Human Factors	Physical Factors

TECTONIC HAZARDS

Explore: how the effective management of hazards is dependent on a range of factors.

Research: the management of a range of hazardous events in both developed and developing countries.

CASE STUDY: *Asian Tsunami 2004 - Thailand*

Level of economic development: *(Newly industrialised country)*

GDP US$: $395.168
GDP US$ per capita: $5,814.77
HDI: 0.740
Population: 67,959,359
Source: World Bank Data

Background Information

- On the 26th December 2004, a tsunami swept through the Indian Ocean, triggered by a series of earthquakes measuring up to 8.9 on the Richter scale.
- Thailand is a country that relies heavily upon tourism. Therefore as a result the death toll in the country was high as many tourism didn't know what to do in the event of a tsunami.
- No one surrounding the Indian Ocean had a real idea of if a tsunami had been created, or how fast it was travelling because they was not tsunamis warning system in place in the India Ocean.

Factors influencing the management of this hazardous event

Link to Model	*BEFORE (modify human vulnerability, modify the event, modify the loss)*	*DURING (modify the loss)*		*AFTER (modify the event, modify human vulnerability, modify loss)*
Parks (1991) Disaster Management Cycle (Warfield, 2008) Expand-Contract Model	*Pre-Disaster*[1] The Indian Ocean, unlike the Pacific Ocean had no tsunami warning system in place, meaning that it couldn't be known whether and tsunami was created by the earthquake. Many tourists accommodation was located immediately on the beach, with some being flimsy beach huts. As a result when the tsunami struck many people were immediately vulnerable, and with no sea defences the waves washed over the island.	*Relief*[2] The initial relief efforts in Thailand were complicated due to the fact that there were such a large number of people , injured or missing. Furthermore the impact of the tsunami was spread over a large number of villages, making it difficult to identify which areas were in immediate need of help. The emergency response following the disaster naturally focused on basic shelter, food and medical assistance as well as search and rescue operations. The Tsunami Victim Relief Centre was also set up to coordinate the relief efforts of all parts of society. The Centre provided a national and international phone line for information on missing persons, as well as a way that money and supplies could be donated. Local roads were repaired almost immediately in order for aid to reach areas that were cut off before. In the initial aftermath 30,000 people including military personnel and volunteers helped in the emergency aid, as well as 36 helicopters and 6 vessels provided by the Royal Navy.	*Rehabilitation*[2] Rehabilitation after the tsunami became a main focus, with overall government budget allocation for tsunami relief and reconstruction being nearly $1.7 billion. The government set aside $112 million of this money for immediate tsunami relief.	*Reconstruction/Mitigation*[1] In the future hazard mangers in Thailand have put in place better communication and warning systems, as well as evacuation plans. In 2005 the Thai government said that: - tourist development in the future should be limited to hotels built on stable structures rather than beach huts - total tourist accommodation on the island should not exceed 1,500 rooms However this proposals have been rejected by those on the island that rely upon tourisms for their main income. After the tsunami also, a Indian Ocean Tsunami Warning and Mitigation System (IOTWMS) has been put in place with help from the UN. In October 2011 a test was conducted, and within 2 minutes scientists received test and email messages about the activity.

DRE Disaster Risk Equation Degg Model, (1992)	*Frequency/magnitude of the hazard* In Thailand, tsunamis are not very frequent, with the most frequency natural disaster being floods.	*Level of vulnerability* Thailand is vulnerable to tsunamis due to the fact that in the Indian Ocean there are a large number of plate boundaries. Although Thailand doesn't lie on a plate boundary, the areal extent of a tsunami means that they are vulnerable to them. Furthermore in 2004 Thailand had no tsunami warning system which meant they were extremely vulnerable. Today though they have a tsunami warning system in place which has significantly reduced their vulnerability.	*Capacity of the population to cope* Thailand today is classified as a newly industrialised country, however when the tsunami struck in 2004 the GDP per capita was only $2,643.479, with much of the population living on low incomes.

1 Turner, Stuart, 2012, Tsunami protection in Thailand

2 Jayasuriya, S. K, and McCawley., P, 2010, The Asian Tsunami