Housing for Safety and Governance

SYED ASHRAF
Communication Media Specialist
Disaster Management Bureau

FIRST PICTURES OF STORM DISASTER

HERALD CHICAGO EXAMINER

1,000 DEAD, 3,000 HURT LATEST TOLL OF TORNADO

In the Twinkling of an Eye, Murphysboro Was No More

The Oklahoma Institute of Disaster and Emergency Medicine

- "The United States averages about 1,200 tornadoes per year. A distant second is Canada, with around 100 per year. Other locations that experience frequent tornado occurrences include northern Europe, western Asia, Bangladesh, South Africa, far eastern Asia and Japan, Argentina, Paraguay and Southern Brazil, Australia and New Zealand. ..... Bangladesh and the surrounding areas of eastern India suffer from tornadoes of equal severity to those in the United States. These tornadoes are often under-reported due the third-world reporting biases. In Bangladesh, there are about 180 people per year killed by tornadoes. This high number may be due to a high population density coupled with poor construction practices, and local lack of knowledge about tornadoes and tornado safety."

- Fujita (1973) showed a map of worldwide tornadoes, and it pinpointed some areas in Bangladesh. It also showed the relative intensity of the strongest tornadoes, and the tornadoes in Bangladesh were ranked as strong as F-4. According to Fujita's map, no other places were ranked as stronger than F-3 except the United States.
- Tornado Intensity Scale in Bangladesh

Casualties of disaster

- In the cyclone prone areas, field sources have also commented that the dangers of flying roof sheets discourage people from leaving dwellings to go to shelters, In 1991 three people were killed in this way at Bakerganj; as the embankment was not overtopped at this position, they would probably have survived the cyclone otherwise.
- Same in Nargis of Myanmar
- Improved construction would reduce this risk and at the same time make it less dangerous to stay at home.

- The study of Social Assistance & Rehabilitation for the Physically Vulnerable (SARPV) in the Tornado affected areas of Saturia, Manikganj found that out of the 1,516 people who had suffered serious injuries, 135 people became permanently disabled for life. In another study, also by SARPV, was conducted in Chakaria sub-district, Cox's Bazaar following the devastating cyclones in 1991. This second study revealed that a total of 799 people became disabled directly as a consequence of the natural disaster only in Chakaria. Most of the deep cutting injuries resulted from flying objects, in almost all cases, corrugated iron (tin) sheets from the households.

Corrugated tin vs Relief Material

- May 13, 1996, a disastrous tornado ripped through north-central Bangladesh, killing more than 700 people and injuring at least 33,000 in a 20-minute outburst of destruction. The 125-mph twister tore through 6 thanas, 16 unions, and 80 villages of the Tangail District. After the devastation officially distributed eight pieces of corrugated tin to roof houses and a cash disbursement .....
- Also all houses built by the NGOs are of the corrugated tin is used as roof material and bamboo for the walls

After the Tangail Tornado

- ..... at the Gopalpur study site, only 28% of households had tin roofs prior to the tornado's devastation. Afterward, however, the percentage increased to 84%. In the Basail study site, the percentage of respondents who owned a house with a tin roof increased from 51% (pre-tornado) to 75% (post-tornado). *Nearly about 49% of all households in Bangladesh have tin roofs*

- in the northern districts of Mymensingh and Netrakona in the evening of 14 April 2004, killing at least 76 people and injuring over 3000. Hospitals are inundated by victims seeking treatment for injuries with some beds holding up to three or four patients while many more were treated in the corridors. Most injuries presenting at the hospital are a result of the storm hurling people into the air while others were hit by flying debris. After the disaster the officials allocated 200 MT of rice, 2000 bundles of corrugated iron sheeting for the victim.

Tornado death toll rises to 65
BSS, RANGPUR Mar 26:

- The death toll rose to 65 as four more persons succumbed to their injuries during the 24 hours ending at 6.00 pm today in the tornado-hit areas of Gaibandha and Rangpur districts, ...
  Reconstruction of damaged houses are going in full swing in the affected areas of the two districts under the supervision by the ministers in charge of the districts, and administrations. The government has so far allocated over 4,000 bundles of corrugated iron sheets (C.I sheet), Taka 20 lakh, 400 tonnes of rice and other goods for the affected people. The allocations are being increased everyday.

- In the case of tornado hazards regional differences in the death rates could be caused by differences in tornado severity, urbanization, building construction, preparedness, hospital facilities, warning systems, and the distinctive behavioral characteristics of individuals. Females might have higher death rate than males in some cases.
- From disability concern, first of all we have tried to make people and policy makers understood not to allow the C. I. sheet (tin) in the disaster prove area. Though at the beginning it was quite difficult to make them understood about the terrible affect of tin on human lives but last of all we have succeed in this regard and also succeed in prohibiting poor people to make their houses with tin.

- After the Cyclone of 2nd May 2004, it was observed that the higher fatality rate of Rohinga Refugees at the Teknaf Coast was owing to flying objects of corrugated iron (tin) sheets from the refugee camp.
- In 4th June 1994, DG-DMB wrote a policy letter to the high authority and also to the district officials that is essential to prohibit the community for making their house with CI sheet.
- In Andhra and Madraz Cyclone prone coastal area, it is also prohibited for using CI sheet for house construction.
- DG-DMB also proposed for not being distributed corrugated tin for roof by the relief agencies.
- 9th June 1997 the UNDP ARR of Bangladesh wrote to PRISM Bangladesh in relation of UNDHA assistance for the post-cyclone Housing Rehabilitation Programe in Moheshkhali and Kutubdia that there are evidences of CI sheets can be major damaging element at times of cyclones. “We would appreciate your reviewing this option with alternative roofing materials.”

Governance issue

- The majority of rural structure of Bangladesh are non-engineered and this group remains outside the BNBC Code coverage.
- Collapse of this category is responsible for the majority of loss of life and injury
- The question of mitigation of vulnerability cannot be address properly without reducing the V of NE structure to extreme wind.
- Any improvement their resistance would significantly contribute to minimizing loss of life and injury.
- Especially for rebuild the houses, the reconstruction must continues with a renewed sense of awareness, of the perils of sub-standard roof construction

Core and Sustainable House building Policy

- After the damages of millions of houses by Cyclone SIDR, the Government of Bangladesh has accepted that it does not have the resources for such an enormous undertaking and is therefore adopting an enabling approach for the provision of improved housing within a national housing policy for the SIDR affected community.

Change initiatives

- Previous initiatives to improve domestic construction in Bangladesh have mostly focused on the use of non-traditional materials such as reinforced concrete or steel framing. This implies an inadequacy of traditional materials whereas the real need is instead to improve traditional construction methods.

Cyclone-resistant traditional building technologies have been largely neglected for the following reasons:

- The major cause of damage and death in cyclones has been the accompanying storm surge; non-pucca construction has been swept away regardless of its quality.
- Embankments have largely failed to protect homes either because they did not exist (1970) or were insufficiently maintained, and
- There is a tendency to spend as little as possible on domestic construction since the investment is likely to be washed away in the next storm surge.

- Poor communities, especially those in vulnerable situations and exposed to hazards, are reluctant to take risks with new and unfamiliar technologies. Demonstrations through pilot projects are needed. New technologies used in institutional or community buildings often convince local communities of their merits. Example: housing project in Zambia.

CGI roofing

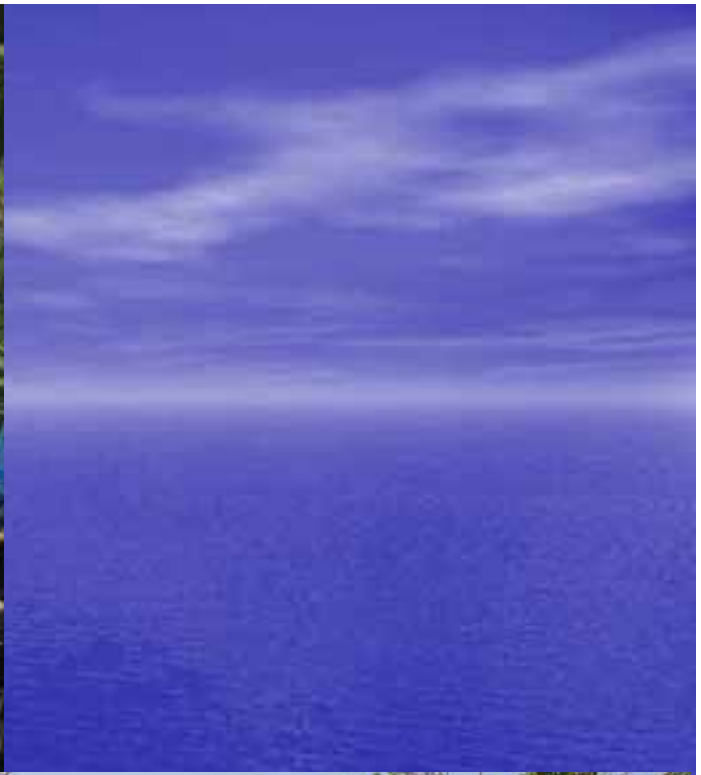
- CGI (Corrugated Galvanized Iron) sheet has been used in the construction of domestic buildings for more than 150 years. It is becoming widely used in Bangladesh because of its convenience, as an expression of comparative wealth and because it is often distributed as a relief or reconstruction material after cyclones, tornado and floods.
- The distribution of roof sheeting for commercial or relief purpose should not occur without accompanying advice on wind-resistant fixing techniques. It is essential to improve fixing techniques for CGI and other metal to reduce damage for detached roofs.
- **CI Sheet:** Locally made sheet is thin and weak, giving poor thermal insulation.

Rural Housing Model-since 1980s

- Housing Model being constructed in the natural hazards areas LGED Models
- Grammen Bank developed its own design for a house during the devastating flood of 1987. This has four cement pillars at the corners and CI sheet roofing on a wooden frame.

Building for safety

- The objective of a Building for Safety programme should be to promote community self-reliance and to create a culture of safety. There is no need to make major changes in building technology; indeed this should be resisted, since Bangladesh and many other hazard-prone countries are littered with failed projects that aimed for fundamental changes.
- Rather than physical changes in technology, the objective should be to create a team of experienced local builders and craftsmen.




CYCLONE RELIEF
VOLUNTEER

The traditional approach to safe building

- In most countries standards and regulations ignore the realities of how people build. Credits and finance schemes are orientated to the middle classes and thus can exclude the poor. Housing projects and programmes seldom have much long term effect.

- Letting people take the decision to innovate; Those who aim initially for perfection may easily fail to achieve even a good outcome.