

## RESULTS

The findings of the formal and informal survey processes are combined here in an analysis of the workshops' impact and socio-economic context. An argument is made for attending to the lessons and recommendations arising from the study, in order to realise the workshop process's full potential.

### Survey summary: The participants have been slow to act

The impact assessment revealed that the rate of implementation of workshop ideas by participants has been disconcertingly low. A number of issues need to be addressed if the workshops are to achieve their objective of reducing hazard vulnerability in the community.

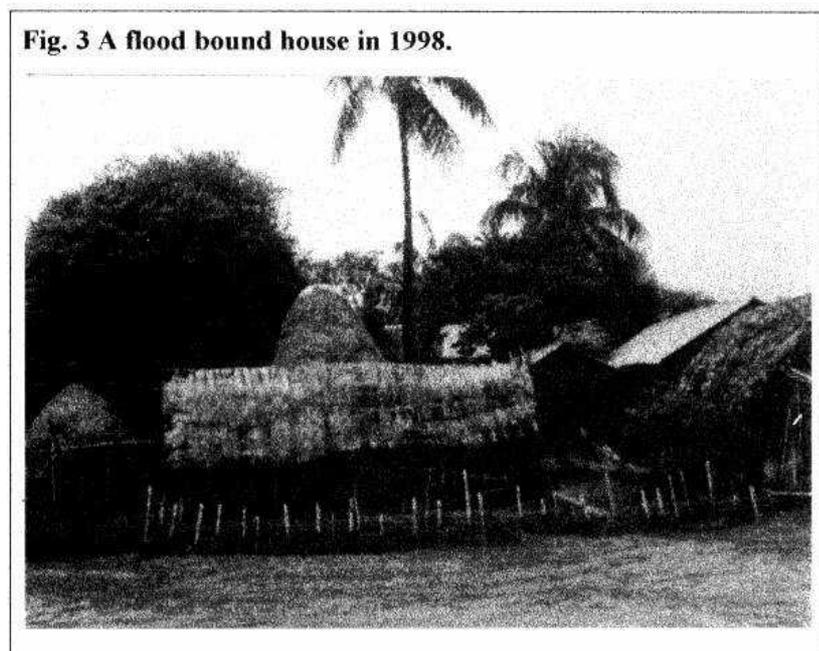
- I. Firstly, a greater understanding of poverty is required. The study has suggestions for ways of negotiating a way forward within a resource-scarce environment.
- II. Implementation of building improvements is impeded by causes of inertia other than poverty alone. To overcome these, activities must be sustained beyond the workshops themselves.
- III. The role of women in home-building and maintenance.

### Poverty : A persistent bar in the path of progress

There is a slowness to act upon building needs in general. Many of the workshop participants commented that building is undertaken only when it becomes more than necessary :

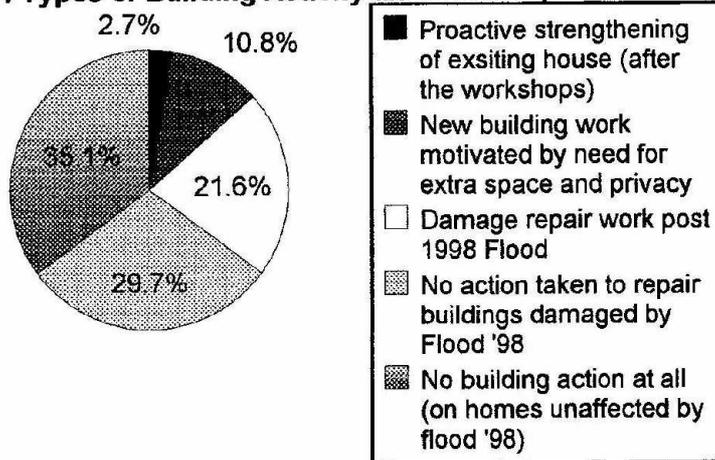
***"house improvements or repairs are not necessary unless our houses have been damaged or worn out"***

Given this prevalent attitude, it was unsurprising to find that people had not taken action to make their homes more hazard resistant before disaster struck.



Although it was not as devastating there as in other parts of Bangladesh, the 1998 flood was unusually severe for Dinajpur district. The impact was felt by workshop participants, one half of whom reported damage to their buildings. Yet, despite the participant's comments reported above, slowness to act has continued even after the disaster: the majority of participants have not yet made any repairs to their homes, even four months after the event.

**Fig.4 Types of Building Activity and Inactivity**



Once the floods and rainy season have passed, people can usually expect that significant rain will not come again until the following year's rains. This could explain why some people feel in no hurry to make repairs, especially on buildings considered less essential than the main living/sleeping house. However, in some cases even those important buildings remain unrepaired. An example is that of one participant who, at the time of the study, was living with his family in their small kitchen house. He lives a hand-to-mouth

*Fig 5. Winter in northern Bangladesh can be a bitterly cold experience...*



existence and was unable to find the money to rebuild his living house destroyed by the '98 floods. The winter in north west Bangladesh which follows the rainy season can be a bitterly cold experience, especially for those without decent shelter. It is not for lack of suffering that this participant, like others similarly placed, had not been spurred into action. The reason is poverty.

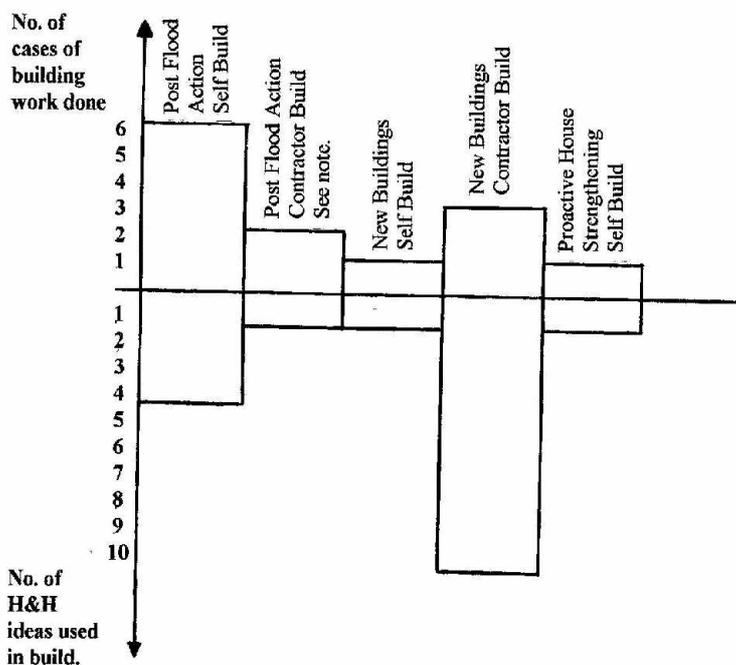
An essential part of Housing & Hazards' future research must be to investigate more closely the reasons why people do not get on quickly with building. This is an important key to understanding why so many participants are not taking the further step of making the kinds of improvements advocated by the H&H workshops.

Of those few who have started some remedial construction, only three of participants used one or two of the workshop ideas each. One participant who had not used any of the ideas in his repair work explained :

***"It is hard for us to rebuild after the floods because there is not enough money. Therefore, people can rebuild only in a poor way - repairing enough just so that we can get by."***

Even one of the workshop demonstrators, although well disposed towards H&H ideas, struggled to implement them when building his own house. The living house of his homestead had fallen down; being a day-labourer, he was building the new home bit by bit as money came in. Meanwhile, he and his wife were sleeping outside and winter was advancing. On days when he had enough money, he would stretch it to use H&H ideas such as painting bamboo pillars with tar to ward off insects and rot. When money was short, he put in pillars without treatment. The need to complete the house so that he and his wife could sleep in warmth and security was a greater force than any thoughts of waiting for a few days to accumulate the funds to make the house more durable.

Being aware of these economic pressures facing families after disaster, H&H had expressly sought to encourage participants to make housing improvements long before hazards strike. However, the survey suggests that only the better-off could respond to this encouragement. The few cases where participants had enthusiastically put several workshop ideas into practice were new building projects and not responses to hazard damage or dilapidation. Typically, those participants had ready cash available at the time of building - enough to afford the extra cost and even to employ builders.



Note: Both Widow Headed Households with no able young men or women

Perhaps it can be said that none used as many H&H ideas as the demonstration building which was constructed at the end of the workshops. The survey also indicated a reason for this. When asked whether poor people would be willing to spend the little extra needed to make their homes strong "like the demonstration building", only one gave an unequivocal 'yes'. The majority said that the extra materials required (i.e. a few bricks, C.I. sheet, bamboo, wheat straw thatch, a small quantity of tar and a handful of nails) would be too expensive for poor people. The demonstration house was



Fig 7. The Workshops' demonstration building, built as a sewing training centre

described by one person as being "like a rich person's bedroom". Another described it as being "equivalent to four houses built in the general way". The demonstration building is relatively large (18'x12') because it was intended for communal use as a sewing training centre. This seems to account for participants' views that its cost would be beyond the means of a poor family, even though the workshops emphasized a budgeting exercise in which the marginal cost of the improvements was clearly seen to be a mere 8%. This attempt to demonstrate long term gains by spending a little extra initially seems to have been unsuccessful.

Building work requires a significant outlay of cash for what is effectively a non profit making exercise in a cash scarce situation. Consequently, building is not a prime target for available cash and it is typically left - if done at all - until it becomes unavoidable. A number of factors combine to make building work impractical:

- After a hazard event, not only houses, but also crops, assets and health have been damaged. People, especially those who rely on day-labour earnings, will have suffered a long period without income. Consequently, the post-hazard period is one of extreme financial hardship, and people's priorities are concerned with re-establishing an income and getting by until another crop can be planted and harvested.
- The post hazard period is also wintertime, in which rain does not usually fall, and when forced by circumstance, people try to get by without all the shelter and shade that they would otherwise need in the heat and rain of summer.
- It is also only by the time that winter ends, that building mud is available. This mud is derived from the bottom of ponds and river sides which have dried out over the winter.
- Winter time is also a lean season in which the prices of summer rice and other commodities are driven high by the stock-storage and trading business in which both poor and well off people are involved. Consequently money is even less readily available for building. When people are able to start concentrating on rebuilding or making repairs, the poorest, and therefore those most vulnerable to hazard, find it a struggle to carry out building work. Many said that making the additional effort to include the improvements and innovations advocated in the H&H workshops was beyond their financial capability. H&H seeks to promote the 'marginal' costs associated with such improvements as 'affordable', but within the complex constraints of home economics, it is difficult for anything to be seen as affordable.

Most rural families have a fragile economy. Daily income varies with the seasons, weather, health and many other factors. Today's income can be as unpredictable as tomorrow's, never mind next month or next year. All income is immediately accounted for several times over by competing daily needs, and 'marginal costs' or 'long-term benefits' have little relevance. Even a workshop facilitator explained that in pondering the rebuilding of his kitchen, he and his wife are already arguing over how they can afford

the time away from earning to do the building. Money for 'extras' is beyond the point.

This was the environment in which the field study found that very few of the H&H workshop ideas had been implemented, except for by those members of the community who were generally better off. This was despite the fact that it was clear from the research that the H&H workshops and ideas were popular among the participants. From the observations gathered in this study, it is becoming understandable why this is so. The incomes of the poor with whom we are concerned are characteristically:

- difficult to project
- periodical and seasonal
- without guarantee
- health and weather dependent
- over stretched.

The study findings highlight the need for better understanding of rural economies, of the dynamics of household resource management in a resource-scarce environment and of how hazard-resistant building can negotiate a way forward within these constraints.

### **A brief look at village economics.**

People in Sundarban describe their economy as being "hand to mouth". There is a hierarchy of poor to whom this applies: the homeless; the functionally landless; families with less than an acre of land; families with a little more land than one acre, but not enough to provide income from which to make substantial savings. (A family of 4 adults is said to need 5 acres to provide surplus.) Typically, all families will try to increase income by engaging in forms of income generation other than farming. Activities that can commonly be employed in a village setting include:

- rearing chickens in order to sell eggs, meat and chicks.
- rearing goats for the sale of meat and kids.
- rearing cows for the production of milk, meat and calves.
- selling ploughing services using a team of two bullocks.
- selling day labour.
- share cropping.
- small pond pisciculture.
- stock storage and trading.
- working for a business (e.g. a credit union) or a trade.
- working for an NGO for an honorarium (approx. 700 Taka/month) + allowance (approx. 1 - 2000 Taka/month), or salary (6+ thousand Taka/month). (80Taka == £1)
- hiring out assets such as pump sets for irrigation.
- setting up a small business (e.g. a tea shop, grocery market stall, basket making, ironing, tailoring, blacksmithing).

The rearing of animals is usually undertaken by women of the household. Income from such activities is seen as away of introducing the reliability of a frequent, albeit low level of earning into the family pot. Women are also now recognised as being the members of the family most likely to engage in long term savings. Their interest is typically in saving for the education of their children, which they hope will result in employed, well-paid offspring who can provide for the family when their parents have become old. Parents see education as being a means for a better future for their children, and

**Fig. 8 Aspects of Rural Livelihoods.**



also a pension scheme for themselves. This was the longest-term view of savings which was noted. This ability or interest to look at such far off horizons is an exception to the general attitude to home economics. To save money is a physical difficulty, even where there is surplus to be kept. Families cannot easily keep money in their homes, and banks are not available in villages. Some savings schemes do exist, such as those held at village NGOs, but are often attached to a particular savings objective, e.g. education.

It is more common that savings are converted into investment, such as buying a small animal, which will produce money in itself, and can be sold if savings must be released. Whilst such an asset is producing income, there is an obvious reluctance to exchange it for money, unless there is a very good reason for doing so. Sometimes, pressing and unforeseen circumstances can come about, which mean that the asset, and the savings objective for which it may have been kept, must be forgone. A typical and frequent circumstance is illness. The cost of medicine and consultation with a health practitioner (whether traditional or conventional) can be crippling. Poor families at the higher end of the poverty hierarchy can be reduced to destitution because of costs associated with illness. In less extreme but nevertheless common cases, families often lose their assets in order to pay for over priced and mis-prescribed medicines for common ailments.

‘Savings’ in the form of profit made from the sale of a relatively large item such as a harvest produce, are also often converted quickly into an investment. The time frames of which people spoke for this conversion is around three weeks. In order to make an investment requiring even larger sums (and therefore longer periods for accumulating those funds), it is more usual that people get involved in taking out credit,

Credit, as the workshop participants confirmed, is largely considered an unpopular or "bad" thing but it is often engaged in when people have a specific profit making activity in mind. For poor families, it is difficult to raise and stabilize their incomes unless they can start an income generating project. But in order to buy ploughing animals and equipment, or to set up a small trade, capital injection is required, usually in the form of loans which are difficult for the poor to service. Again, when illness or disaster strike, repayments may become impossible, with families finding themselves locked into severe hardship. Credit is widely available commercially through money lenders and credit unions, but also through NGOs. Credit schemes are now seen by NGOs as a way of making money for the

organisation, at a time when they are being pressurised by funders to show that they have their own income generation capabilities. Some NGOs offer little service, in practice, other than credit, and are in effect loan businesses. NGOs such as that in Sundarban, who previously ran savings schemes, are now running savings schemes tied to credit programmes. Some NGOs are also providing credit for non income generating activities, such as house building. Despite low repayments packages over long periods, and judging from the loan-financed houses seen in Sundarban, it is likely that these schemes will run into trouble since it is doubtful that the houses will remain standing for the duration of the repayment period.

Credit, despite its unpopularity as a "bad thing" and its risky consequences is becoming part of the economic culture of the poor and of the NGOs that serve them. H&H and organisations taking a similar poverty-focused approach to housing must take care not to be swept up into a mode of economic aid, which especially for non-profit making activities, has questionable sustainability.

### **Help with building materials : contradiction or complement to the H&H approach?**

Provision of building materials appears to be a departure from the H&H commitment to self-help solutions. Moreover, past failures of material distribution programmes have provided graphic warnings of the problems to be surmounted in avoiding a dependency culture. It is now seen as good practice in many sectors that beneficiaries should bear some of the costs of the 'aid'. However, with so many development initiatives now demanding contributions, the poor are sandwiched between the competing demands of essential facilities such as water, education, health care, sanitation and shelter.

Although each aid initiative sets its costs within the beneficiary's ability to pay, the cumulative effect is that even the marginal costs of H&H improvements lie beyond the means of the poorest sector of the community. Given the pressures on family incomes that have been seen in Sundarban, perhaps some kind of material assistance for hazard-resistant housing may prove worthy of consideration. Some people also remarked that organisations which conduct motivational programmes exhorting people to implement ideas but which do not fund the advocated actions, lack credibility.

Several people offered carefully considered opinions about what more could be done to help people make their homes more hazard-resistant. They called for very specific help with building materials which would be tailored to facilitate implementation of particular H&H ideas. Suggestions included :

- Provision of good quality wire for making bamboo joints and for the 'kata' process (cutting mud walls to control cracking);
- Tar and brushes for treatment of bamboo poles;
- Rice-husks for mud wall building;
- Bricks and cement for forming the 'dhari' (outer part of the mud plinth)
- Loan of compaction rammers for building more robust mud plinths.

Participants were also keenly aware of the pitfalls of material provision and of how pressure on daily incomes could lead to misappropriation of resources intended for housing improvements. An essential recommendation came out of their comments:

**Specifications for assistance should be made so that it will not be tempting for poor people to sell the designated materials and so that materials (or quantities thereof) should not be too attractive to a market of marginally better-off people in the surrounding community.**

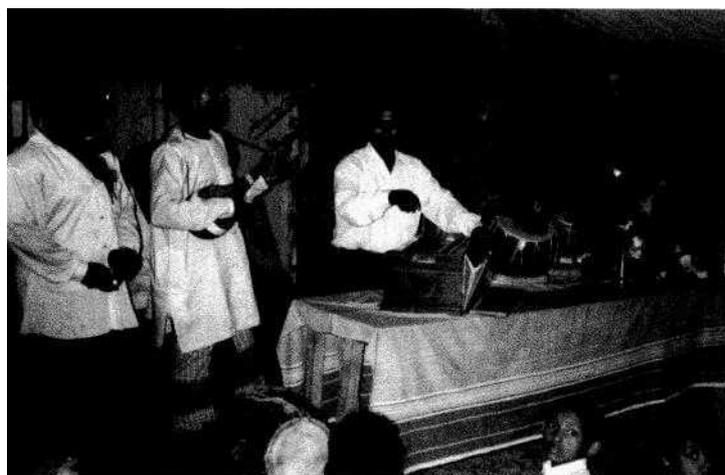
This recommendation can be met by keeping the distribution of materials tightly matched to the implementation of workshop-sanctioned improvements and activities.

The success of a materials provision programme such as this will hinge on one crucial factor: the presence of a field worker who can procure and distribute the materials justly. The H&H programmes initially relied on a local partner to host the workshops and later to conduct the follow-up activities. However, it turned out that the H&H objectives for the use of the resources did not tally with those of the local partner. This indicates a need for independent field staff who would ensure that assistance could be specifically tailored to the needs of the target (neediest) beneficiaries. Such field workers, responsible to H&H, would also provide the basis of effective monitoring and accountability structures.

### The need for follow-up activities

Recognising that participants would need to draw support and inspiration from one another as

Fig. 9 The song team commissioned to publicize the H&H workshops and ideas.



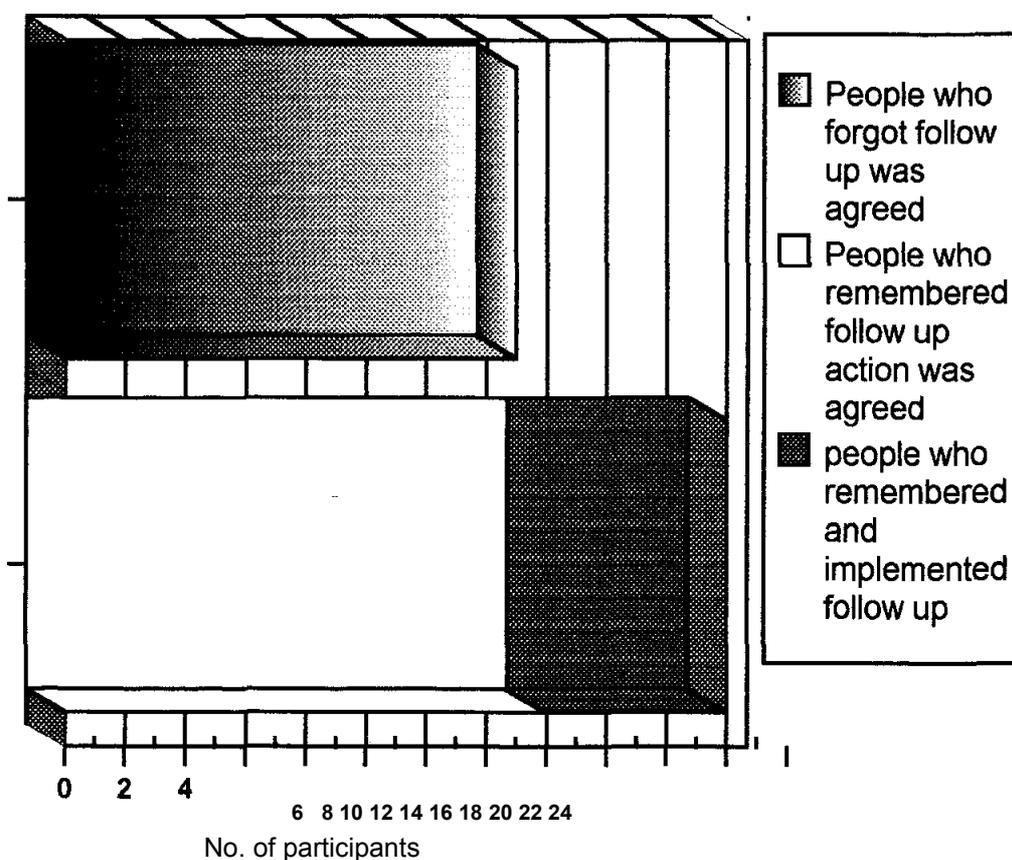
they started to put workshop ideas into practice, the first H&H project arranged for follow-up activities during the ensuing building season. The local NGO partner agreed to host further workshops; a song team was commissioned to publicize the work; tar would be provided for bamboo treatment and advice would be given by the workshop facilitators- However, as no single person was made responsible for the coordination of this activity, the plans were slowly forgotten. Without someone to nurture the process of hazard mitigation stimulated by the workshops, it could not survive.

It had been hoped that the participants themselves would be the sources of a spread of enthusiasm for H&H ideas. This had been discussed and agreed with the participants at the end of the workshops. However, of those who could recall making this commitment, nearly all had to admit that they had not put it into practice. They commented that as their houses had not fallen down they had not had to rebuild and so had not been in a position to spread the building for safety messages. Several respondents called for a community-based motivator. They explained this need with comments like

*"I'm only a little person -people don't listen to me".*

There is clearly a lack of personal confidence among the poorer people which inhibits them from taking the sort of leading role envisaged.

**Fig. 10 Level of recollection & implementation of follow up activities agreed by participants.**



The study has also found a lack of confidence about certain ideas which had been explored during the workshops. Without reinforcement of the original messages, participants were beginning to get muddled about what ideas had been covered. Many could remember that particular methods had been discussed but could not recall the 'nuts and bolts' details that would enable them use the techniques to good effect. This vagueness would also reduce confidence in implementation of ideas.

Fig. 11 Summary of ideas retention among the 40 participants.

H&H idea covered in workshop	No. of people holding idea in upper memory	No. of people holding idea in lower memory	No. of people indicating a good understanding of principle of the idea/ exercise.	Comments.
Weak house plus hazard = disaster.	1	0	1	The hazard + vulnerability = disaster paradigm has not been adopted as a motto/ catch phrase.
Ball test	2	4	1	Poorly remembered.
'kata' process.	6	5	5	Poorly remembered.
Building walls with mud only.	3	18	11	Popularly remembered.
Building walls with mud and sand.	6	15	6	Popularly remembered.
Building walls with mud, sand and rice husk.	26	6	22	The participants were unable to recall the ratios of the materials which were found to have the best durability results.
Mixing the mud mixture with the feet.	3	4	0	Poorly remembered.
Cross bracing.	13	9	0	Poor signs of understanding.
Comer bracing.	9	7	0	Poor signs of understanding.
Scorching bamboo.	26	4	4	Popularly remembered, but not widely understood.
Painting bamboo with tar.	28	3	6	Popularly remembered, but not widely understood.
Clamp system	0	0	0	Forgotten.
2nd horizontal frame in bamboo frame.	0	0	0	Forgotten.
Painting tar on bamboo walls.	3	2	1	Poorly remembered.
Use of nails for fastening bamboo stick e.g. for bracing.	3	3	1	Poorly remembered.
Use of wire on house frame joints.	6	5	0	Poorly understood.
Comer braced upper roof frame.	1	2	0	Poorly remembered.
Alternating stick system.	11	12	4	Fairly well remembered but not as well understood as is desirable. This is an important H&H idea.
Wire ties on roof bamboo.	6	11	2	Poorly understood/ appreciated.
Painting tar on exposed roof bamboo.	1	4	1	Poorly remembered.
Budgeting exercise.	7	0	0	Poorly remembered.
Brick damp proof course (used in demo building)	2	25	4	Well remembered but it is also very visible.

This all points to a need for a follow-up worker who would keep ideas fresh in the minds of participants and would stimulate the spread of building for safety practices to other members of the community. Appropriate activities for such a worker might include :

- Answering questions on practical implementation of workshop ideas,
  - Finding out and attending when people are doing building work;
  - Inviting neighbours to observe implementation of ideas and to lead discussion;
  - Organising follow-up meetings;
  - Involving participants in motivational work;
  - Coordinating song team and 'jatra' (drama) performances which raise awareness of the issues;
- Organising demonstration building exhibitions. The list of potential follow-up activities is as long as the imagination can stretch.

### **The role of women in home-building and maintenance**

The pilot workshops targeted female as well as male participants, recognising that both are involved in the building process. In practice, the division of activities traditionally has men undertaking tool-based work such as site preparation, preparation of materials and roof construction. Bamboo wall construction requires the use of tools and is thus done by men; mud walling is much more a hands-and-feet activity and is often done by women.

**Fig. 12 Women at work: maintaining and repairing mud walls.**



However, once the building is completed, the woman of the house plays a much more significant role in maintaining the buildings, particularly those built of mud. The effects of rain, floods and even daily wear and tear all result in a continual erosion of the structure. The methods of construction used also contribute to a lack of long-term resistance to those hazards and the workshops suggested appropriate ways of reducing cracking in mud walls.

Two neighbours present an example of the importance of maintenance and of the woman's role:

In home A, the women follow traditional practice, polishing the walls and plinth of the house weekly with a mud paste or with water. Each month, they undertake more substantial plastering. As a result of this attention, the 26 year old house appears almost new.

The neighbouring house of family B, only 15 years old, shows substantial decay in several places. Family B is much poorer than family A and both male and female members of the family must spend the day working away from the house. Therefore, the women are unavailable to keep the house in good repair and the building is less able to resist any hazards which may occur.

This traditional role of the women in keeping building exteriors crack-free is very important in reducing the penetrations of rain and insects. However, it appears that such maintenance is in fact undertaken more for aesthetic reasons than for structural ones. This suggests that future workshops should emphasize the long-term benefits of mud maintenance and incorporate ways of making this possible. It also points to a need to consider how public demonstration buildings, which do not get such regular attention, will be able to demonstrate the durability of improved mud walls.

The gender division of labour based on tool use is not hard and fast. In many aspects of life women can be seen using tools too, for example, harvesting crops, tilling the land and making bamboo baskets, as well as in the kitchen. When there is work to be done, women will get on and do it, tradition notwithstanding. However, when a male arrives on the scene, with time, rather than tools, in his hands, the confidence of the women who had been getting with the job often seems to evaporate, with the tools being handed over to the men to finish the task.

Confidence and opportunity are, of course, fundamental factors which influence women's liberty and decision-making. In particular circumstances, tradition can be bypassed, even during house-building. The author was introduced to two young women who had built their parental home, in its entirety, by themselves. Their father is paralysed and their elderly mother works all day in the fields to earn 20 taka for their rice. The girls had been given sanctuary by a small organisation for abandoned women where they learned handicrafts and skills which developed their self-confidence. Having saved money from their handicrafts, they returned home to build the family house and provide a more secure situation for the whole family. The important stimulus was the confidence acquired through mastery of new skills plus the accompanying income.

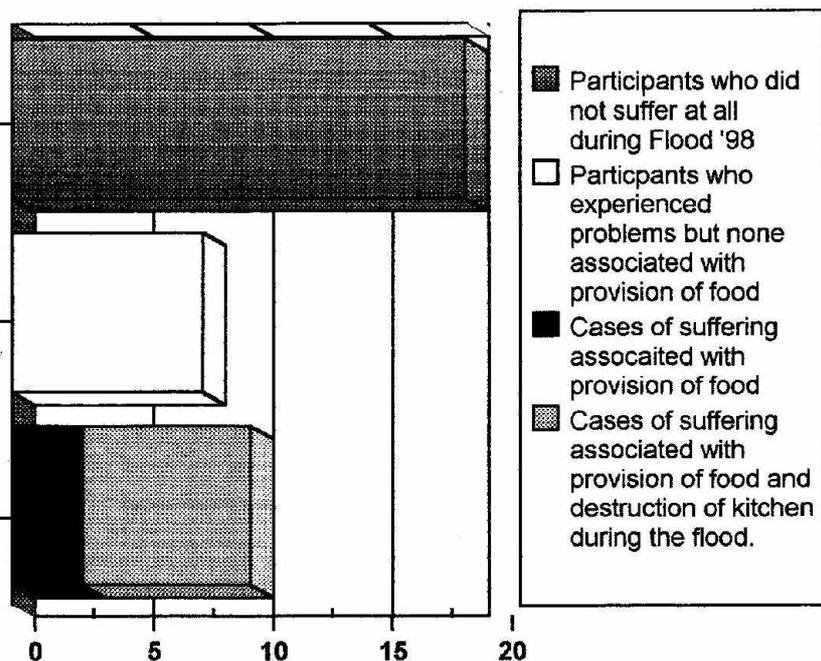
Those parents were lucky in their children. Many households headed by elderly widows have to rely on costly professional builders for home construction. The 1997 workshops included two examples of this. In both cases, it was the young daughters who attended but it appears that the girls, aged 15 and 16, were too young to take part in subsequent building work or to influence decisions about it. In neither case were the improved technologies implemented. These are among the poorest households in the village and can ill-afford the expense of the builders who were needed to reconstruct after storm damage. Such households should be the main focus for building for safety programmes and would benefit particularly from the work of a confidence-building motivator.

It must also be recognised that female participants are not as immediately empowered to make decisions about building (or most other things) as are their men-folk. In a resource-scarce environment, family differences over major expenditures can be a source of great tension. While

the man can follow the patriarchal norm and make his own decisions, the woman has much greater difficulty in persuading her husband to use extra money for implementing ideas which she has learned from a workshop. This problem might be avoided if husbands and wives were to attend the workshops together, with the result that there would be a better likelihood of getting the full family's support for H&H ideas. Working together, a husband and wife could be a good resource team for an H&H field worker to use in motivation work in the paras. An advantage in many areas is that whilst the husband can work with the men of the para, the wife can have access into the homes and courtyards of neighbours that her husband would not.

Decisions about the methods of construction used for different houses within the family homestead can also impact adversely on women. The living/sleeping house is usually the best built and maintained. By comparison, the kitchen, in which the woman spends much other time, is typically the least well-built of the houses. Therefore, the survey found, the kitchen is one of the first buildings to suffer damage during hazard events. As a result, working in the cold and rain makes the woman more vulnerable to sickness, further adding to her workload. Participants' stories of their suffering in the 1998 flood included problems associated with cooking and eating as an important theme. This is an aspect worthy of more consideration in future workshop programmes; before that can happen, a closer study is needed of peoples' attitudes to kitchens.

**Fig. 13 Experiences of suffering during Flood '98, including proportion of suffering related to the provision of food and damage to kitchens.**



"Distressed sales" (where materials such as C.I. sheet are resold to realise capital) can adversely affect the women and children who are left exposed in the home (Son-ill, 1998). The decision to resell C.I. sheeting is commonly made by the male of a household following spending controlled by the same male. In many cases, the men spend much of their time working or living away from the building in question while their women and children remain to occupy a house exposed in

security and environmental terms. People are often very concerned about personal security and violent robbery. For example, one family building their home explained that the house would have no windows because violent individuals could easily enter through such openings. Part removal of a C.I. sheet roof creates additional (but often unrecognised) hazards of dislodged and flying sheets in high winds. These negative aspects of distressed sales merit discussion during the workshops.

From the above it is clear that there are many aspects of the relationship between women and housing that should shape the development of the H&H workshop approach. It is worth noting that the workshops themselves provide a very good action-research opportunity for investigating women's issues and perspectives. To do this will require the development of focus discussions in both the men's and women's workshops which approach housing in a way that is sensitive to the different gender perspectives.