LEARNT TO LIVE WITH FLOODS- THE DHEMAJI STORY

Raised houses –The agrarian society have always settled on the banks of rivers for the fertile lands and the water available; though this may have been to raise food and sustenance, the location of shelter also shifted to the river banks and flood plains of the river. Due to various environmental and man made reasons over a period of time, water started entering the homes of people and great damage was done to life and property. The "village university" of the Assamese Mishing tribe started its own research ages ago and arrived at such a practice that has sustained more than centuries now- the "sang ghaar".(houses on raised platforms).

Nilima Basumatary of Molan village under Simenchapori Gaon Panchayat of Jonai Block in Dhemaji district of Assam talks of her village and her own home, which is, raised more than 12 feet on wooden stilts. Her family of 3 male members and 7 female members experience floods every year but are saved from water because of the height of their house. A practice of coping with floods and a method of minimizing the damage caused by floods, these houses are built on raised wooden stilts. Sometimes strong bamboo variety (Bholuka) is also used for the pillars (stilts); the platform is made of timber or bamboo matting/weave. Some families also make cement concrete pillars (stilts) and use CGI sheet roofing. Roofing is either thatch or CGI sheet and is always sloping .The selection of wood is also done in such a way that the timber itself contains bitter oils in it.

Reason how the practitioners evaluate the effectiveness of these houses. The houses are saved from ravages of flood. The wear and tear of the houses is less and repair and maintenance intervals are long. If these houses are made of timber (stilts and platforms) instances have been seen that they stood for more than 40 years without major repairs .The belongings are safe from the high moisture content of the otherwise mud houses. During floods as the people and children do not come in direct contact with water (flowing or stagnant) they are safe from various health hazards. Even the livestock are saved during the flood period as they are shifted to the sang ghar. Apart from floodwater, even if there is sand deposition these houses are safe, The children can continue to study, the pregnant, elderly, disabled and sick are safe from drowning and other concommitant dangers. The house of Sri Mukheswar Chungkrang , aged about 32 years of Kashinath Chapori located in Semienmukh Gaon Panchayat with a family of 5 male members and 3 female were saved from the disastrous floods of 1998 even when the entire village was drowned . He has a saang gharof nearly 6-8 feet high. Mr Chungkrang and others of the community feel that though the cost involved in the construction of the Saang Ghar is slightly on the higher side compared to the houses made on the ground (Maati ghar), the sustainability of such houses for a longer periods and less wear and tear makes it cost effective in the long run; Over and above that, the indigenous knowledge of construction of such houses are with the community .In their opinion, close accessibility to fertile land and river water for irrigation , riverine fishery and water source as such is only possible because habitation near the rivers. In the absence of such adaptations and ingenuity, the community would have had to migrate in search of greener pastures and shift to relief camps. The Mishing community in the plains of Brahmaputra river basin extensively uses these houses. The main concentrations of Mishing people are in the Dhemaji, Lakhimpur, Majuli, and Sadia areas of Assam. This practice has also taken the form of tradition. Even if Mishing people do not live in the flood plains, they build saang ghars and ceremonies of birth, death and marriages are not complete without a saang ghar. Gradually these types of houses are

adopted by the other tribes like Dewris, Bodos, Ahoms etc. on need basis. The traditional rearing of pigs ensures cleanliness. The food wastes are dropped from the raised floor to the ground below which is devoured by the pigs and the pig droppings are used as agriculture manure. The silt is fertile which ensures good crop. During floods, the food wastes are fed to the pigs sheltered on one portion of the 'saang ghar',other effluents are washed and carried away by the floodwaters.

Flood control storage may be one component of a multi-purpose reservoir development. Over time the operation of the reservoir could be altered to enhance other beneficial uses of storage to the detriment of flood control. A commitment to "designated flood storage" and to reservoir operation procedures to achieve that storage is needed.

Inspection, rehabilitation and maintenance

Structural works require a periodic and systematic inspection, rehabilitation and maintenance programme to ensure that the design capabilities are maintained. For example, levees may be subject to weakening due to erosion during a past flood event, by the actions of burrowing animals, or the construction of utility lines through the levee. Of particular importance is an inspection programme and responsibility assigned for rehabilitation and maintenance.

Structures such as dams should be subject to a dam safety programme, usually at the national level, to ensure that the specialized expertise required is available for the inspection of all structures. Dam safety programmes are carried out in many countries and standards or guidelines are readily available.

Flood proofing of new and existing structures

Any new construction permitted in the flood plain should be flood proofed to reduce future damages. Building codes can be developed that minimize flood damages by ensuring that beneficial uses of buildings are located above the design flood elevation. For example, buildings can be raised above the design flood level by placement of fill; stilts or piles used to elevate the structure; and building utilities can be located above the flood level (see Figure 11). Ground floors can be designed in a way that little flood damage occurs through use of masonry materials and specifying that contents must be removable.

If any new development is allowed within the flood-prone area, then the impact of that development must be taken into account to ensure that flood levels do not rise significantly due to the additional constriction to flow. Hydraulic analyses can be undertaken to ascertain the impacts of potential activities and to keep the rise to within acceptable limits.

Flood proofing of existing structures is difficult and expensive. One successful strategy is to link flood disaster assistance available after a flood event to methods of reconstruction that minimize future flood damages. This approach often requires additional funding over and above a payment for damages, but can be cost-shared between various levels of government and the owner. This strategy is particularly useful when flooding is frequent and future disaster assistance can be expected as part of disaster policies.

Flood proofing of existing structures can include raising of structures to prevent damage, relocation of utilities, changed building use, installation of protective walls and waterproof closures, and use of materials that are not damaged by water and can be easily cleaned after the flood event. Relocation of existing buildings and structures to an area that is not flood-prone is also an option.

Buyout and relocation programmes for a particularly vulnerable development should form a component of flood proofing initiatives. In many cases it may be more economical to buy out and relocate the existing use than to protect it.

Figure 11

Flood proofed dwelling

Photo: Environment Canada

A number of critical services such as water lines, power pylons and telephone services often cross the flood plain. These utilities can be protected against the ravages of flooding at relatively low cost through additional depth of burial, a higher design standard for exposed components, and raising of components above design flood levels.

Water supply and treatment plants are particularly vulnerable. They are often located on the flood plain yet are critical for the protection of human health during and after a flood event. Such structures need to be protected against extreme events and designed to prevent cross-contamination from floodwaters or sewers.

Bridges and roads

Bridges generally constrict the flow of water, and they can act as artificial dams if debris jams on the structure. In all cases, their hydraulic characteristics must be considered at the design stage to prevent an unacceptable rise of water levels upstream of the structure.

Bridges are important in terms of maintaining access for evacuation and delivery of medical and other emergency services. Key transportation corridors should have high design standards that will withstand extreme flooding events. However not all bridges require a high level of protection, and the design criteria can be to a lesser standard that takes into consideration the possibility of overtopping.