncertain. The ripple effects following the shock of the terrorist attack on New York's World Trade Center demonstrate only too clearly the national economic impact arising from the destruction of even a small part of a city's commercial heart.

A number of organisations dealing with disaster mitigation in the region are now focussed on jointly developing an awareness of risk in the Pacific nations, appropriate planning for development, legislation and enforcement of relevant building codes, and an immediate, local capacity for urban search and rescue in the face of disaster.

Efforts are being concentrated on developing and supporting national disaster management offices at a high level in the various Governments, to link and coordinate urban planning, public works, fire and emergency response organisations and police and military services. National development is very much seen as being predicated on successful management of risk, and most notably risk due to seismic hazard.

A joint project between the Geophysical Institute of Israel, IRD France and SOPAC has seen seismic hazard defined for five of the largest Pacific cities, and a microzonation of the hazard based on foundation conditions. The work has shown that unexpectedly high accelerations are possible and that foundation conditions in many areas are extremely poor.

Concurrently, geographic information system databases have been developed for the cities which include descriptions of the building stock, lifelines and populations at risk. Work is proceeding to evaluate the risk to those vulnerable elements from a range of hazards including seismic hazards.

National institutions of engineers and architects have hitherto adopted ad hoc standards borrowed from other countries or developed through aid projects, and are now pushing for the formal adoption, legislation and enforcement of standard national building codes.

The experience of Kobe, Turkey and New York in recent times has underlined the need for rapid and effective response after disasters and the need to have systems of local response developed that can operate without being hamstrung by the juggernaut of bureaucratic procedures and dependence on vulnerable transport and communication systems. Models for successful urban search and rescue in Pacific cities are currently being fashioned.

The traditional societies of the Pacific generally demonstrate a high level of risk-acceptance balanced out by strong community-support mechanisms and high intrinsic resilience, and yet the modern cities on which national survival may teeter are some of the most vulnerable in the world. Finding the appropriate response systems and effecting change to build safer urban communities is not only a problem of a lack of finance but one of education, awareness and acceptance. An agreed framework for future preventative and protective action by relevant national authorities is emerging.

(This presentation will reflect the outcomes of the SOPAC-UNOCHA regional workshop 'Building Safer Urban Communities in the South Pacific', Suva, 7-9th November, 2001)