

Tropical Cyclones in MEDCs & LEDCs: A Comparison of Mitigation Methods

Introduction

Tropical cyclones are known as hurricanes in America, typhoons in Asia-Pacific and cyclones in the Indian Ocean. According to Kovach et al (2003:108,112), their occurrence is often restricted to regions of latitudes 5° to 25° N/S, and occur most frequently when ocean waters are at its warmest in summer (in July to October in the Northern hemisphere, and in January & February in the Southern hemisphere).

Only the effects of tropical cyclones can be mitigated per se, as a hurricane cannot be stopped once it starts. The resultant hazards, like flash floods, can be mitigated through various measures undertaken by the government and the locals. A comparison of mitigation methods in MEDCs and LEDCs will be detailed below.

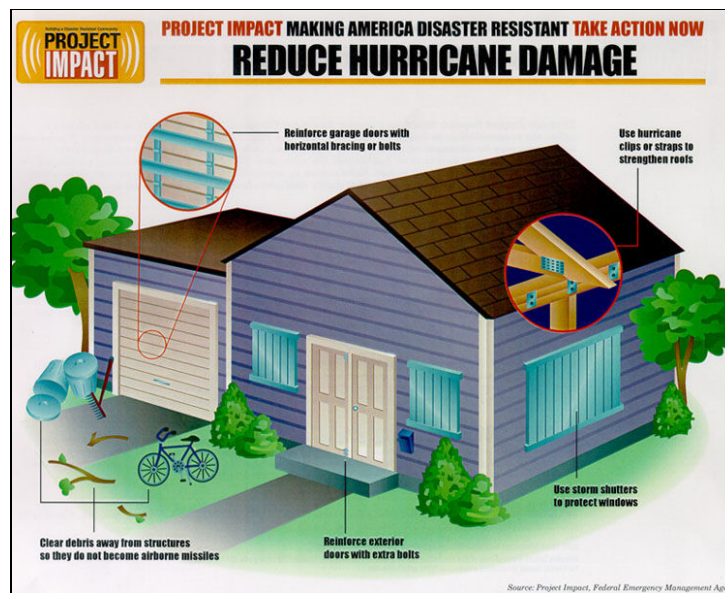
Mitigation in MEDCs

More Economically Developed Countries (MEDCs) that are affected by tropical cyclones include USA, Japan & Australia. Having greater access to funds for research and forecasting of tropical cyclones, they are at an advantage in terms of hazard mitigation.

According to Preece (2005), the best strategy in reducing damage by tropical cyclones is to manage the hazards, since predictions are often inaccurate and tropical cyclones cannot be stopped. Monitoring is done through satellites, monitoring centres and air surveys. Drainage conduits and

diversion canals can help manage flash floods through diverting water flow, while seawalls and breakwaters can protect coastal areas from the full force of the impact. Galveston, Texas, built a 3.5m seawall against storm surges which previously killed 6000 in the town. However, the cost of some of these measures is prohibitive for LEDCs to adopt.

The Hawaii Statewide Hazard Mitigation Forum (2007) has also stated measures that residents of Hawaii can do to reduce hurricane damage to their homes, with educational material provided by the US Federal Emergency Management Agency (FEMA). Educational efforts in MEDCs can also be replicated in LEDCs since they require less funding, but there are also funding issues LEDCs face in providing public education.



Sample material from Project Impact, FEMA, on how hurricane damage can be reduced through various measures. Image taken from website of Hawaii Statewide Hazard Mitigation Forum at <http://www.mothenature-hawaii.com/images/hurrdama.jpg>.

National Oceanic and Atmospheric Administration (2005) also details its mitigation measures days before the hurricane reaches land, where NOAA Copyright © 2008-2009. Woon Wei Seng. Distributed on Erpz.net

emergency operations and response teams help to bring ships into the Gulf of Mexico to prevent the ships from being hit by the hurricane. Such extensive measures require time and money for execution.

MEDCs also have the ability to attempt reducing the strength of the hurricane, a huge task requiring much funding and research. Kovach et al (2003:117) and AOML (2007) both discuss Project Stormfury: an attempt by the US NOAA in the 1980s to seed the hurricane eye-wall clouds with silver iodide to cool down the eye-wall and reduce wind speeds. However, several such attempts failed, and the project was discontinued.

Mitigation in LEDCs

Less Economically Developed Countries (LEDCs), in contrast, have lesser resources to invest in mitigation of tropical cyclones. According to Preece (2005), Bangladesh, being one of the poorest nations in Asia, has spent 45% of its development budget on disaster relief in 1988 – 1989 due to the frequency of tropical cyclones, leaving it with limited funds for investments in other areas like education.

In Bangladesh, mitigation efforts brought up by Noblett (2006) include broadcasting of cyclone warnings through the radio as part of the local disaster preparedness programme, though few locals own radios. Mangrove trees were grown along shores to protect inland areas from winds and waves stirred by the cyclone. Molnar (2005) cited cyclone walls that are built to defend against storm surges and provide quick evacuation routes during a cyclone, though they have been breached in the past. Cyclone shelters have

also been built 7m above ground against possible storm surges, and according to Noblett (2006) are built by Oxfam and also used to educate people on disaster preparedness. Such mitigation efforts are cheaper to implement though insufficient. For instance, the shelters built can only house 400 in a village of 15000.



Cyclone wall in Bangladesh. Photo taken from at <http://www.pitchford.com/bangladesh/>.



Cyclone shelter in Bangladesh. Photo taken from at <http://www.sullivan.net/images/Bangladesh/CycloneShelters/index.php?Title=Cyclone%20Shelters%20in%20Noakhali>.

According to The Financial Express (2005), cashew exporters in India have proposed planting cashew trees along the shoreline of India to act as a wall and windbreaker so as to reduce the impact of cyclones and tidal waves.

This is similar to what is being done in Bangladesh, but to be executed on a large-scale would be prohibitively costly, heavy on manpower and limited in effectiveness.

Conclusion

Essentially, many mitigation efforts span both MEDCs and LEDCs as they work together to reduce the impact of tropical cyclones and their hazards. According to the WMO (2008), the Severe Weather Information Centre website has been developed to allow public access to tropical cyclone warnings and their tracks worldwide. Also, Preece (2005) cited The Pan Caribbean Disaster Preparedness and Prevention Project as another example of cooperation, where USA helped poor Caribbean nations in mitigation efforts through technical aid and training for disaster procedures. Thus, global cooperation can often allow LEDCs to receive assistance in carrying out such mitigation efforts to reduce the loss of lives and property, even through simple means such as public education and warning systems.

(Word count: 802)

Bibliography

Atlantic Oceanographic and Meteorological Laboratory [AOML]. (2007). *FAQ: Hurricanes, Typhoons & Tropical Cyclones*. [Online] Available:

<http://www.aoml.noaa.gov/hrd/tcfaq/C4.html>.

Hawaii Statewide Hazard Mitigation Forum. (2007) *Mitigation Activities at Home*. [Online] Available:

http://www.mothenature-hawaii.com/county_hawaii/hurricane_what_can-hawaii.htm#.

The Financial Express. (2005) *Cashew trees along shores can check cyclones*. [Online] Available:

http://www.financialexpress.com/old/fe_full_story.php?content_id=80301.

Kovach, R. & McGuire, B. (2003) *Philip's Guide to Global Hazards*. UK: Philip's.

Molnar, M. (2005) *The 1991 Bangladesh Cyclone and Its Impacts on Flooding*. [Online] Available: <http://www.uwec.edu/jolhm/EH2/Molnar/mitigation.htm>.

National Oceanic and Atmospheric Administration [NOAA]. (2005) *NOAA's hurricane assistance spans multiple levels – before, during and even after the storm*. [Online] Available: <http://www.magazine.noaa.gov/stories/mag183.htm>.

Noblett, P. (2006) *Tropical Cyclones in Bangladesh*. [Online] Available: http://www.geogonline.org.uk/cep_bang_cyc.ppt.

Preece, D. (2005) *Hurricanes*. [Online] Available: <http://www.pupilvision.com/upper-sixth/hurricanes.htm>.

World Meteorological Organisation [WMO]. (2008). *Severe Weather Information Centre*. [Online] Available: <http://severe.worldweather.org/pilot.html/>.