Introduction locality as well as its geology. south

Introduction

An earthquake is essentially a quiver which resulted by sudden energy release from the earth inner surface.

The release of energy causes a ripple of seismic waves that are felt in the form of shaking. The damage caused by an earthquake depends on the magnitude and the length of such earthquake. (U. S. Geological Survey2008, April 22). The length however depends on the size of the wave since the larger the wave the larger the area affected and consequently the longer the period of time taken. Each year the earth experiences up to half a million-earth quakes of which only 100, 000 can be truly felt. The probability of occurrence of an earthquake depends on the nature of the locality as well as its geology.

South California alone experiences up to 10000 earthquakes a year.

History of earthquakes in San Francisco

Earliest reported earthquake in California was felt in 1769 the worst of them all was the 1906 San Francisco earthquake. There have been severel other smaller earth quakes that have hal minimal impact and even gone unnoticed. Others which have been of a greater impact

Situational analysis and probability of an earthquake in the near future

Research has predicted that there exsists a 25% probability of an earth quake with a magnitude of up to 7. 0 occuring within the next two decades in sanfrancisco. Based on the historical data as well as computer simulations it has been suggested that there is an even more greater chance that an

earthquake of an even greatter magnitude will occur in the next 45 years. The death toll is estimated at a shocking 5, 800 deaths if the magnitude is at least 7. 0.

this means that the value could be higher if the ripple effect is of agreater magnitude(Abercrombie and Brune1994) Sanfrancisco notably lies on the san andreas fault which is considered the most vulnerable to such earth quakes. The last time such an event occured in 1989 it left 66 dead and 3, 757 injured. It only lasted fifteen seconds but the damage to property was indisputably large with the San Francisco Oklahoma Bridge collapsing. This damage went to the tune of 6 billion in property damage. The then United States president George bush issued a 3. 45 billion package that was to act as relief for the affected.

The effect could have been even more grave had there been a tsunamic effect. This would have resulted in flooding of the coastal towns sweeping away their homes and destroying their productive farms. The earth quake would damage the regions leeves bearing an effect similar to that of harricane katrina. The damage would even be worse after the earth quake as the flood water contaminates the fresh water supply that is mainly supplied though an over land aquaduct that would cost even more to repair.

It is estimated that at least 24, 000 homes were damaged and 100000 left homeless after the floods caused by snow melts hit sanfrancisco back in 1997. Up to 50 leeves were damaged (United States Geological Survey 1999, October 15) Even more compelling scientists from the United States geological survey suggest that there is a 70 % chance that at least one or

more earthquakes with intensity not less than 6. 7 will in the next 30 or so years strike San Francisco bay. This is equated to one that occurred in 1994, which left 57 people dead, and others wounded and caused destruction to the tune of $ 20 billion. (Seismological Society of America, 2008, April 17)

General effects of an earthquake

Earth quakes are categorized among the top ten most deadly natural disasters.

They have the following effects Shaking and ground rupture -This is the single most probable effect of an earth quake. The intensity of the shaking will depend heavily on the magnitude size as well as the distance from the epicenter. It will also depend on the geology of the area in question. Geological concerns go to the nature of the superficial soils in the subsurface of the earth. Landslides and avalanches -Landslides also bring along volcanic eruptions which may cause serious storms and wild fires. Landslides are specifically dangerous to both the affected and those who make attempts at providing rescue services. Fires – Shaking causes damage to power lines and gas pipe systems which are a remedy to massive fires.

The effects of these fires were typically felt in the 1906 San Francisco earth quake. The destruction by fire or any other human motivatied factor such as stampedes accidents and collusions would participate heavily to the increased casualties. These however will depend on the level of awareness of the poplation as well as the preparedness. Soil liquefaction – This is a situation where sand and other granular material owing to the saturation of water temporarily loose strength and dissolve into liquid making the

foundations upon which buildings and other rigid structures stand on to become loose causing the building to collapse or tilt. In the Alaskan earth quake the effects of soil liquefaction were immensely felt. This would however e an unlikelyeffect on sanfrancisco due to its geology. Tsunami – Tsunamis are often mistaken for tidal waves that rock the seas due to oceanic currents.

The mechanism behind tsunamis is much more different. A tsunami is essentially caused by unusual sudden movement of water volumes in the open sea. The sudden movements could be caused by an earth quake in the submarine soils as well as landslides Floods -Earth quakes that occur in the open sea cause a tsunami effect that leads to seeping of water from the open sea and into the mainland causing floods. Sanfrancisco would be hardly hit by these floods due to its proximity to the sea.

In the mainland they cause destruction of dams and water barriers leading to flooding. Human impacts -Earth quakes have a toll on every aspect of human life. They bring along a death toll besides the destruction caused to the infrastructure. They also cause disease owing to lack of necessities. Financially they lead to high claims for compensation besides the relief costs occurred in resettlement (The Virtual Museum of San Francisco, 2011).

Emergency Planning Options.

Citizen based approach

This a proactive and reactive approach which involves two basic components; Leadership which involves appointment is disaster management managers who will be vetted based on willingness aggression

and objectivity and partnership which involves embracing an integrated vision and mission and letting the community be part of the campaign The approach recommends the cooperation between government agencies and the people living in San Francisco. The government formulates a plan that requires the engagement of the people partially or as a whole.

Government departments such as the police accept suggestions and receive volunteers who are trained and licensed as local disaster managers. The people are collectively involved in the

The strategic approach

The approach collects together all available resources and coordinates manages motivates the implementation of the awareness campaign. It encourages the building of an integrated programming system e.

g., school based curriculum and emphasizes on capacity building and empowerment

Strategy Implications

The strategy adopted will among other things require the change of policy to accommodate the budgetary concerns of the implementation process. It will also require cooperation from all participants and interested parties including investors and development partners.

The partnership will help diversify the information platform and increase the level of awareness. The integration of the measures into the various programs such as the school-based curriculum will require training for the implementers who include teachers and administrators. (Interagency Coordinating Committee (ICC) 2008)

Way forward

With the objective of a better disaster management system the government should undertake in research to improve the understanding of the earthquake process its likelihood and impact. It should also develop cost efficient ways of combating the effects on individuals as well as improve the level of resilience in the population.

There is a lot of information available in the various sources concerning the effects and consequences of an earthquake. Every citizen should develop a need to know to ensure that they make informed decisions in areas such as construction development and investment

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