

# **COMMUNITY PARTICIPATION IN HONDURAN HOUSING PROJECTS AFTER HURRICANE MITCH**

**Edward Forwood BEng CEng MICE MIStructE**

## **About the Author**

The author is a member of RedR and worked for two years in Honduras after Hurricane Mitch, first as the Program Co-ordinator for GOAL and then as a Technical Auditor, reporting to USAID, within the International Organisation for Migrations (IOM). While working for GOAL he set up a house building program for communities affected by Hurricane Mitch. While working for the IOM he visited and reported on several large housing projects co-ordinated by a range of different Non-Governmental Organisations (NGO's) and partly sponsored by the IOM. He is currently working with Ove Arup & Partners in Sydney, Australia as a Façade Specialist.

## **Abstract**

**This paper discusses different community participation reconstruction models used in the housing sector in Honduras after Hurricane Mitch struck in October 1998. The paper sets out and discusses the models used in three housing projects co-ordinated by GOAL between December 1998 and October 1999. The paper addresses issues such as communication with the beneficiary groups, communication and integration with the local authorities, the controls used on beneficiary labour, quality control procedures, the integration of previously disperse groups into a new community, land tenure considerations, appropriate technology and project sustainability.**

**The community participation model used by GOAL in its first three projects in Honduras is compared and contrasted with those used in a number of different projects, totalling approximately 6000 houses, carried out by a number of large NGO's receiving the financial support of USAID through the IOM.**

**The paper closes with recommendations on the design and management of housing projects using community participation after a natural disaster in the context of the author's experience in Honduras**

*Keywords: Honduras; Hurricane Mitch; Housing sector; Community participation; Beneficiary labour; food for work*

## **INTRODUCTION**

In October 1998 Hurricane Mitch struck Central America causing widespread destruction and loss of life throughout the region but particularly in Honduras where it is estimated that over 5000 people died and tens of thousands were made homeless.

The Irish NGO, GOAL, was one of the international organisations that responded to the housing needs completing 3 provincial projects, each of approximately 100 houses, within a year of the Hurricane. This paper discusses the construction and community participation approaches used in these projects.

The International Organisation for Migrations was the international body responsible for setting up temporary shelters in the capital Tegucigalpa immediately after the Hurricane and for co-ordinating the efforts of several large NGO's in building permanent housing for the refugees. This paper compares the approaches used in these projects with those used by GOAL and closes with recommendations for community participation construction projects.

## **GOAL PROJECTS NOVEMBER 1998 TO OCTOBER 1999**

GOAL developed their housing projects using a community participation approach organising the beneficiaries into a community to work together to build a complete project. GOAL provided materials and technical supervision.

A community participation approach was chosen for the following reasons:

- GOAL had a limited budget which did not include any significant allowances for paid labour to build their projects or for letting of major contracts
- GOAL's philosophy was to involve the beneficiaries in resolving their own problems where possible
- Project beneficiaries generally did not have the skills to build a house without technical guidance
- Limited availability of suitable land meant that several pre-established communities needed to be resettled into single larger housing projects, it was thought desirable to integrate all the beneficiaries into a single new community through the construction of each project

Site selection was carried out by GOAL in association with the local municipalites (who donated the land) and with other local government bodies and took into account:

- Local water supply
- Access conditions
- Availability of local materials

- Risks of future floods
- Ground conditions and slope stability
- Size of plot
- Availability of local work
- Location of temporary shelters housing beneficiaries
- Proximity to the local electricity grid

The sites selected were located in the municipalities of La Libertad, Comayagua and Morazan.

Beneficiary selection was carried out by GOAL in association with the local municipalities and independent studies carried out after Hurricane Mitch. The involvement of the municipality allowed better co-ordination with the other efforts of the municipality (providing important local knowledge) and other NGO's and.

The design of the houses was undertaken in consultation with the beneficiary groups in particular the women of the groups to ascertain what was culturally most appropriate. A two-room fully detached dwelling with a front veranda was chosen, providing a living and sleeping area and a covered outside area for cooking. The total covered area was approximately 36m<sup>2</sup>. The houses were designed with high duo-pitch roofs for thermal comfort, to allow a greater pitch to the roof, which improves the performance of roof tiles and to allow for future extension of the house. The materials selected for the houses varied from project to project depending upon local availability. The designs of the houses also varied slightly from project to project in response to the materials adopted. Figure 1 shows a typical house built in the 'La Libertad' project.

In parallel with the house design the construction implications were assessed to calculate how many man-days a typical house would take to be built. The calculated number was doubled and included in a contract between GOAL and the beneficiary. The contract between the beneficiary and GOAL was an important part of the project as it set out clearly from the start of the project what was expected of the beneficiaries (principally how many days work) and what they could expect in return (principally a house). In order to include additional concessions granted by the local municipality (such as legal rights over the land) a memorandum of understanding between the municipality and the beneficiary was also included. To protect GOAL's position a municipal act and a memorandum of understanding between GOAL and the municipality was also signed. The act set out that when the project was complete the municipality would present the beneficiaries with land deeds. Land deeds were not given to the beneficiaries prior to the project for 2 reasons; to ensure that the NGO had leverage over the beneficiaries throughout the project development and because the ownership of individual plots would not be decided upon until after completion of the project.

The beneficiaries were organised into different construction teams to carry out different construction tasks. Typically the teams were:

- materials (responsible for bar bending of reinforcement, making of blocks, preparation of roofing members etc)
- foundation excavation (responsible for preparing of foundations for the houses)
- pouring of foundations
- superstructure (responsible for construction of building columns and tie beams)
- walls up to window level
- walls (and associated scaffolding works) up to ring beam level
- roof structure
- roofing
- floor slabs
- finishes

Figure 2 shows how some of the tasks were carried out by these teams

A supervising civil engineer was appointed for each project. On a weekly basis he reported the advance of the project such that an estimate of how complete the project was, how many man-days of the beneficiaries had been used and what activities were most time consuming could be monitored. Based upon these reports changes were then made to the projects to improve speed of construction. In assessing any changes the beneficiary site attendance, material costs and the speed of construction were all taken into account.

In addition to the civil engineer a site clerk was contracted for each project. The role of the site clerk was to provide support to the civil engineer and to be a closer contact to the beneficiaries. As part of his role he monitored the attendance to site of each beneficiary family and updated a large A1 size chart summarising the man days worked by each family. This chart allowed each family to see how far they were into completing their quota and to allow peer pressure to develop between families. In addition a chart was produced showing the overall site attendance on a day by day basis allowing any trends in site attendance to be monitored.

Meetings were held on a weekly basis between the beneficiaries and the site engineer to discuss project advances and to try to further motivate the beneficiaries. Food for work was distributed at these meetings donated by the World Food Programme. This was vital to the success of the projects as it released the beneficiaries from other work that they would have otherwise had to undertake to feed their families.

When each project was complete a raffle was held with two barrels; one containing all the beneficiaries names and one containing the number of each house. One by one the beneficiary names were drawn out of one barrel and when their name was drawn they came forward and drew out a card with the number of the house from the other. The municipality then drew up the legal papers for all of the houses.

The project in La Libertad was the first project commenced in Honduras by GOAL. It was in a remote location and accessible only by rough dirt roads. One of the interesting aspects of the project was the use of adobe blocks for the walls to the houses. These were chosen for the wall construction because the remoteness of the site meant that there was no guarantee of getting concrete blocks to site in one piece, because of the reduced cost of adobe over all other materials, because of the ready availability of suitable material and because of the beneficiaries' familiarity with the material. Adobe blocks also had the added advantage of high thermal mass thus providing a cooler house than would have been achieved with other materials. In order to provide protection to the adobe blocks from rain on the outside and to prevent insects living in the adobe blocks on the inside the houses were plastered with a lime mortar mix inside and out.

In addition to the production of adobe blocks on site, profiled micro cement tiles were also made. These were cheaper than buying corrugated metal roofing and also provided improved thermal and acoustic qualities to the housing.

The production of on site materials for this project made it the most labour intensive of the three projects. Clear control of the use of the beneficiary labour was thus vital to the success of the project. The lessons learnt including the importance of controls from day 1 were implemented into the second and third projects enabling them to run smoother than the first project. In the La Libertad project approximately 140 man days were required to build each house while in Comayagua the number reduced to approximately 120 man days and in Morazan the number was approximately 100 man days. The cost in materials was correspondingly higher.

## **IOM SPONSORED PROJECTS**

The position of refugees and the ability of the NGO's to respond to their needs was more difficult in the capital Tegucigalpa than in the rural areas. The main reasons for this were:

- The people most affected in Tegucigalpa were those who had moved from rural areas to the city slums and who were not living in established communities
- The municipality was stretched by the scale of the disaster and had more competing priorities including critical infrastructure repair required to re-establish the economic viability of the city
- The municipality was unable to co-ordinate the aid efforts of a large number of NGO's
- The municipality had no land that it was willing to donate to NGO's for housing projects
- Established communities were hostile to the relocation of refugees to housing projects close to them
- Existing infrastructure was insufficient for the water needs of a new community in many areas (this in part contributed to the hostility of existing communities to new projects mentioned above)

- The scale of the need was an order of magnitude larger than in the rural areas
- The refugees were used to living in central areas within Tegucigalpa and were unwilling to move to outlying areas; prior to the hurricane below the high water mark of the larger rivers and after the hurricane in temporary shelters on private land in areas located centrally within the city

The International Organisation for Migrations in partnership with USAID established a project to co-ordinate the efforts of different NGO's to provide permanent housing to the refugees located in the temporary shelters. The IOM provided a service to the NGO's which the municipalities had provided or met in other areas. This service included:

- The establishment of a database of private land suitable for housing, which the owners were willing to sell.
- Verification of the legal position of potential land to be built upon by the NGO's
- The establishment and maintenance of a database of the names and social security numbers of all the refugees and the names of any housing project of which they became beneficiaries
- Liaison with the refugees
- Technical supervision of the projects to ensure that minimum standards were met

The IOM also provided financial support to the NGO's proportional to the number of refugees relocated from the temporary shelters. This financial aid was what enabled the IOM to effectively remain involved in the projects throughout their development and ensure that minimum construction standards were met and that the offer and acceptance of aid between the different NGO's and the large number of refugees was orderly.

### **Construction models used in the IOM projects**

There were approximately 20 different housing projects built around Tegucigalpa after Hurricane Mitch constructed with many different approaches. There were also significant differences in the houses constructed and the cost to the beneficiaries varying from 24m<sup>2</sup> to 48m<sup>2</sup> and from no repayment required to repayment of the cost of all building materials.

The construction models used in the IOM projects can be generalised into three main types: (i) Supervised build your own, (ii) Traditional method, (iii) Community built. Elsewhere in Honduras another model was also use: (iv) Materials only. A brief description and a summary of the advantages and disadvantages of each model are discussed below.

### ***Supervised build your own***

An urban plan on suitable land is established by the NGO and individual plots are assigned to beneficiary families. Materials are assigned to each family who build a house on their plot to a single standard design chosen by the NGO. Limited skilled labour may be financed by the NGO to help each beneficiary family.

#### Advantages

- More responsibility given to individual beneficiary families
- Each family will have more control over the advancement of their individual houses
- By focussing only on their own individual houses the beneficiary families may not be frightened by the scale of the overall project being undertaken

#### Disadvantages

- Each house will be slightly different and require special supervision to ensure minimum standards are met for every house
- Time will be wasted explaining all the construction details of the house design to every beneficiary family
- Conflicts may arise between beneficiaries over materials, materials may be wasted or 'go missing'.
- Inefficient use of labour as each beneficiary group must learn all the skills for every aspect of house building
- Those in most need lacking construction skills or single parent families may not be able to complete their house or believe that they are not able to complete their houses and hence not become involved in the project
- NGO has large responsibilities for health and safety
- With each family working in a different fashion there is less scope to establish set working methods and hence assess and manage health and safety concerns on site

### ***Organised traditional arrangement***

Consultants are employed to design an urban plan and tender documentation including drawings and specifications. Following a tender process a main contractor is employed to construct the housing project in accordance with contract documentation. The original consultants may provide a supervisory role to monitor individual contracts or the entire project.

#### Advantages

- An organised contractor may be able to mobilise a construction team quickly
- A local contractor will be familiar with local building methods and regulations

- A local contractor will have existing networks, which may enable the project to be more quickly completed
- No requirement to organise beneficiary labour (less site staff required on behalf of the NGO) and not dependent upon skills or availability of the beneficiary community
- Warranties can be sought from the contractor
- Minimum local standards should be met
- Quick form of construction if initial contracts are well set out
- Depending on form of contract some risks can be passed onto contractor who may be better placed to handle them (eg material losses, bad weather etc)

### Disadvantages

- Procurement strategies may be complex and require detailed knowledge of local laws
- Project start up may be delayed significantly while project specifications are fully worked out
- The NGO will require experienced contract managers to ensure that the project technical specifications are met
- The local contracting or consulting market may be stretched following a natural disaster and in the knowledge that a NGO may not provide repeat business the attention paid to the contract may not be adequate
- Variations may be claimed for which a budget has not been set aside.
- Cost is likely to be higher than other methods to cover profit requirements of main contractor, his assessment of risks etc

### ***Community built***

An urban plan on suitable land is established by the NGO. The NGO organises the beneficiaries into construction teams and trains each team to undertake certain aspects of the construction. Each construction team then carries out the same task in every house in the project. Houses are not allocated to beneficiary families until the project is complete.

### Advantages

- Working in teams can help form strong bonds in the community which will survive long after the construction period
- Training is limited to one task per group
- Supervision is limited as each group quickly understands how it's particular part of the construction should be carried out
- Improvements in how individual tasks are carried out can be identified and more easily implemented as the project develops
- Use of beneficiary labour can result in significant cost savings in the project over paid labour

- Flexibility as no contractual relationship with local companies
- No profit margin needs to be paid for

### Disadvantages

- Requires good organisation and understanding of the beneficiaries
- Requires good communication with the beneficiaries
- Highly dependent upon the motivation of the beneficiaries
- Can be affected by other external influences on the beneficiaries (eg if a harvest occurs during the project large amounts of labour may not get to site)
- May require additional aid to be secured for the beneficiaries eg Food for Work
- NGO has larger responsibilities for site health and safety issues but clear planning of the construction should enable the NGO to manage the risks

### ***Materials only***

Materials are given to beneficiary families by the NGO who have rights over a plot of land and who build their own homes.

### Advantages

- Disbursement of materials can be quick and efficient, refugees receive aid more quickly
- Only costs to the NGO are materials and distribution costs meaning that for a given quantity of money more beneficiary families can be reached
- NGO need not have construction expertise
- Individual houses might be more quickly constructed

### Disadvantages

- Beneficiaries may sell the materials to pay other debts.
- There will be no control on the construction and the quality achieved will vary and may not meet 'minimum requirements'
- Social impact of the project may not be addressed
- Sanitation needs may not be addressed (latrines may not be built and cement or concrete floors may not be installed)
- Location of project and its risk to future natural disasters may not be assessed
- If plots of land are disperse it can be extremely complex to assess if a beneficiary family really owns a particular piece of land and hence the risks of future possession of the materials and the completed house by another 'owner' of the land.

## **CONCLUSIONS AND RECOMMENDATIONS FOR COMMUNITY PARTICIPATION HOUSING PROJECTS**

In Honduras after Hurricane Mitch there were a large number of different NGO's seeking to help alleviate the housing need and competing for donor agency funding. Each NGO had surprisingly different approaches both at a general level and a detailed level. The more successful projects were those that established a project plan, monitored it and modified it as necessary through the project's development. Communication and understanding of the beneficiaries' needs was also crucial.

The GOAL projects were successful because the construction techniques were monitored from the beginning of the project enabling changes to be made as appropriate. The 'production line' approach had the advantage that the beneficiaries became capable in their particular task quite quickly and then were able to improve their processes continuously. They were taught how to carry out their task and were able to repeat it though all of the houses reducing supervision requirements. Other projects that used the supervised build your own approach had many technical difficulties that varied from house to house. One house might have had poorly compacted foundations or floor substrates while others had missing reinforcement, off plumb walls, poor connections between roofing and walls, faulty lintel details etc. The difficulty was that it required much greater vigilance from the supervising team to ensure that the houses were constructed defect free.

The GOAL projects became steadily more successful in the integration of the beneficiary groups. The weekly meetings and working together of the community established understanding and respect through the community. This is likely to be a great asset to these communities in the short term (though in the medium and long term the local municipalities will need to assist these newly established communities and ensure their integration into the larger community). In contrast other projects particularly those established using the 'traditional approach' with the beneficiaries receiving their houses later will require greater continued input from qualified social workers in order to manage the social tensions that may arise when people of varied backgrounds are housed together without proper planning.

The following recommendations are provided as a summary of the lessons learnt from organising three community participation projects while in GOAL and visiting others while working for the IOM:

- Include a budget for beneficiary selection and screening.
- Seek advice and involvement from the female beneficiaries as to what housing model is preferential before starting the project.
- Be aware that some beneficiary families may try to get more than one house from different NGO's offering aid, couples may even separate to enable them to get more than one house, local knowledge and the involvement of local authorities or a co-ordinating agency is vital to avoid this.

- Involve the beneficiaries in the development of the project design but be clear of your basic framework
- Establish a clear written contract with the project beneficiaries outlining their obligations (eg how many days work are expected), and rights (eg how big the house will be, what rights they have to sell it etc) and what is expected from the beneficiaries when the project is complete. Include in the contract that changes may be made in the project to enhance productivity and in response to certain situations
- Establish a project plan detailing when different tasks should take place and be prepared to monitor and change as necessary
- Seek advice regarding the local tax laws, it may be possible to make local purchases for materials without paying “VAT” or “goods and services” type taxes. In GOAL’s projects savings were made by purchasing materials through the local municipalities which had established relationships with suppliers and who were exempt from “VAT” type taxes
- Establish clear controls which show graphically how much work each beneficiary family has carried out through the project to allow peer pressure to develop in order to encourage each family to increase their contribution to the project and so that all the project beneficiaries can see that they are providing an equitable contribution. Provide motivation (prizes etc) for those families contributing most
- Recognise that beneficiary labour is a project asset and must be accounted for throughout the project and may best be the responsibility of the site supervising engineer
- Establish in contract what rights the beneficiary has to selling the house once the project is complete and seek legal advice
- When construction begins do not involve all the beneficiaries from the first day but build up gradually as the first groups of beneficiaries learn how to carry out their particular tasks (appearing organised to the beneficiaries is important to instilling confidence)
- Finish one house as soon as possible, this is because most beneficiaries will not understand your architectural plans and because it will provide an important psychological boost
- Be aware of different cultural histories of previous disperse groups joined into a new colony eg religious or attitudinal such as to the drinking of alcohol.
- Employ a local social worker (part time if necessary) to listen to and report the concerns of the beneficiaries which may be quite different to those imagined by a foreign aid worker. This social worker could also prepare community structures while construction takes place such that when the project is complete there is an ordered transition from building the project to living in it
- Let the local authorities and other Aid Organisations working in the same area know who your beneficiaries are so that beneficiaries do not ‘shop around’ for the best deal
- Consider what water source is available
- Consider what electricity source is available
- Consider what work options are available

- Consider the scale of the project to be undertaken, the author believes that housing projects of approximately 100 houses are of a scale that allows efficiencies of scale to be achieved but small enough to allow a small organised team to manage them
- Get legal advice from qualified local land lawyers and be aware that in many third world countries a single plot of land may have more than one apparently legal owner. Be aware of any taxes that the local municipality might charge when legal documents such as land deeds are produced and seek a waiver from them before undertaking your project
- Establish what age children can be considered as able to provide labour for a beneficiary family. In the GOAL projects work carried out by children under 16 were generally not counted to a families quota
- Establish if beneficiaries are able to sub-contract their work quota to other people. In GOAL's projects this was generally not allowed except in exceptional circumstances and the contracted person needed to be a skilled labourer



Figure 1 Location of previous house of beneficiary family and new completed house



Construction of houses in Comayagua in a production line approach with different activities following each other



Ground beam construction carried out with formwork used in every house to speed construction



Bar bending carried out by less able bodied beneficiaries



Roof construction preceded wall construction so that adobe could be stored under cover and so that walls could be built even in wet conditions



Manufacture of roof tiles



Manufacture of adobe blocks

**Figure 2 – Construction of GOAL projects**



**Figure 3 – Finished Project in La Libertad**