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The Role of Corporate Real Estate Managers in Disaster and Business Continuity Planning

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Abstract

Climate Change is predicted to have a significant effect on the frequency of extreme weather events and the occurrence of natural disasters. This paper describes the current climate change predictions and the likely consequences for building assets in the face of extreme weather events. There is a need for asset managers to mitigate and prepare for future events however current practice as illustrated by the literature shows that little risk assessment is currently undertaken with few organisations preparing integrated disaster management plans or business continuity plans to help them meet the challenge. There is a need for further research into the impacts on assets and the role of the corporate real estate manager in assessing the risks and developing strategies to prepare the organisation and to mitigate the effects of natural disasters and severe weather events.

Keywords

Climate Change, Business Continuity, Disaster Management, Corporate Real Estate.

Introduction

Buildings and the built environment play a key role in supporting human activity and delivering economic prosperity. At the basic level, the buildings we occupy are designed to provide the essential elements of an enclosed workspace which affords security and a barrier to the elements (Douglas 1996). There are increasing occasions when these simple functions are compromised by natural disasters. This paper examines the role that building assets play in supporting the operations of business and how disaster and business continuity planning can contribute to the survival of the organisation when significant natural disaster events threaten.

The past few decades have seen an increase in the number and extent of natural disasters throughout the world. Each year of the past decade an average of 258 million people have suffered from disaster, considerably higher than the 74 million a year in the 1970s' (Christian Aid 2006, p. 7). In 2008 the number of reported natural disasters was 326 worldwide with some 235,736 people reported killed, the second highest number in a decade. The highest number was as a result of the 2004 Tsunami when 241,366 people died as a result of natural disasters (Rodriguez et al. 2008, p. 326). The loss of life resulting from major disasters tends to occur more frequently in those areas prone to disasters and within less developed countries; however the economic effects of major disasters are more often felt within developed countries. . The total cost of natural disasters in 2008 was US$ 181 billion these costs resulting largely from Cyclone Nargis which killed an estimated 38,366 in Myanmar and the earthquake in Sichuan China which killed 87,476. This compares to the costs of hurricane Katrina in 2005 which are estimated at US$ 140 billion (Rodriguez et al. 2008).

Damage from Hurricane Ike, which hit the USA in 2008, cost US$ 31.5 billion. Nine of the fifteen natural disasters with damage costs of US$ 1 billion or greater occurred in North America, a further two occurred in Europe. Three of the remainder occurred in China (Rodriguez et al. 2008). In the past decade some 88,671 people died in Europe as a result of 953 disasters which affected more than 29 million people and cost losses of 269 US$ billion (Guha-Sapir 2009). The effects of natural disasters within developed countries are more acutely felt due to the higher densities of population and the economic intensity with which the land is used, while in developing countries the loss of life tends to be higher. It follows that in highly developed cities there is an enhanced need for buildings to be prepared for the adverse effects of natural disasters.

Defining disasters

What constitutes a disaster is the subject of much debate and there are a variety of definitions which can be applied. The definition is somewhat arbitrary as at the borders between one definition and another there is still significant human suffering and property damage. The International Red Cross adopts the definitions developed by the Centre for Research on the Epidemiology of Disasters (CRED) which defines a disaster as; '...*a situation or event, which overwhelms local capacity, necessitating a request to national or international level for external assistance, an unforeseen and often sudden event that causes great damage, destruction and human suffering'* (IFRC 2009, p. 159). Under this definition, for a disaster to be recorded in the CRED database one of the following criteria must apply:

- Ten or more people reported killed
- 100 people or more reported affected
- Declaration of a state of emergency
- Call for international assistance (IFRC 2009, p. 156)

The definition of disasters is further broken down by type, ranging from biological to geographical and climatological. The definition also includes technological disasters which include industrial accidents and transport related accidents. The largest categories by far are those relating to natural events. Within the definition of natural events, there are two categories which can be directly linked in part to the potential consequences of climate change. These categories are:

- **climatological disasters:** droughts (with associated food insecurities), extreme temperatures and wildfires
- **hydrological disasters:** floods (including waves and surges), wet mass movements (avalanches, mud/landslides, rock falls and subsidence of hydrological origin)

In addition a third category may be included which comprises the geographical events which include earthquakes and tsunami, but also include mass earth movements and rock fall These latter disasters can, in some circumstances, be linked to changing climatic conditions. Figure 1 shows the comparative data for the major disaster groups comparing 2008 with the period 2000- 2007. The two groups, hydrological and meteorological, together account for over 80% of the top ten disasters and, while 2008 did see a decline in the number of events in that year, the long term trend is increasing. While the number of events decreased, the economic costs of the events significantly increased (Rodriguez et al. 2008, p. 15)

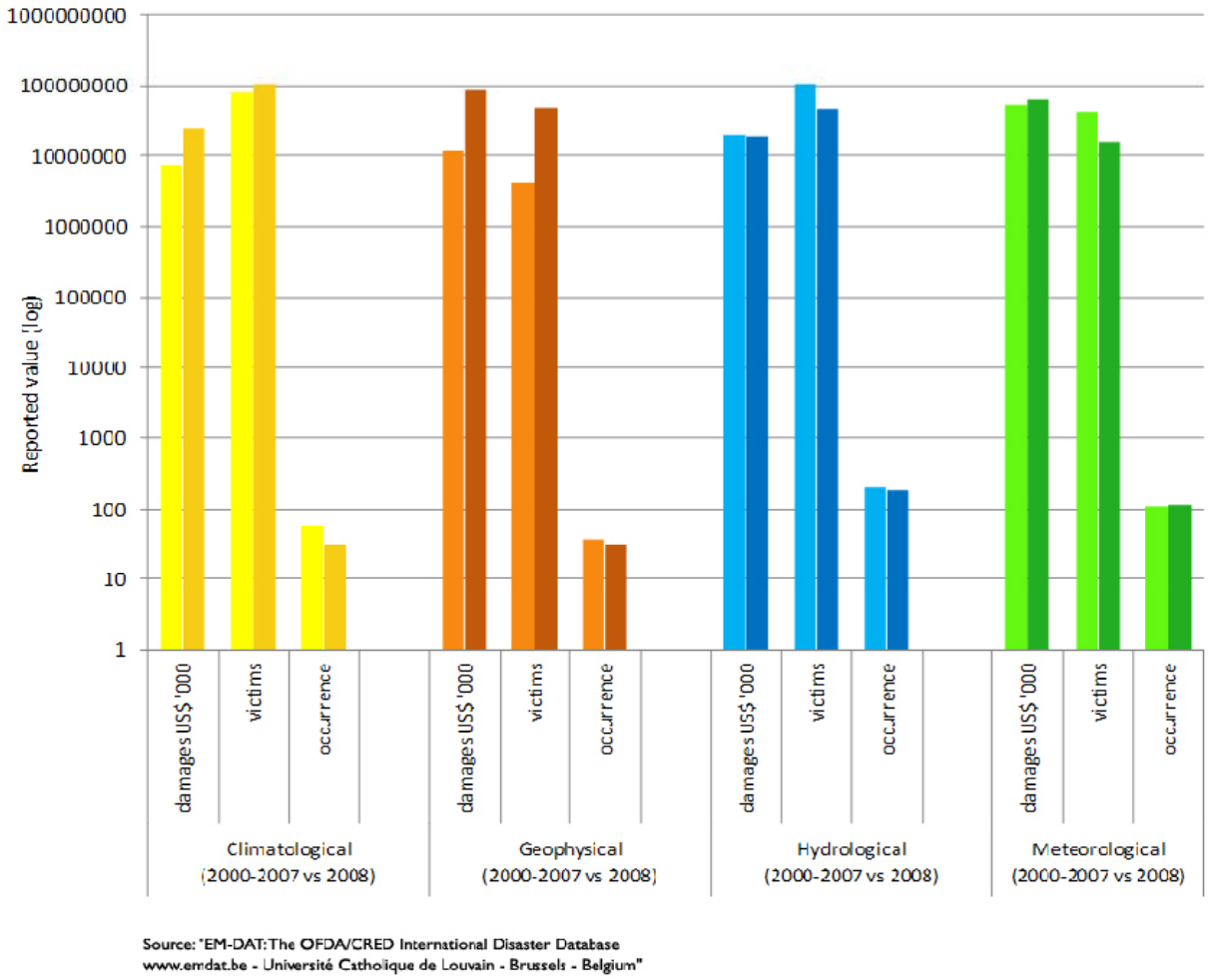
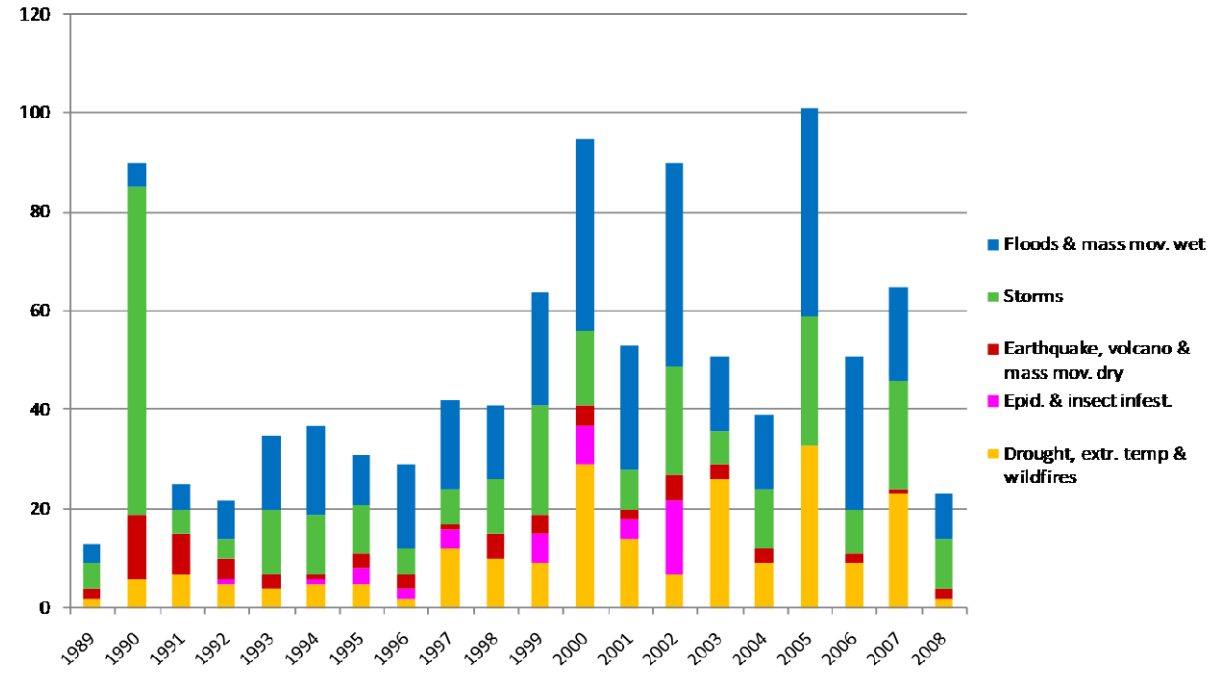


Figure 1 Natural Disaster Impacts by sub group

The economic effects of disasters are often more acutely felt in developed countries. During the past decade there have been 953, disasters in Europe resulting in 88,671 deaths and US$269 billion in economic loss. Per capita Europe leads the world in disaster related economic loss. This is largely attributed to the region being more densely populated and the greater investment in infrastructure (Guha-Sapir 2009). Figure 2 shows the number of natural disasters in Europe and the clear upward trend in the number of disasters over the past decade.

Figure 2 Number Natural Disasters Europe



Source: (Guha-Sapir 2009)

In addition to those events which meet the definition of a disaster discussed above, there are also many more which create a crisis situation but do not result in either significant loss of life or the need for a state of emergency to be declared. Crises are of a lower magnitude but still present a threat to the core functioning of the business system. Examples of major crises include the 2003 breakdown of the electrical grid in Northern USA and the Auckland power outage of 1998, both of which caused considerable economic loss (Boin et al. 2007). These crisis events can have a very significant effect on an organisation and its ability to continue to operate. As Boin (2007) puts it, Disasters are simly crises with a bad ending.

Climate Change and Property Assets

It is not the intention of this paper to debate the validity of data regarding climate change per se, but rather to take the view that there are significant issues to be addressed and based on the best evidence, our climate is likely to change. The annual increase in carbon dioxide levels in the atmosphere increased at the highest rate in the decade to 2005 and is now higher than at any time in the past 650,000 years. Eleven of the last twelve years (1995–2006) rank among the twelve warmest years in the instrumental record of global surface temperatures since 1850 (IPCC 2007a). Projections are that global temperatures will continue to rise at about 0.2°C per

decade. These temperature rises will result in a continuing rise in sea levels due to melting of ice caps and glaciers and the expansion of the oceans. In the past decade sea levels rose at the rate of 3.1mm per annum and projections are that this trend will continue (IPCC 2007a, p. 72). The atmosphere will cause temperatures to continue to rise for many decades, even if all emissions were stopped today. An increase of 2°C over pre-industrial levels is broadly agreed to be a critical 'tipping' point, beyond which dangerous climate change becomes increasingly likely. How much the temperature actually rises will largely depend on national and international mitigation efforts in the coming years but most scenarios are bleak (IPCC, 2007).

The effects of the predicted climate change will vary from region to region. The most vulnerable industries, settlements and societies will be those located in coastal areas and within flood plains. In Europe most regions will be negatively affected with increased severe weather events leading to flooding and coastal erosion. In the south, high temperatures will lead to drought and water shortages, while northern regions may experience some positive changes with a reduced need for heating and some increased crop yields, the negative effects of flooding and increased ground instability will bring significant economic costs (IPCC 2007b). Recent major flood events in Germany and the UK are seen by many as testament to these potential climate change events (Pitt Review 2008).

If global warming continues, the Oceania region will see increased severe weather events with storms causing flooding and coastal erosion. Coastal effects will be further increased as sea level continues to rise. The number of extreme heat days, those over 35°C ,will increase over the coming years by between 10% and 100% placing significant demands on building systems and the energy supply (BRANZ 2007). There will also be periods of prolonged drought which will affect biodiversity and productivity of crops. Water shortages will have negative effects on many eastern and southern communities.

America will be similarly negatively impacted with severe weather events leading to flooding. Extreme heat days will increase particularly affecting the cities resulting in increased deaths due to the effects of heat, and significant energy demands to supply air conditioning systems. Agriculture will have mixed effects with some positive impact on crop yields while others suffer as plant varieties reach their southern range for production (IPCC 2007b).

IPCC (2007b) acknowledge that some adaptation to climate change is occurring with sea defence projects and water use reduction projects underway, however, further 'Adaptation will be necessary to address impacts resulting from the warming which is already unavoidable due to past emissions' (IPCC 2007b, p. 19). The business environment will be significantly impacted by these climate change predictions. The evidence of climate change is, however, giving us an

early warning system for the potential for severe weather events and climate related disasters. We need to take heed of these warnings and instigate measures to mitigate the effects and to reduce the potential for catastrophic change (IFRC 2009). The United Nations International Strategy for Disaster Reduction (UNISDR) has recognised the need for action to prevent and mitigate the effects of climate change. In 2005, UNISDR recognised that a gap exists between current practices and the actions necessary to meet the challenge of climate change. The UNISDR Hyogo Framework for Action 2005-2015 identified specific gaps particularly in; governance, risk identification, assessment, monitoring and preparedness for effective response and recovery (UNISDR 2005). In 2008, UNISDR reiterated the need for preparation of mitigation and preparedness strategies for future disaster events and the need to systematically integrate disaster risk reduction and adaptation into national development strategies (UNISDR 2008). This disaster risk reduction planning process needs to not only be undertaken as a national strategy but must also incorporate all organisations and physical assets which will be vulnerable to climate change disaster events. The extent of adaptation needed to existing buildings will vary depending on location. The costs of undertaking the necessary adaptations are not insignificant, adding approximately 2.5% to new dwellings just to combat rising annual temperatures (BRANZ 2007).

The effect of climate change will be felt in a number of areas which relate to the way that we use the building assets which support business. The most obvious effect is that of disaster, extreme weather events, causing flooding, or heat stress. Other, more subtle, problems however, will be faced. The change in the frequency of extreme heat days, particularly in the cities, will lead to a number of problems air conditioning systems will struggle to maintain satisfactory indoor air quality conditions, leading to occupier dissatisfaction and associated drop in productivity. The high demand that will be placed on the electricity supply network is likely to lead to interruptions in the continuity of supply. Indeed, the longer term security of energy supply is a growing issue in many major cities, Governments face the prospect of global reductions in the supply or availability of energy as they struggle to meet CO_2-e emission targets (Bauen 2006; Huntington et al. 2004). As we seek to address the problem of CO_2-e emissions, governments around the world will need to implement schemes to significantly reduce energy use. The sustainability agenda and available building rating tools all seek to make a contribution to the reduced use of energy by encouraging the use of more efficient lighting and air-conditioning systems within buildings and using innovative methods to maintain indoor environmental quality by operating in a sustainable manner (Green Building Council of Australia 2008; Williams 2008). Energy reporting schemes are already in operation throughout Europe and are proposed in Australia and many other countries. Such schemes establish a benchmark by which we can address the efficiency of the building and its management.

Similarly carbon trading schemes are being introduced by many governments as a means of incentivising business to meet the Kyoto protocol emission reduction targets (Commonwealth of Australia 2008; European Parliament 2003; United Nations 1998).

Planning for potential climate related disasters

There is a rich literature from a range of business and economic sources which seek to address the role of business continuity in crisis situations, but the literature directly related to asset management in these scenarios is somewhat limited. Property assets in disaster situations is even less well understood and the contribution of property professionals in pre and post disaster planning is not widely recognised (Warren et al. 2008). There are a number of tools and techniques described in the literature each designed to prepare an organisation to meet unforeseen events (Devargas 1999; Herbane et al. 2004; Lee et al. 1999). The objective of these management processes is to deliver organisational resilience, which is particularly important in 'High Reliability Organisations' where loss of operations will have wider consequences, particularly in terms of safety. Power plants, defence establishments, airlines, and some public services, might fall within this category (Crichton et al. 2009). Organisational resilience can be achieved through risk assessment and the preparation of risk minimisation and mitigation approaches. This risk management approach is often termed disaster recovery planning, crisis management, business impact assessment or, more commonly, business continuity management.

Business Continuity Management (BCM) as a means of risk management grew out of the information technology sector which recognised the importance of the data held to the ongoing success of the enterprise. Thus a need to protect the systems and plan for crisis events evolved. The importance of BCM has evolved into a much wider and less technology based management tool and is now seen as an organisation wide, strategic organisational requirement (Elliott et al. 2002). This transformation of BCM into a business wide strategic management tool that draws on both crisis management and disaster recovery planning approaches allows the organisation to assess risks in the pre-crisis, trans-crisis and post-crisis period. Threats and responses can be evaluated against the organisational objectives. BCM in its early forms was seen as providing technical solutions, and was very much orientated to recovery of IT systems, but has now become a value proposition for the organisation as BCM can offer a degree of potential competitive advantage over organisations which are less well prepared (Elliott et al. 2002). Moving from the technical to the strategic dimension, BCM embraces technical, operational and social issues within the organisation and moves from planned reaction to crisis to an anticipated loss limiting approach which puts in place avoidance and mitigation processes to ensure a speedy reaction and recover from crisis (Herbane et al. 2004).

The organisations long term survival in a competitive business environment is put at risk if they are not prepared to meet major disruption to operations. A well prepared BCM that is comprehensive, is clearly communicated to all within the organisation and regularly tested can make a significant contribution to recovery (Herbane et al. 2004, p. 441). The vulnerability of those organisations within the supply chain, however, can also significantly contribute to the success or otherwise of the recovery plan. Supply chain risks associated with each key location from which the organisation operates are a key element of a proactive approach to building resilience in disaster situations (Knemeyer et al. 2009). The importance of organisational risk assessment to external and internal crisis was specifically recognised in the UK Turnball Report into corporate governance. This report strongly recommends that all publicly listed companies have a risk management strategy and, while this is in the most part an accounting and audit focused report, it does clearly include environmental risks within its proposed scope of risk assessment (Turnball Report 1999).

Corporate real estate has a key role to play in the development of an organisation's BCM plan. The importance of the loss of buildings to the organisation is not widely addressed. Hearnden (1995), in a study addressing Information Technology resilience planning, found that only 41% of organisations also included the building in their plans. A similar survey in the UK by Pitt and Goyal (2004) found that 60% of organisations had prepared contingency plans and, of these, most, 95%, included buildings in the planning process. Indeed this research showed that facilities personnel ranked fourth in importance in terms of BCM planning behind the Board of Directors, IT Manager, and Production Mangers. The organisation's location is highlighted by some authors as while not specifically addressing the facilities themselves, they do consider the resilience of the location in terms of supply chain and personnel (Knemeyer et al. 2009; Lee et al. 1999).

The role of property and that of the corporate real estate or facilities manager in the BCM process is clearly an important one which is not widely reflected in the literature. There is consequently no well defined process by which an asset manager can prepare a strategic management plan for their assets. The Royal Institution of Chartered Surveyors (RICS) in a recent practice guide to facilities management drew on the recommendations of the Turnball Report discussed above as the basis for developing a property risk assessment and goes on to recommend that a BCM plan is developed for all facilities. It does not, however, provide any guidance on the process other than a generic five step risk assessment process (RICS 2009, p. 29).

It is clear from the literature that any property risk assessment should include property location as an element. Location can be analysed in terms of supplies and markets and the potential for

interruption to the supply chain (Knemeyer et al. 2009). The supply chain might also be seen to include the resilience of energy and communication's resources, and the capacity of supply in the face of increased temperatures and extreme weather events. The physical supply infrastructure in terms of cable configurations and alternate suppliers can represent a major risk factor for any given property location. The risks of continuity of power supply are clearly illustrated in the Auckland crisis of 1998, where a single damaged cable led to major prolonged loss of power for nearly ten weeks (Crichton et al. 2009).

The proximity to threats such as high profile co-occupiers of a building or, indeed, a high profile building per se, can present a risk. Is it better to be in one building in one city or in several geographical locations? A spread can lead to delays in decision making, but may allow backup capacity (Msezane et al. 2002; Thompson et al. 2007). Does an organisation need to have 'hot sites' ready to move into in alternate locations should the building they occupy be lost and what are the financial implications? (Edwards 2006; Smith 2006). If alternate sites are secured, will they be ready in the event of a disaster? If implementing the continuity plan is reliant on external contractors, will these be available and at what price. An example of good contingency planning is exemplified by the Reserve Bank of Australia, which recognises the sensitivity of its ability to support foreign exchange transactions and as such maintains hot site capability located well away from its main operational headquarters and self contained in terms of energy and key personnel access and accommodation.

The availability of key workers at times of natural disaster can pose considerable problems; naturally there is a concern for their families which can override their contractual commitments. Edwards (2006) reports on a survey of medical professionals in Hawaii which showed that only 26% planned to return to work after a disaster. Following Hurricane Katrina 247 of the 1700 police department employees were absent one week after the disaster and subsequently fifty four were sacked for dereliction of duty(Edwards 2006). One counter measure that can be employed to combat this is to supply essential employee facilities including family members, in disaster situations, but how many organisations' BCM plans go to this extent?

The aftermath of Hurricane Katrina provides one further sobering lesson for large occupiers of property. If your buildings are damaged and your staff have left their homes, how do you contact them? Does the organisation's BCM include a well communicated procedure for contacting employees or finding alternate meeting points? Aligned with this aspect, will the organisation be able to continue to pay its employees at a time when they will most need the cash? Finally will the organisation still be liable for rents and other payments in the buildings it

occupies? All of these questions should form an integral part of a comprehensive cross-organisational risk assessment.

Conclusion

The importance of a well formulated risk management plan which is widely communicated and subject to continuing evaluation, training and review is the basis of good business continuity and disaster planning. It is evident from the literature that the possibility of increased natural disasters as a consequence of global climate change will increasingly need to be considered by all organisations. The level of both physical injury and economic loss associated with natural disasters cannot be ignored by any prudent corporate property manager. The propensity for extreme weather events to cause damage and disruption to the normal business workings of the organisation has been recognised by many organisations and has resulted in the establishment of business continuity plans. The planning process in many organisations however, has a focus on the information technology resources of the business and the processes which can be employed to ensure data security and the reestablishment of normal communications.

The evidence from crisis, events, particularly in developed regions, has shown that the narrow focus on the individual organisation and its information technology infrastructure is generally not sufficient to ensure the survival of the organisation and the rapid reestablishment of normal business services. The role of the corporate property manager in evaluating the location of business property assets, the potential for damage and loss of premises from a range of disaster threats and the need to make provision for key personnel and contractors is fundamental to the effective management of property as an enabling resource to the organisation's business role. The limited research in this area and the apparent limited application of sound risk management practices by property and facilities managers is an area which must be addressed, particularly given the fast growing need to address the consequences of climate change. There is a need for further research into the role of property and the resilience of buildings in natural disaster events. This research should address not only building resilience in terms of structure, function and location but also the security of energy and communications supply. The professional asset managers should also be undertaking detailed risk assessments of their assets and preparing strategic business continuity and disaster management plans which address the apparent growing frequency of extreme weather events and climate change driven natural disasters.

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