

Improving Shelter Response to Humanitarian Crisis

Research Report - India and Bangladesh





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Research and content:

Alistair Rennie, Parag Talankar, Gouthami, Vijayalakshmi Viswanathan and Anshu Sharma (lead)

Media:

Photos - Siddharth Behl, Sarika Gulati, Anshu Sharma and Tarun Sharma

Design - Jyotsna Singh and Meghna Chawla

Illustration - Sarah Ernst and Alistair Rennie

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Post-disaster shelter remains a challenge for the humanitarian sector; and is assuming growing urgency with passing years as the frequency and intensity of disasters grows across the world. Considering South Asia is one the most disaster prone regions, the work of Christian Aid and its partners in this region is too huge to study with justice in this small attempt. The study does however appreciate the depth and breadth of their efforts and attempts to bring out some of the main successes and challenges encountered on the way as represented by the cases under study.

It has been a privilege carrying out this study and engaging with motivated agencies and individuals who are dedicated to improving the lives of disaster affected communities. The study was possible thanks to the teams at Christian Aid, The Social Awareness Society for Youths (SASY), The Church's Auxiliary for Social Action (CASA) and Sustainable Environment and Ecological Development Society (SEEDS). We are particularly grateful to Mr. V.A. Ramesh Nathan of SASY, Mr. Nirmal Singh, Ms. Florina Benoit and Mr. Poul Luther of CASA, Ms. Shivangi Chavda and Mr. Parag Talankar of SEEDS and their respective teams. Ms. Jesu Rethinam of Social Need Education and Human Awareness (SNEHA) offered insights into SNEHA's work as part of their literature review. The support we got from the field teams and also from the communities themselves speaks volumes of their inherent capacities; which can lead to wonders with just a little bit of help.

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We hope this study will give a boost to a much larger process of learning and capacity building in the area of post-disaster shelter.

The Study Team, Saferworld Communications

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OVERVIEW

Christian Aid (CA) is a development and humanitarian aid organisation that insists the world can and must be swiftly changed to one where everyone can live a full life, free from poverty. It provides urgent, practical and effective assistance where need is great, tackling the effects of poverty as well as its root causes.

The South Asia Office of Christian Aid, based in New Delhi, oversees the work in the two countries studied in this report - India and Bangladesh; though each has its own country team. Christian Aid carries out its interventions through a diverse group of partner agencies, most of whom are reputed national civil society organisations. All post-disaster shelter interventions thus follow this principle and are therefore often varied in their approach, targeting, processes and outputs. Each, however, maintains the basic principles and overarching approach of humanitarian aid to the most needy with dignity.

In recent years, Christian Aid has responded with shelter support to affected communities in the aftermath of most major disasters across India and Bangladesh. This study undertook a broad-brush review of the overall approach and lessons based on a prior study of Bangladesh shelter programmes and a desktop review. Detailed assessment was carried out in three project locations in India – one in Rajasthan and two in Tamil Nadu.

The study focuses on shelter processes; drawing lessons from the review with implementing partners. It is not intended to be an evaluation. Further, it assumes a people-centric focus of the shelter process rather than an engineering one. This helps get a clearer



picture of 'softer' issues such as social inclusion, participation, local skill base, environmental sustainability and cultural appropriateness; besides structural compliance.

The study uses a common framework evolved for the purpose of a large global study being undertaken by Christian Aid and partners.

Seven broad recommendations for future shelter projects emerged from a comprehensive analysis of the literature review, field study and workshop. These state that shelter projects must be inclusive, participatory, local, permanent, ecosystem-driven, efficient and advocacy-led. These are further broken down into action points to be undertaken at a strategic level by international/ national aid agencies and donors; and at a ground level by implementing local partners. An 8th recommendation elaborates on possible further research that would help improve shelter response and address new and critical challenges.

- 1. Ensure coverage of the most vulnerable including socially excluded groups and persons with special needs
- 2. Ensure participation and increased choices of families in all stages of the rehabilitation process.

- 3. Develop and integrate locally appropriate designs, technology and materials in shelter programmes
- 4. Promote permanence in housing rather than focussing on immediate and intermediate needs.
- 5. Address the entire shelter ecosystem and approach shelter rehabilitation as a process; incorporating safety and sustainability principles in their entirety.
- 6. Build shelter-specific capacity and skill sets across all levels.
- 7. Engage and work through multistakeholder institutions including governments, civil society and the private sector to influence shelter policies and practices.
- Conduct further research to improve understanding on nuanced issues within the post-disaster shelter sector and to help build a knowledge base to improve future humanitarian shelter assistance.

EXPLORING SHELTER RESPONSES IN INDIA AND BANGLADESH

Shelter response to humanitarian crises has long been a subject of concern to the sector. Given the urgency of shelter needs in post-disaster situations and the resource intensive nature of housing construction: the humanitarian sector has often struggled while trying to deliver timely, high quality and locally appropriate shelters. Variables such as timeliness, quality and costs have led to widely varying responses and outcomes. The consequences of such variables can have both positive and negative impacts on communities. How can implementing agencies best support and respond with appropriate shelter measures that meet needs in an emergency; but also leave beneficiaries with a dignified and long-term home?

This document looks at specific case examples of shelter response by Christian Aid and partners in India and Bangladesh to accumulate a comprehensive view of responses, over time. By assessing which of these have been most effective and why, it aims to inform future action in the shelter arena. Projects in the two countries were reviewed through literature study and three projects were specifically chosen to accumulate longitudinal information. Specific pointers were derived to determine whether shelters have survived the test of time in keeping with recognised local and international standards. Key informant interviews, focus group discussions, case studies and observation studies were used to assess the projects.

This report encompasses the findings of a literature review of Christian Aid's shelter response in India and Bangladesh; and three in-depth field studies of post-disaster shelter projects.

Tsunami

- The Social Awareness Society for Youth (SASY), India
- Church's Auxiliary for Social Action (CASA), India

Floods

• Sustainable Environment and Ecological Development Society (SEEDS), India

Cyclone

- Christian Commission for Development in Bangladesh (CCDB)
- Islamic Relief, Bangladesh
- Madaripur Legal Aid, Bangladesh
- Nagarik Udyog (Citizen's Initiative), Bangladesh
- Shushilan

In October 2012, eight villages were visited for the purposes of this study; four villages in Barmer, Rajasthan and four villages in Cuddalore, Tamil Nadu. Projects were specifically chosen to give a varied assessment of outcomes taking into account different disaster responses, approaches, funding lines and procedures. Both social and structural contexts have also been taken into consideration.

SASY's projects in Tamil Nadu focused predominantly on beneficiary involvement in decision processes;



concentrating upon the rehabilitation of Dalit communities and working to rebuild their social structures to decrease poverty and build back effectively. This was a small scale project.

CASA's programme in Tamil Nadu was assessed to account for a large scale response to the 2004 Indian Ocean Tsunami. This was a significantly bigger project; resulting in a comprehensive, in depth response to rehabilitation, reconstruction and community disaster preparedness.

The SEEDS' work in Barmer was chosen at it was primarily an immediate response to address the devastating effects of flash floods in the desert region of Rajasthan in 2006. While the designs kept in mind local vernacular and materials; SEEDS also placed beneficiaries at the forefront of all decision processes and worked to build up their livelihood skills.

Interviews were conducted with the partner staff, field teams and with beneficiaries to acquire accurate and varied information on the processes during the shelter programmes and how the projects are viewed to have performed since completion. The study team generated both broad and specific questions to acquire qualitative information.

The findings of this assessment have been used to derive recommendations for future programmes. Key observations are discussed in detail; with the hope that the imperative variables for successful shelter response will be followed in future responses. These recommendations are not sitespecific, focussing on complex and at times controversial features of shelter response programmes. They will need to be addressed in the context of individual responses to arrive at locally appropriate specificities within the overall given approach.





Shelter projects have been riddled with challenges in striking the balance between vernacular and modern, sustainable and fast, appropriate and aspirational.

RESPONSE MAPPING AND THE CA SHELTER EXPERIENCE

INDIA

Christian Aid has responded to all major disasters in the country through its established network of partners and has consistently been one of the first agencies to reach affected communities with immediate relief. Interventions after larger disasters have usually included shelter response. This has been a mix of immediate shelter in terms of tents; intermediate shelter in terms of semipermanent houses to last 3-5 years; core shelters with single room houses that can later be expanded by the homeowners; and permanent houses with adequate space and surrounding infrastructure such as water supply, toilets, roads and schools. Prominent partners in post-disaster shelter interventions have included CASA, SEEDS, SNEHA, Society for National Integration through Rural Development (SNIRD), SASY, Poorvanchal Gramin Vikas Sanstahan (PGVS) and Confederation of Voluntary Associations (COVA).

Recent years have seen the strong emergence of intermediate shelters, sometimes also referred to as transitional shelters. This is primarily due to a desire to move from tented solutions towards permanence. Emerging funding conditions from some institutional donors seek more such housing, but partners are restricted from delivering truly permanent houses in the required construction time period under their emergency aid decisions.

A few examples across the range of CA supported post-disaster shelter projects include:



A consistent question is 'will people be able to continue building the way the project build shelters for them'?

Tamil Nadu, 2005

Shelter reconstruction work taken up post-tsunami in Tamil Nadu offered various learning opportunities as different models and approaches were tried. The good practices included a comprehensive approach of reconstruction, repairs and retrofitting. Participatory processes helped bring in a greater sense of ownership; enhancing the quality of the interventions. Additional features of sanitation and drainage helped address the shelter ecosystem concerns. Very specific targeting helped address the major challenge of social inclusion. Despite the significant hurdles, the most marginalised communities were identified, brought into the focus and assisted with appropriate shelter interventions.

Kashmir, 2005

This intermediate shelter project post the 2005 Kashmir Earthquake raced against time. The earthquake hit in October, just before the onset of the harsh winter and there was an urgent need to deliver housing to a large number of people in the very short time before the snow began to fall. Varied approaches were adopted in two different areas. The first was to provide shelter reconstruction tools and training to house-owners and local construction workers; helping them reuse their rubble and other locally available material to quickly build a shelter for the winter on their own. The second was the construction of modular units with concrete foundations, timber frames, water-proof ply cladding and corrugated galvanised iron sheet roofs.

Odisha, 2008-2009

The use of prefabricated approaches and local material was extended to the shelter intervention in Balasore after severe flooding in 2007. Since 350 houses with sanitation units had to be constructed in widely dispersed locations within a short period of 6 months, a modular prefabricated approach was taken. This included pile foundations, a frame structure, fly-ash block infill till sill (fly-ash was freely available as a waste product from a nearby thermal power station), bamboo infill, a roofing frame that was local skill based and corrugated galvanised iron sheet roofs. The houses were also constructed on raised plinths ensuring that they stay above the normally expected flood level.

Three projects – one in Rajasthan and two in Tamil Nadu were studied in detail through field visits and these are covered in the next chapter of this report.



'Intermediate' shelters are being debated and there are serious concerns around them. However, in some situations they may be necessary and in some are upgradable.



Disaster resilience of shelter design: an illustration

Building future resilience needs to be one of the core objectives of a post-disaster shelter project. This example from Balasore, Odisha illustrates how this has been attempted in this case.

- During a mild or moderate flood, the raised plinth and plinth beam will provide suitable protection from flood waters.
- During a moderate to severe flood, it is advised that the current bags provided are filled with sand to create a water tight seal around the entrance.
- During extreme and sustained flooding, it is advised that all belongings are stored at attic level and the family moves to higher ground.

ATTIC

Roof structures can be designed to offer beneficiaries the potential to add an attic. This provides additional space within the shelter for storage. During times of flooding, this raised platform will provide safe refuge for their belongings.

ROOF

The roof design can be done with traditional building materials of bamboo. In this case, three primary roof trusses were manufactured offsite as a single component and could accomodate the beneficiaries' choice of thatch, tin sheets or terracotta tiles.

PLINTH

The raised plinth is constructed by the beneficiaries to bring the level of the shelter above the prevailing flood level. It provides a stable base and is protected against future erosion by a retaining wall of blocks and mortar.

FOUNDATIONS

The foundations can be constructed from freely available reinforced concrete sanitary pipes filled with concrete and reinforcement rods. These foundations increase the lateral stability of the structure to resist cyclonic wind pressures, fast flowing flood water, and also the adverse affects of weak sub soil.

PLINTH BEAM AND SILL BEAM

The plinth beam not only provides a stable structure, but also provides a level base for block walls and a watertight seal ensuring that flood water does not penetrate the shelter. Both the sill beam and plinth beam hold the structure together and provide lateral stability against extreme winds, earthquakes and flood waters.

OPENINGS

The design of the openings can be left to the beneficiaries to install their own traditional doors and windows. To maintain a watertight seal around the door sand bags were provided with each shelter.

Benefits of participatory shelter process: an illustration

Participation of beneficiary families in all stages of the shelter process brings multiple benefits ranging from a greater sense of ownership to finer technical adaptation of locally appropriate solutions. This illustration shows inherent and long-term benefits of a participatory approach.



BANGLADESH

The Bangladesh study is largely based on a shelter rehabilitation review carried out by Saferworld Communications in 2010. It looked at various shelter programmes implemented by Christian Aid partners, namely CCDB, Islamic Relief, Madaripur Legal Aid, Nagarik Udyog (Citizen Initiative) and Shushilan in the aftermath of cyclones Sidr in 2007 and Aila in 2009. Most of the shelter programmes used designs and materials that were in between temporary and permanent, based on timber frames and CGI sheets in combination with bamboo mats. Disaster resistant features such as raised plinths were attempted in most cases. A larger view of the habitat concerns was taken and programmes addressed water, sanitation, education and emergency sheltering in some of the locations.

The findings from these interventions are treated as one case study and are analysed in detail in the next chapter of this report.



How resilient is DRR and how homely are the shelters that are built?

KEY FINDINGS

The literature review of a range of post-disaster shelter projects implemented by Christian Aid and partners in India and Bangladesh resoundingly demonstrates a people centric, inclusive and process-based approach. This sets a clear agenda to look at shelter as a process and not a product. Having set this framework, the challenge faced in most projects has been to find the right technological solutions. Solutions that offer sufficient flexibility and yet are grounded in safety, cultural appropriateness and environmental sustainability. The broader findings are included in the conclusions column of the matrix, the recommendations and in subsequent sections of this report.

SASY

Tamil Nadu

Meeting local needs within the project approach

The Social Awareness Society for Youth (SASY) works towards protecting Dalit rights in Tamil Nadu. SASY received funding of 1,66,632 GBP from Christian Aid over a period of 12 months to implement response work with tsunamiaffected Dalit and Adivasi communities in Tamil Nadu. Fundamentally, SASY was focused on social aspects of the Dalit communities of Thitukattur and Stalin Nagar: addressing caste problems and looking at long-term approaches to better their lives such as livelihood programmes, infrastructure and the teaching of legal rights. In total, SASY built 57 shelters, 32 in Stalin Nagar and 25 in Thitukattur.

A mere look at the timing (the final shelters were stated to have been completed in April 2011) may indicate a highly delayed intervention. However, until 2008, there had actually been no realisation of the impact of backwater flooding on inland villages and the damage to Dalit communities. Complexities in land acquisition for the villagers of Thitukattur further delayed the project implementation.

So when looking at the fact that the project covered excluded groups – both in terms of social marginalisation and from the physical interpretation of direct disaster impact - the relevance becomes very high.

However, this delayed response meant that the funding for the SASY projects was limited; and the shelters incurred



limited design features as a result. Built at a reduced size of 200sq ft, they have since been viewed as insufficient for the beneficiaries to comfortably meet their wants and needs. In hindsight, SASY felt that they should have pushed for further funding to be able to produce shelters of an appropriate size; ideally 350sq ft. It may be noted that though these houses are smaller than others delivered by aid agencies in the area, they still meet the Sphere standards.

Being locally appropriate

Through group workshops with beneficiaries, shelter parameters were determined in relation to the limited funding, prioritising what they felt were the most important aspects. The small number of shelters meant that it was possible to follow this process for each individual village. Conversations during the site visit made it apparent that beneficiaries had been at the forefront to establish the best possible shelter designs. The design also had to take into consideration the social context of the Dalit villagers. Where vernacular, thatched roof or tiled designs were proposed, the beneficiaries voiced safety concerns; as roofs had been set alight in past conflicts. Therefore, concrete structures were deemed appropriate in relation to both man-made and natural disasters. This incurred greater costs, decreasing the potential space, and a tiled roof would have allowed for a larger shelter.

Since the initial design discussions, the departure from the local vernacular has shown its flipside. Beneficiaries now see



concrete structures as the desired shelter medium; but do not have the resources or knowledge to build extensions with concrete. Extensions that are not structurally sound have since been damaged in cyclones and floods.

A final significant aspect to the project is that beneficiaries are stated to be land and shelter owners. However, they have yet to receive official papers from the government.

The procurement and construction process

SASY had no previous experience of building shelters. An engineer and local architect were hired to oversee the construction projects. All actual building work was outsourced to masons and labourers who had concrete construction experience from the surrounding local villages. The beneficiaries themselves



were not a part of the building process, but only participated in decision workshops in relation to the design. There were no skills workshops to teach villagers how to maintain their shelters or build extensions of the same nature once relief aid had left.

Upon visiting the shelters, concerns about the construction processes could be seen. There was visible cracking amongst concrete load bearing walls. When the engineer who worked on the designs and building was questioned, he stated it was because the construction had taken place during the rainy season; not allowing the concrete to set properly. The point should be stressed that if concrete building practices are not fully understood, the building can prove detrimental to safety. What seems like a strong and effective building material can, in the long term prove deceptive and disastrous if not correctly handled.

Integrating direct and indirect linkages

SASY focused not only upon long-term shelter design, but also the complex social variables affecting the livelihoods of Dalit communities. A high importance was placed on livelihood programmes for Dalit communities. A carpentry workshop was set up at the office for young Dalit men and workshops were held for women on computer skills, candle making and tailoring. The greatest achievement was the establishment of the cashew nut company - 'Porto Novo Women Cashew Producers'. This is run completely by Dalit women.

However, SASY did face complexities in introducing Dalits to new livelihood principles and possibilities. As a result of centuries of negative stereotyping, there was a psychological belief that they were not capable and nor should they partake in such activities. It has taken a total of 4-5 years to break this belief within these communities. Beneficiaries claimed to make Rs. 500-2000 a month, particularly those in Stalin Nagar who had taken up additional businesses as a result of these programmes.

In addition to livelihoods, SASY focused upon forming female and child-led groups to propagate legal awareness. This helped inform women on which official figures could be approached in times of need and how this could be done. Women were also taught about their legal rights in relation to sexual abuse, domestic violence and the Schedule Caste Schedule Tribe (SCST) atrocities Act.

The long-term social aspects to the project are apparent and will benefit the beneficiaries in future years to come. However, SASY states that as a result of the shelter sizes being compromised, the beneficiaries have reverted to building techniques that are not structurally sound. Thus, they are placed back into a position of danger from future disasters. Safety features to the designs in Stalin Nagar were also compromised due to lack of funds, with beneficiaries not having stair access to their roofs in times of flooding. Furthermore, there was no knowledge of an evacuation process if a future tsunami was to occur in either village.

Efficiently achieving the goals

Social improvements were achieved in both projects; with the fear of other castes being reduced. Although there is clearly room for improvement to the shelter designs and construction, SASY did their best with the experience and skill sets that they had and the budget that they were allocated. The fundamental issues of providing shelters and running livelihood programmes that would improve the lives of the community were addressed.

Goals were met by SASY in addressing socially and contextually relevant wants and needs of the Dalit beneficiaries. The Dalits received livelihood training that would otherwise not have been available to them, resulting in better incomes and lifestyles. Further, beneficiaries gained an understanding of their legal rights and the correct procedures to follow; leaving them more able to address social problems within the community. These impacts reach the fundamental aim of SASY's project objectives. The most significant change from the project concerns the development of an access road for the Dalits in Thittukathur. This

road is still active and in use to date; and, as a result, social and physical conflicts have ceased.

The learning and impacts

Inadequate funding meant that the shelters didn't suffice to fulfill all beneficiary wants and needs. Therefore, families resorted to building kitchens, toilets and additional spaces outside their provided shelters using old unsafe practices; thus partle reverting to the pre-disaster structural vulnerability. Additionally, building safety features such as roof access (in case of flooding) were not achieved as stair access could not be given.

Using this project as an example, appropriate funding should be assessed at the start of a project to account for accurate project implementation. It is not just about meeting the short-term needs of beneficiaries concerning shelter, but also about providing a sustainable option that will not place beneficiaries in a detrimental position in the future.

Improvements could have been made to take the local vernacular into account and engage beneficiaries in the shelter construction process. This knowledge could have helped beneficiaries amend their shelters in a structurally sound manner, reducing the risks of future disasters. This is especially critical for the communities SASY has worked with; as it is unlikely that they will be able to afford the expenses of outsourced concrete construction repairs or extensions. However, while this is an easy observation to make from the outside, the social dilemmas and aspirations were complicated; and the cement structures were constructed also to build a sense of security that was as much social as physical.





While cement concrete is the aspiration, does it really work better than local materials in the given context of resources and skills?

CASA Tamil Nadu

Meeting local needs within the project approach

The fundamental priority of the Church's Auxiliary for Social Action (CASA) was to supply 50,000 beneficiaries of Tamil Nadu, Kerala and Andhra Pradesh with initial relief, mid-term relief and longterm rehabilitation, reconstruction and community based disaster preparedness. The shelter component looked at structurally safe, permanent shelters that would survive the test of time; and suffice for beneficiaries' wants and needs. Work commenced in April 2005 and continued until March 2007. There were four stages to the project.

Crisis Phase (4-6 weeks): The distribution of cooked food, water, rationing of dried food, medical aid, clothing, bedding and tarpaulins for temporary shelter to 50,000 families.

Mid-term Rehabilitation (up to 40 weeks): The construction of 800 temporary houses, 30 toilet units, repairing of 250 fishing boats and motors, provision of psychosocial support, repairing of 400 damaged houses and repairing of 50 damaged schools.

Reconstruction and long-term rehabilitation (up to 108 weeks): Initiation and building up of community organisations, co-operatives and self help groups for capacity building, networking, lobbying and advocacy work on disaster management and mitigation. The construction of 2,900 earthquakeresistant core houses and 25 multipurpose disaster shelters.

Community Based Disaster Preparedness (up to 108 weeks): Establishment of 80 Disaster Mitigation Task Forces and provision of training and capacity building.

In the village of Kumarapettai, the government initially only identified 16 houses as having been damaged in the tsunami. This initial listing was proposed by the government in liaison with the







The shelter story goes far deeper than the structures. It is about people - their lives, livelihoods, social status and much more.

village Panchayat members. When CASA assessed the village they noticed other families who were in need that had not been acknowledged and these additional 75 damaged shelters were brought to the Government's attention.

Being locally appropriate

As all the beneficiaries were from the fishing community, balancing safety while staying close enough to the sea to assure that livelihoods and local needs weren't disturbed was essential. The beneficiaries were relocated at a minimum of half a kilometre from the high tide line to ensure their safety in case of future disaster events.

Given the large scale of the tsunami and of following interventions, the state had issued implementation processes and policies.

House sizes were therefore determined in accordance with these new rules. Working within these parametres, CASA generated seven possible shelter designs. The most effective and popular one was determined through local group workshops with beneficiaries. The final design covered a total area of 400 square feet; comprising of a living room, bedroom, kitchen, toilet and washroom with a small veranda at the front and the back. Additional space was left in case there were further building requirements or as a place for beneficiaries to grow crops on their land. However, upon visiting the villages Kumarapettai and Indira Nagar in Tamil Nadu, the beneficiaries confided that they didn't put too much consideration into the design options at the time of relief. Their judgment was clouded by their need for a safe shelter as soon as possible.

The local vernacular is deemed to have changed to concrete construction and it was voiced that this was what the beneficiaries' desired. In fact, the new generation did not know anything different as a result of concrete government structures. While a number of other shelter options were presented to the beneficiaries, it was feared that they would be rejected by the community if they did not go along with the concrete construction. Beneficiaries expressed aspirations to have a western 'civilised' house design, whether it was appropriate to their climate or not.

In discussions prior to the designs being finalised, there was a conversation between CASA and beneficiaries concerning the need for a prayer room. At this point it was deemed not essential. However, on visiting the shelters, most beneficiaries had converted their kitchens to a prayer room, resorting to cooking outside. The views of the researchers are that this could be a result of the size of the kitchen being too small; and not accounting for the nature of Indian cooking styles that generate large amounts of smoke. A larger, better ventilated, possibly open-space kitchen would be more suitable to meet beneficiary needs.

The procurement and construction process

Village committees were formed in both villages. In Indira Nagar, due to the local social dynamics, it was not always possible to include women at the initial stages; though female integration did occur later on in the project cycle. However, women were involved from the initial stages of development itself in the village of Kumarapettai.

The fishing community was adamant about not participating in the building process; stating that they did not have the necessary knowledge and refusing to learn the new skills. The work was therefore outsourced to local masons from neighbouring hamlets. Technical expertise was brought in from an engineering company which had previously worked in shelter programmes in other disasters across India. At every point of construction activity, CASA staff oversaw the projects.

CASA's view was that if house allocation had been done prior to construction and each beneficiary had been given the responsibility to supervise their house; it would have created a complex set of issues. At the time, this feeling was supported by the beneficiaries. However, in hindsight, they did voice that if they had more involvement in overseeing the construction process, then more care would have been put into the shelters; resulting in a greater sense of ownership amongst the community.

In terms of procurement, however, the centralised approach and bulk procurements drastically reduced costs. Most materials were procured from the local area. The Indira Nagar female group was clear that had each family been given the money, they could not have generated similar or as effective homes.

Integrating direct and indirect linkages

Relocation took into account the livelihood of this fishing community; staying at an adequate yet workable distance from the sea. The community was also taught effective techniques to repair fishing boats, motors and nets.

Long-term disaster management task forces were found to be in place in Kumarapettai, with an effective evacuation plan known by the villagers. Maps were painted on building walls to clearly depict evacuation procedures, with the location of all shelters, evacuation points and community buildings noted. During a recent tsunami scare in March/April 2012, the new siren system was put to a real life test. Community members were said to have effectively evacuated their homes, gathering at the community hall built by CASA. Additionally, the villagers have been designated into groups for effective response in case of future disasters.



Efficiently achieving the goals

CASA's housing projects began in the short time following initial funding and relief aid. The general consensus of beneficiaries was that they were happy with the shelters provided, knowing they were safe from future disasters. The women in Indira Nagar felt that their status and prestige within their society had risen as a result of living in concrete housing. The concrete roof ('medaveedu') was referred to repeatedly; and a tiled roof would not have given them the same satisfaction. Families also stated that the frequent expenditures on repairs and amendments needed in their old houses had reduced significantly.

A concern of the CASA projects is that the beneficiaries were not part of the building process, refusing to learn or be involved in the construction. Therefore, all future extensions or necessary repair work is outsourced to local masons in neighbouring villages and communities. While the fishing community may be able to pay these expenses; it is not a cost that all communities would be able to bear.

The learning and impacts

The programme has produced structurally safe shelters. In fact, the district administration head, known as the District Collector, has tried to advocate the CASA design in other places in the state.

However, community members themselves are not aware of construction techniques; and, in years to come, work will always be outsourced to masons without houseowners themselves knowing the essential elements to ensure safe concrete house construction. Yet, keeping in mind their location, resources and the easy accessibility to building knowledge; it could be perceived that the local fishing communities do not require the skills to build shelters on their own. In such a situation, perhaps greater emphasis on procurement and oversight committees could have encouraged somewhat greater engagement of the beneficiary families.

Psycho-social, disaster awareness and livelihood programmes have all helped build the community's resilience; leaving beneficiaries in an effective position to deal with and respond to future disasters.



Homes that exceed humanitarian space standards are strong and demonstrate a sense of ownership in the way they are adapted, expanded and decorated.

SEEDS

Barmer

Meeting local needs within the project approach

Heavy monsoon rains that began in August, 2006 engulfed several villages across 12 districts of Rajasthan; of which Barmer was the worst affected. Following a short relief phase, a sixmonth shelter programme began in November of the same year. 300 shelters were built targeting the most socially excluded groups.

Relocation was not considered the best option as it would have a detrimental effect on people's livelihoods. Therefore, where possible, the shelters were built on or close to the original land. However, in the case of Kotra, land ownership problems and a government decision to move the community forced relocation. This is the only village where some of the families opted to continue living in their original homes and use the new homes as stores.

The shelters were built in compliance with the local environment and vernacular; in terms of the design, technologies and materials used for construction. This was of particular concern so that the shelters could be maintained efficiently once relief aid had left Barmer. The chosen intermediate shelter design was circular, maintaining the local traditional designs of the Barmer villages that are resistant to sandstorms and strong earthquakes. Additional structural features were added to the design for the shelters to withstand any future floods, sandstorms or earthquakes.



A combination of hydraulic and manual block machines to ensure speed as well as sustainability.



Where is the dividing line between intermediate and permanent? An immediate relief decision, intermediate shelters and permanent housing.

These features were chosen in accordance with cost limitations, but more importantly to ensure the comfort and security of the beneficiaries. The shelter designs were developed with the help of Village Development Committees (VDCs) of local community members and community participation activities.

Being locally appropriate

Community participation was the foundation of the project designs for Barmer. The entire village was oriented on the project objectives, implementation processes and the significance of forming and running a Village Development Committee. These VDCs comprised of between six to ten members; helping facilitate interaction with a range of community members to ensure that all viewpoints of the affected communities were voiced.

Members included teachers, community representatives, 'accounts' managers and those capable of monitoring the progress in each village. VDCs were viewed as an effective step forward for the communities as they resulted in them becoming stakeholders, generating a sense of ownership of the final outcomes. While mud – the typical construction material in the region – was retained; cement was added to strengthen the blocks. With the view that ancient building techniques have survived for generations with good reason, the original circular form was also maintained in the designs.



Traditional houses: made of mud, circular in design and had thatched roof



New houses:

- made of mud stabilised with 5% cement and compressed for strength
- circular with inter-locking blocks, proper foundations, and structural bands for strength
- thatched roof for thermal comfort

Additionally, structural elements concerning appropriate foundations were implemented and taught to the locals.



Foundations, something new for the traditional Rajasthani Dhani.

In keeping with the local skills and construction knowledge, local masons were chosen. This was to ensure that knowledge of the building techniques remained within the community once this immediate project was over.

The procurement and construction process

The VDCs continued to play a key role, post the design stage, in the procurement and construction process. A key focus of the project in Barmer was to ensure that beneficiaries could maintain safe building processes once SEEDS had left. In order for this to work effectively, careful consideration was taken on material, staff and resource selection. The bulk of the material was local mud and straw. The limited amounts of cement and other tools that were needed were also acquired from locally available resources.

Beneficiary families were also involved in the on-site construction activities. Under the guidance of trained staff, the foundations and roofs were built and completed by the families themselves.

The technology itself was kept basic, with masons being trained on manual block making machines. The five manual machines and four strategically located block fabrication units were entirely managed by community workers themselves. The idea of 'interlinking' blocks cut out the need for mortar.

Unfortunately, the full benefits of scale could not be achieved because a new technology was being deployed for a limited number of houses over a very short time span. A larger initiative is needed to achieve economies of scale and to influence the market sufficiently to mainstream the new technology. As a result, while foundation and structural bands have been found in local houses built independently after the project; the stabilised compressed block technology has only been practiced in a very limited way by another NGO operating in the region and not by independent houseowners.

Integrating direct and indirect linkages

SEEDS addressed the issue of maintaining livelihoods by engaging local masons at all levels of the recovery process. As a result of using local masons at the forefront of the construction, the skills could remain embedded in the community even after the relief phase was over. The training covered block making and safe construction techniques for flood and earthquake-prone areas. Following the training, most of the houses were built by these twenty three masons themselves.

Sustainable techniques were implemented within the communities in relation to rain water harvesting and solar power. Water storage tanks (locally called tankas) had been damaged in the floods. SEEDS built seven large community tanks that can each hold 32,000 litres of water. The initiative also began looking at sanitation issues as open defecation is a widespread practice in Barmer. Five dry pit community latrines with attached bathrooms and tankas were built as a demonstration. These, however, were in use only till local women's groups managed them and then gradually went out of use. A series of workshops targeting women were conducted that highlighted the importance of such issues. It needs to be noted, however, that changing sanitation practices and introducing toilets in

communities that have never used them requires a significant educational component over a period of time. Since the project was limited to a six month duration due to strict back donor conditions, there was inadequate time to do this. Additionally, it also needs to be noted that community toilets are not a very successful model in general and families prefer and are known to maintain toilets mostly when singly owned.

Efficiently meeting the goals

Outcomes of the project have been successful in providing structurally sound and sustainable shelters to beneficiaries that are in keeping with local livelihoods and building principles. All the shelters visited in most villages (except for Kotra) were well-maintained and still happily inhabited. There are few complaints from beneficiaries besides the request for additional space and the complications of the thatched roofing that needs repair every couple of years. However this was an anticipated procedure. This is also a testament to the fact that although these were built as intermediate shelters; the careful consideration to the materials and design allowed them to endure over long periods of time - a more 'permanent' outlook.

Community participation was another integral goal that was efficiently achieved; as community members and beneficiaries were involved from the start to finish of the project. The shelter designs were therefore in keeping with the people's wants, needs and livelihoods. Additionally, beneficiary concerns were effectively voiced and taken into consideration through the VDCs.



Water is inseperable from shelter or anything else in this hot desert.

Water, sanitation and solar light components were carried out alongside the shelter reconstruction to address significant problems in the community. However, the time frame of the project did not allow enough time to penetrate deep-seeded practices and begin changing behaviour.

The learning and impacts

Revisiting Barmer 6 years later, there were signs of government housing that has since commenced for those below the poverty line. However, this construction has not taken into consideration structural elements or the local vernacular. Beneficiaries continue to prefer the comfort level of SEEDS shelters in terms of thermal comfort, as well as the feeling of safety. In fact, the response was similar in a different village where another agency - UNNATI - had worked along similar lines with mud shelters. The thermal comfort of the vernacular houses was found to be much greater than modern concrete ones. Thermal comfort becomes a major consideration in the desert where summer temperatures reach 50°C and winter temperatures dip to freezing point. The difference between the inside temperatures of a concrete house and a vernacular one is found to be up to 8°C.

The factor of using only local masons was effective in building their personal skill sets and sparking small changes in the community. Some DRR features are being replicated in new construction. While the few trained masons still present in the village clearly and intelligently depict the building principles learnt; many others have since moved on to further their careers in other



provinces and villages. It was stated that neighbouring villages have shown interest in learning similar techniques and designs; and this has led to wider dispersal of the knowledge within the mason community in the region. However, this effect could not be verified within this study.

The machines used to generate the mud blocks were left with the community on completion of the project. The villagers claimed that this machinery is now located in central Barmer; but there was no verification of its usage. A large part of the challenge was the fact that the stabilised interlocking mud blocks did not make an entry into the local market or practice, despite the skills and equipment having been transferred. The primary reason for this appears to be the short time span and limited scale of the project; not allowing enough space for local awareness generation and unable to make a dent in the supply chains of existing construction materials.

The colony of Kotra was the only village relocated in the Barmer project; and this aspect of the project has not been very successful. Since the construction took place, the relocation site has also become a government mining location. Over half of the 65 houses built are no longer occupied as the families have left to find other places to live and work.

The additional interventions were also found to be a challenge to maintain by the families for long periods of time after the project. Batteries of solar lights have not been replaced. Where water tankas had suffered some damage due to swelling subsoil, these have not been repaired.



Government approach of 'model' villages - a recurrent lesson against relocation.

MULTIPLE PARTNERS

Bangladesh

Meeting local needs within the project approach

This review surveyed the shelter response of five different partners to two tropical cyclones – Sidr in 2007 and Aila in 2009. The relevance of their work was apparent as all five worked with the most vulnerable communities who were not just on the frontlines of recurrent disasters, but are also threatened by the impacts of climate change. This low-cost housing was provided in an environment where other organisations were pumping in much larger budgets per house.

Various combinations of materials and designs were tried within and across projects, each retaining the core elements of rapid response and selection of most vulnerable beneficiaries.

Being locally appropriate

Within the coastal region, the contexts varied across various intervention areas from the delta to riverine plain to inland locations. Different approaches were deployed to meet these very context specific, micro-level needs.

A long experience of major disasters in the region helped a thinking process that included meeting basic needs and reducing future risks. On the other hand, this has also embedded an inherent short term relief approach; mostly extending to intermediate sheltering but not reaching long-lasting permanent solutions.

Though there was a realisation that CGI sheeting is not necessarily the most appropriate; the challenges of time and resources meant the houses were largely built with such materials. Bamboo was tried in combination, but in limited ways. These CGI structures are dependent on imported raw materials and are thermally very uncomfortable. Cement and steel-based structures are also expensive and require knowledge such as cement handling and curing that is often missing locally. A house by another international agency cost about USD 2,500, which is

over three times of the cost of houses using local and traditional materials.

With technical know-how on shelter construction being a limitation in these work areas, the best possible efforts were made to produce complete houses and to integrate DRR measures. However, these do need more rigour.

Integrating direct and indirect linkages

Raised house plinths, tied roofs, raised cyclone shelters and raised water hand pumps were all seen in these projects; highlighting an understanding of DRR features. Yet a more holistic approach to DRR when planning structures; and greater technical rigour, permanence and participation should be an aim. same pool of resources has been used for both facilities, it would be very useful if there is a system of cross learning among the NGO partners. A basic minimum standard could be agreed on in terms of space, design, safety and overall quality. Within this standard, partners should have the flexibility to make changes based on local context and community preferences, but without compromising on safety.

The procurement and construction process

On the whole, investments were made largely in products and less in processes. Yet, it is looking at shelter as a process that can yield the long-term benefits; giving importance to participation



Multi-purpose cyclone and flood shelters which operate as schools in normal times.

For example, in many instances, the multi-purpose cyclone shelter buildings (which serve as a school in normal times) have rightly been raised on stilts to keep them above the storm surge and flood level. Yet, in one case, the water hand pump and toilet which were built as a part of the same complex have been kept at the ground level. As a result, when people are stranded in the cyclone shelter in an emergency, the toilets and water hand pump will be unusable. Worse, the water in the hand pump will be exposed to contamination.

In a neighbouring village, another partner of the same programme had raised the entire infrastructure on stilts and the water hand pump and the toilets were placed on the first floor. Since the through empowered instruments such as procurement committees. Economising should not be done in DRR at any cost; and in shelter ecosystem issues to the extent possible.

Additional costs were incurred for basic DRR features such as the raising of plinths. With some additional spending, a little more could have been done to provide pitching or other protection to make DRR features more permanent.

CGI sheets formed a very significant component of the shelter material and it was reported that these are often imported by the country, making them a less desirable and expensive proposition. A very strong emphasis needs to be laid on use of only local materials and skills.



Combinations of materials to meet specific needs. Creative designing that will go a long way with a little bit of structural rigour.

Efficiently meeting the goals

The core desired outcome was to provide shelters quickly to the most affected and vulnerable families. This goal was accomplished, delivering successfully across very difficult terrain. It is notable that these families would have had few other options in the absence of this aid.

Closer to intermediate shelter, the houses met the immediate needs and ensured short or medium term risk reduction. Though many incorporated plinths and toilets, longer-term sustainability of these features needs further attention. In fact, the degeneration in the houses, plinths and toilets has a very visible presence in the villages and thus a detrimental impact on the community resilience efforts.

Families continue to do a number of household activities outside for want of the kind of spaces that could be accommodated in the design.

The learning and impacts

The extensive post-disaster aid experience of the partners allowed for a diverse range of outputs and accomplishments. On the whole, the processes of shelter aid are very well worked out and the partners very capable of implementing them efficiently. Besides shelter construction, this included the formation of committees, context-specific DRR features, small and large interventions such as raised water hand pumps and multi-purpose cyclone shelters.

While the results were achieved, the projects highlighted the inherent need to move from aid delivery to empowerment processes. This can be achieved relatively easily due to the strong experience and wide presence of the partners.

At the same time, the general awareness of disaster risks is very high in the local community; partly due to the frequent experience of facing disasters and partly due to the very visible DRR and risk communication work done by the implementing agencies.

Finally, since most of these communities are at the frontlines of climate change impacts, and though there is an ongoing discussion on the subject, specific attention could be given to climate resilience in shelter and related programmes in this area.



The problems of recurrent flooding are acute as most land is low-lying. Raised cyclone shelters help, but water points and toilets need to be similarly raised; as in fact was done by another partner in a nearby village.



CASE STUDY MATRIX

	SASY - TAMIL NADU	CASA - TAMIL NADU	SEEDS - RAJASTHAN	MULTIPLE PARTNERS - BANGLADESH	CONCLUSIONS
Context	Permanent shelter response to the 2004 South Asian Tsunami, specifically targeting families left out of relief packages.	Permanent shelter response to the 2004 South Asian Tsunami in coastal Tamil Nadu.	Intermediate shelter response to unprecedented desert flash floods in 2006.	Shelter response to two tropical cyclones – Sidr in 2007 and Aila in 2009. The work of five partners reviewed.	
RELEVANCE: Relevance addresses the overall programme goals: the 'why', 'what' and 'who funds'	SASY received funding of 1,66,632 GBP from Christian Aid over a period of 12 months to produce tsunami response work specifically with the 2004 tsunami affected Dalit and Adivasis communities in Tamil Nadu. 57 houses were built of a size of 18.6 sq metres (200 sq feet). Funding was granted in 2008. As a result of social complexities and being unable to acquire appropriate land, the project ran over a course of three years. The last shelter was constructed in 2011. As a result of applying for funding a long period after the initial tsunami responses were met, funding was limited. This resulted in restrictions to shelter designs and sizes.	Work commenced in April 2005 until March 2007 following the 2004 Indian Ocean Tsunami. Funding was from Christian Aid. Focus was on the most marginal families and on rapid response. 2,900 core houses of a size of 37.16 sq metres (400 sq feet) and 25 multi- purpose disaster shelters were built. Seven shelter options were presented to beneficiaries who chose the most appropriate one to meet their wants and needs. At the time of the project, there was limited demand and an unlimited supply of funding in the larger context.	In response to the flash floods of August 2006, on site work commenced in November 2006 and was carried out over six months. Funding was from Christian Aid and ECHO. 300 houses of a size of 20 sq metres (215 sq feet) were built at a cost of about 400 GBP (35,000 rupees) per house. Targeting was specifically focussed on the socially excluded groups. The chosen intermediate shelter maintained a circular design, maintaining to the local traditional designs of the Barmer villages that are earthquake and sandstorm resistant. Additional structural features were added to the design so the shelters could withstand any future floods, which were considered alien before 2006.	All five partners worked with the most vulnerable communities who were on the frontlines of recurrent disasters and also threatened by climate change impacts. The house size was around 20 sq metres (215 sq feet) and were built at a cost of around 400-460 GBP (600- 700 dollars); though both size and cost varied from partner to partner. Various combinations of materials and designs tried within and across projects, each retaining the core elements of rapid response and selection of most vulnerable beneficiaries. Low cost housing was provided in an environment where other organisations were pumping in much larger budgets per house.	All projects demonstrate high relevance in terms of needs, deliverables and beneficiaries. However, the house packages, sizes and timelines varied very widely. Bangladesh and SASY houses were the smallest, SEEDS houses being part (core) shelters and CASA houses being largest. There was a long delay in SASY houses due to the complexity of the situation. There is a need for an agreed relevance framework and degree of compromises normally to be allowed.

	SASY - TAMIL NADU	CASA - TAMIL NADU	SEEDS - RAJASTHAN	MULTIPLE PARTNERS - BANGLADESH	CONCLUSIONS
APPROPRIATENESS: Was the project tailored to local needs, increasing ownership, accountability and cost-effectiveness accordingly?	Through group workshops with beneficiaries, shelter parametres were determined in relation to the limited funding; prioritising what beneficiaries felt were the most important aspects of their shelters.	Beneficiaries refused to partake in the construction of shelters because of over supply of aid in the region and the range of free options available. However, they were a part of the decision making process for the shelters design.	Through the use of Village Development Committees and beneficiary interaction, the design was in keeping with beneficiary wants, needs and the local vernacular.	Within the coastal region, the context varied across various intervention areas - from the delta to riverine plain to inland locations. Different approaches were deployed to meet very context specific needs.	While `standards' are often irrelevant in humanitarian work situations, more thought is needed on an acceptable bandwidth of house sizes, designs, materials and construction. Participation can sometimes be difficult to invoke and
Appropriateness addresses the inputs and activities of the programme: the 'how', 'who implements' and 'who builds'	Local construction skills were not well known in the Dalit community. However, the local context of social conflicts between Dalit and Non- Dalit communities was an important consideration to the shelter design. This was especially true in terms of material selection to decrease the chance of man made damage to shelters. Shelters were built at a reduced size of 200sq ft that has since been viewed as insufficient to accommodate the relevant design features deemed necessary to live comfortably.	Beneficiaries wanted shelters as soon as possible without thinking in-depth about the long term effects. The context of working in an environment of overflowing aid posed challenges. The district administration acknowledges the CASA design as a good one and has shared it onwards in the state administration.	Feelings of ownership were achieved as a result of involving beneficiaries in every step of the shelter process, from concept to construction. The typical local construction material of mud was used, but improved by stabilising with about 5% cement and shaping in the form of compressesd interlocking blocks to ensure a safer construction material.	Under pressure to meet challenges of time and resources, houses were built using common materials such as CGI sheets. It is realised that this is not the best material. Bamboo was tried in combination but in limited ways. Technical know- how on shelter construction being a limitation in the work areas, best efforts were made to produce complete houses and to integrate DRR measures; but they need more rigour.	familiarity with participatory tools and options is needed for the implementation teams. The larger aim should be of permanence in housing rather than interim solutions.

	SASY - TAMIL NADU	CASA - TAMIL NADU	SEEDS - RAJASTHAN	MULTIPLE PARTNERS - BANGLADESH	CONCLUSIONS
INTEGRATION: Did the project take a holistic, integrated, long term approach to solving the interconnected problems face by communities?	SASY focused upon not only long-term shelter designs, but also the complex social variables affecting the Dalit communities. In order to address the social issues, SASY placed a high importance upon livelihood programmes for Dalit communities.	Local skills and knowledge were kept in mind; ensuring that all villages remained at an adequate distance from the sea to assure safety from future disasters whilst being able to effectively maintain their fishing livelihoods.	SEEDS addressed the issue of maintaining livelihoods by engaging local masons at all levels of the recovery process.	A long experience of major disasters in the region helped a thinking process that included meeting basic needs and reducing future risks.	There is a strong need across the board to look beyond shelter as shells and consider the entire housing ecosystem, with WASH, DRR, CCA, livelihood spaces, social interaction and recreational spaces, women and child friendly
Integration addresses how the programme made connections across departments, organisations, sectors and context.	Dalit community members lacked construction knowledge and all work was therefore outsourced to local masons in surrounding villages and communities with previous construction experience. Government forces were strongly involved in land acquisition and ownership rights for dalits. This was particularly the case for Thittakatur in terms of the new access road provided.	The project was addressed in four stages: 1. Crisis phase 2. Mid-term rehabilitation 3. Reconstruction and long term rehabilitation 4. Community based disaster preparedness Masons were selected from within neighbouring communities, ensuring livelihood to the locals and local appropriateness in skills.	Local masons were trained on building techniques to prevent damage from future disasters; and took the lead in constructing the 300 shelters. WASH issues were touched upon but could not be addressed to a desirable level within the tight six month construction period.	Raised house plinths, tied roofs, raised cyclone shelters and raised water hand pumps were all seen in these projects, highlighting an understanding of DRR features. More technical rigour, permanence and participation can be an aim. The long experience of major disasters also carries an inherent short term relief approach, mostly extending to intermediate sheltering but not long lasting permanent solutions.	spaces, and green areas. Shelter programmes need to be based on processes that start from the context. Project teams need to have the complete range of skill sets.

	SASY - TAMIL NADU	CASA - TAMIL NADU	SEEDS - RAJASTHAN	MULTIPLE PARTNERS - BANGLADESH	CONCLUSIONS
ECONOMY: Are we or our partners buying inputs of the appropriate quality at the right price from the right place?	SASY had no prior experience of building shelters. However, they ensured that an engineer and a local architect who had vernacular knowledge were hired to oversee the construction project and that the execution was planned and economised.	As a result of conducting the project in a centralised manner and buying materials in bulk for a large quantity of houses, the costs were drastically reduced.	The bulk of the material was local mud and straw. Limited amounts of cement needed along with tools were acquired from locally available sources.	CGI sheets formed a very significant component of the shelter material and it was reported that these are often imported by the country, making them a less desirable and expensive material.	Very strong emphasis needs to be laid on use of only local materials and skills. Shelter needs to be seen as a process and not a product, giving importance to participation through empowered
Economy addresses the amount of inputs	Local vernacular designs were proposed to beneficiaries, but due to social stigmas and feelings of safety, communities opted for concrete structures. This was chosen even with the understanding that using concrete would result in a higher cost and thus a smaller shelter. Houses finally built were small yet resource intensive. The issue, however, needs to be looked at in a larger context of the sense of insecurity in the community and the lack of time available to the partner to address this in an educational mode.	Materials and labour were sourced from local neighbouring communities and villages, ensuring low transportation costs and at the same time infusing money in the local economy. Local constraints held the project team back from setting up a purchase committee of beneficiaries in the village so they have a greater say in quality control and material selection. CASA does this in other shelter projects though.	The technology was kept basic, with manual block making machines being used by local masons ensuring teaching to locals on how to acquire the materials and to use them themselves for future construction and repairs. Full benefits of scale could not be achieved because a new technology was being deployed for a limited number of houses in a very short time span. A larger project is needed to achieve economies of scale and to influence the market sufficiently to mainstream the new technology.	Additional costs had to be incurred in DRR features such as raising of plinths. However, a little more can be done here by providing pitching or other protection to make DRR features more permanent; even though this will come at further additional cost. Investments were largely in products and less in processes. Process based investments can yield long-term benefits.	as procurement committees. Economising should not be done in DRR at any cost, and in shelter ecosystem issues to the extent possible.

	SASY - TAMIL NADU	CASA - TAMIL NADU	SEEDS - RAJASTHAN	MULTIPLE PARTNERS - BANGLADESH	CONCLUSIONS
EFFICIENCY: How well do we or out partners convert inputs into outputs?	On the face of it, this was a very delayed programme with limited outputs. Yet, this has to be seen in the very difficult circumstances and the tough context of the marginalised community.	Families stated that they were spending less on repairs of their houses then before. Outputs thus immediately translated into outcomes.	Through the aid of the Village Development Committees, the most affected and vulnerable community members received shelters in a transparent manner.	The processes of shelter aid are very well worked out and the partners very capable of implementing them efficiently. Most partners had experience of large scale post-disaster interventions.	Efficiency is generally observed to be at high levels in terms of product delivery within given time and resources. There is scope for improvement in efficiency
Efficiency addresses the amount of outputs	Construction commenced during the rainy season, resulting in the concrete not being able to set properly. This is an issue that could influence long term structural quality. A very significant output, besides the houses being safe from future floods and cyclones, was the sense of security and rights that were given to a community severely excluded from the larger social context. As a by-product, women based committees that were developed were also teaching the Dalit community about their legal rights and procedures to address future issues.	Within the means of a post-disaster shelter programme, the quality and size of the houses was very high as compared to other projects in the region. Women-led groups that engaged with the project team operated as unique committees and the empowerment of women was particularly noticeable. As a result of the community not partaking in construction, all future work will have to be outsourced and local building knowledge in the communities remains limited.	Masons that were trained are still practicing some of the safe sustainable construction techniques in relation to flooding and earthquakes. Although the houses were built as intermediate shelters, there was careful consideration to designs, construction materials and technologies so that they would endure for a long period of time. It was more of an outlook on permanent shelter. The entire project with beneficiary selection, consultative design and construction processes was accomplished in a record time of six months in a very difficult terrain with far spread village sites.	The diverse range of outputs, including committees, context specific DRR features, small and large interventions such as raised water hand pumps and multi-purpose cyclone shelters besides houses is an accomplishment coming from long experience of post- disaster aid. There is a need to move from aid delivery to empowerment processes. This can be achieved relatively easily due to the strong experience and wide presence of the partners. Shelters themselves can be seen in a more long term perspective, aiming at permanence.	keeping in mind the larger goals of inclusion, appropriateness, future safety, overall development and long-term impacts.

	SASY - TAMIL NADU	CASA - TAMIL NADU	SEEDS - RAJASTHAN	MULTIPLE PARTNERS - BANGLADESH	CONCLUSIONS
EFFECTIVENESS: How well are the outputs from an intervention achieving the desired outcome?	Desired outcomes were to provide social support and shelters to Dalit communities, leaving beneficiaries in a safer and better recognised way of life.	Desired outcomes were to provide beneficiaries with fast, efficient and structurally sound shelters.	The desired outcomes were to provide safe and sustainable shelters that could withstand any future disasters and were based on vernacular designs and local materials.	Desired outcomes were to provide quick shelters to the disaster affected families that were most vulnerable to future disasters.	From a project perspective, highly effective in terms of shelters delivered on time and within cost in most cases. Effectiveness in secondary areas
Effectiveness addresses how and to what extent the programme reached its goals	Financial resources were limited which affected the standard of shelters. It limited safety features and could not meet the comfort levels of beneficiaries' wants and needs. Beneficiaries were not a part of the construction process and have since not been able to afford additions to their shelters, lacking knowledge and funding to do so. Therefore, they have resorted back to their original building techniques. Additional social understanding of how to better their livelihoods and legal rights has also been a boon for the community.	Due to the comfortable availability of resources following the 2004 tsunami, the desired level of assistance could be extended, resulting in large, safe and comfortable houses. Additional support in the form of psycho social and livelihood programmes was extended to better help the community recover from the disaster.	Outcomes of the project have been successful in providing structurally sound and sustainable shelters to beneficiaries that are in keeping with local livelihoods and building principles. In terms of quality, shelters are still fully active with nominal damages occurring; mostly to the thatched roofing which requires repairing once every one to three years. Although the beneficiaries were worked with closely and taught structural techniques to better future developments, it has not necessarily been implemented in shelters since relief aid has left.	Shelter delivery was achieved, providing the targeted families with houses that are often on raised plinths and have toilets. In many houses, a number of activities are done outside for want of the kind of spaces that can potentially be accommodated in the design. The goals sometimes are closer to intermediate shelter, thus meeting immediate needs and ensuring short or medium term risk reduction. Longer term sustainability of these features needs further attention.	long term needs requires attention. A larger initiative of repositioning shelter aid in itself as a process needs to be looked at collectively.

	SASY - TAMIL NADU	CASA - TAMIL NADU	SEEDS - RAJASTHAN	MULTIPLE PARTNERS - BANGLADESH	CONCLUSIONS
IMPACT: What were the short and long term impacts of the project - social, economic, technical, environmental - on individuals, gender and age groups, communities and institutions. Impacts can be intended and unintended, positive and negative, macro (sector) and micro (household).	Beneficiaries were happy to have received a structurally safe shelter. However, they are no longer satisfied to be in the position of having to build additions to the shelters that are not structurally sound, additions that have since been destroyed in winds and rains.	The shelters continue to be used. Many additions have occurred due to personal preference and comfort and not really due to necessity.	Skills, livelihoods and shelter knowledge were improved upon, putting beneficiaries in a position to potentially better their future development and lives.	Shelter delivery to the worst affected and most vulnerable families across very difficult terrain was achieved successfully. It is notable that these families would have had very little in terms of options in the absence of this aid.	Short term impacts are largely positive, but long term impacts need to be worked upon. For this, shelter needs to be seen as a process. Significant emphasis needs to be put on educating the local communities, involving them in all stages of the process, training masons
Impact identifies why the programme did or did not achieve its goals and which processes led to these results.	Following social programmes, beneficiaries gained an understanding of how to correctly address legal matters concerning their community rights. One of the biggest reported achievements was of confidence and a position of recognition in society, though still with inherent constraints and risks. This project could have been significantly enhanced with sufficient funding, thus avoiding a limitation of space in the shelters.	The district administration head has been seen trying to promote further shelter construction using the CASA design in other areas. Communities are well informed about disaster preparedness schemes, and how to tap into these. Their engagement with local government authorities has improved after the shelter programme through which they could establish better linkages.	Beneficiaries remain safe and secure in their shelters, choosing them over other shelter options, especially during the rainy seasons. Ownership amongst beneficiaries was achieved from an early stage in the project resulting in high occupancy rates and maintenance of the shelters. The construction process was of low skill requirement, using portable manual machines. However, there was limited ability of the masons to impact the local market. This has resulted in very low penetration of stabilised mud blocks in local construction practices after the project.	General awareness of disaster risks is very high in the local community; partly due to the frequent experience of facing disasters and partly due to the very visible DRR and risk communication work done by the implementing agencies. The shelters themselves and the DRR features incorporated do not have the desirable level of permanence and long term impact. In fact, the degeneration in the houses, plinths and toilets has a very visible presence in the villages and thus a detrimental impact	and construction workers and advocating with local governments. While the jargon exists at all levels, effective communication strategies and tools need to be deployed to have a deeper impact resulting in action.

L pi ha th ba	Livelihood programmes have enhanced he lifestyles of peneficiaries.	Beneficiaries are dependent on outsourcing construction to workers from neighbouring areas at high costs. The women in Indira Nagar felt more secure in the houses built by CASA due to the construction techniques used. They felt that their status and prestige within their society also improved as a result.	Sustainable practices on water harvesting and solar power have not lasted as there is not sufficient maintenance knowledge amongst beneficiaries. In comparison to government shelters, beneficiaries prefer the comfort levels of the shelters built by under the project as they are significantly cooler in the hot desert summers and there is a sense of reassurance that they are safer.	Most of these communities are at the frontlines of climate change impacts. Though there is an ongoing discussion on the subject, specific attention can be given to climate resilience in shelter and related programmes.	
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RECOMMENDATIONS

The recommendations below emerged from the conclusions drawn after the literature review and field research across India and Bangladesh; and from a national-level workshop on improving shelter response. This brought together shelter experts, field workers, donors, government representatives, architects and communication professionals.

The discussion at the workshop threw up three broad areas that needed attention. The first was the creation of a sectoral strategy; including private sector participation, MOUs with the government and looking at transitional shelter (where used) in a stage-wise manner. The second was looking at larger climate-resilient habitat including water management training and using infrastructure as a backbone for long-term sustainability. The third was the capacity issue; including the need to educate donors, build project management capacities, enhance education and technical training and to use media as an integral part of this work. It ended with a firm commitment to creating an India Shelter Forum.





It is the softer elements like skill building that matter more in the larger picture.

The broad line recommendations for future shelter projects state that these must be inclusive, participatory, local, permanent, ecosystem-driven, efficient and advocacy-led. These are further broken down into action points to be undertaken at a strategic level by international/national aid agencies and donors; and at a ground level by implementing local partners. An 8th recommendation elaborates on possible further research that would help improve shelter response and address new and critical challenges.

The policy discussion that resulted in a recommendation for an India Shelter Forum.

RECOMMENDATION 1: INCLUSIVE

Ensure coverage of the most vulnerable including socially excluded groups and persons with special needs

International and national aid agencies and donors

 Facilitate nuanced understanding and sensitisation among partners and other stakeholders on inclusion in shelter programmes through specific documentation and communication of issues of inclusion on shelter.

Local implementing partners

- Conduct mapping and power analysis to identify the most vulnerable including socially excluded groups, PWD, elders, women, children, the landless, the displaced and others.
- Familiarise field staff with tools to help drive inclusive processes.

RECOMMENDATION 2: PARTICPATORY

Ensure participation and increased choices of families in all stages of the rehabilitation process.

International and national aid agencies and donors

 Simplify strategic approaches such as Participatory Vulnerability Capacity Assessment (PVCA) and Value for Money (VfM) to make them more accessible to partners and field staff.

Local implementing partners

- Be flexible with the design, technology and materials and allow communities to modify where appropriate; while ensuring structural safety and sustainability.
- Create community based institutions like VDCs and procurement committees to drive the shelter process.
- Ensure representation in participation of the families, specifically of women members.

RECOMMENDATION 3: LOCAL

Develop and integrate locally appropriate designs, technology and materials in shelter programmes.

International and national aid agencies and donors

• Create linkages with regional and national technical institutions to encourage identification and refinement of locally appropriate shelter solutions.

Local implementing partners

- Consult with and strengthen skill sets of local construction workers as part of all shelter interventions.
- Establish links with local technical institutions to pre-identify appropriate technology and materials for the area, with specific reference to indigenous knowledge.

RECOMMENDATION 4: PERMANENT

Promote permanence in housing rather than focussing on immediate and intermediate needs.

International and national aid agencies and donors

- Treat shelter interventions as a developmental programme rather than emergency response.
- Move away from temporary and intermediate shelter approaches.
- Educate back donors on the need for a developmental approach with permanent shelters.

Local implementing partners

- Carry out long-term shelter needs assessments and don't look at it as just immediate relief.
- If transitional shelter is the only option, then carefully plan what it will transition into and how.

RECOMMENDATION 5: ECOSYSTEM-DRIVEN

Address the entire shelter ecosystem and approach shelter rehabilitation as a process; incorporating safety and sustainability principles in their entirety.

International and national aid agencies and donors

• Avoid looking at shelter rehabilitation projects in isolation and seek comprehensive proposals.

Local implementing partners

- Carry out detailed risk assessments and comprehensive habitat planning; including DRR, WASH, environment and livelihoods.
- Do not use principles selectively and mainstream DRR into every element.
- Opt for local, enterprise-based solutions to ensure sustainability and support to local livelihoods.
- Create safety nets through mediums such as micro-insurance for the most vulnerable.

RECOMMENDATION 6: EFFICIENT

Build shelter-specific capacity and skill sets across all levels.

International and national aid agencies and donors

- Facilitate increased capacity building and cross-learning among partner organisations.
- Invest in research, learning and partnerships with regional and national institutions to create databases of available appropriate options and map resources.
- Develop a strategy for the shelter sector and a rehabilitation framework.
- Work with back-donors to ensure adequate funding flexibility to adapt to the local challenges and context.

Local implementing partners

- Inculcate project management and shelter-specific skills.
- Ensure comprehensive damage and loss assessments using available standard tools.
- Adequately document initiatives for cross learning; and use communication tools and media to reach out and educate communities.
- Ensure compliance with recognised standards and facilitate skill building of field staff in this area.

RECOMMENDATION 7: ADVOCACY-LED

Engage and work through multistakeholder institutions including governments, civil society and the private sector to influence shelter policies and practices.

International and national aid agencies and donors

• Engage in advocacy and strategic partnerships to influence shelter sector policies; including government programmes.

Local implementing partners

• Engage and work through local government structures and civil societies.

- Build partnerships with the local private sector to ensure that shelter programmes activities do not compete with the local enterprises.
- Advocate with the government on issues of land rights and relocation; as well as on long-term risk and developmental issues.
- Take an active role in inter-agency groups and influence thinking in the larger humanitarian sector.

RECOMMENDATION 8: FURTHER RESEARCH

Shelter after disaster is an often talked about but grossly under-researched subject. This is true particularly in the non-engineered aspects, wherein ways can be found by humanitarian agencies to implement better programmes. Some of the key areas requiring urgent research attention are:

Social inclusion in post-disaster shelter

Social exclusion is an underlying risk that often marginalises and excludes the most vulnerable during periods of post-disaster assistance. Shelter assistance may be narrower in breadth and coverage, but is one of the most expensive and critical components of aid for long term recovery and resilience. While there have been pieces of research on social exclusion and post-disaster shelter separately, the point of connect between these two needs to be studied to unravel the nuances and to find ways to address this invisible gap. Suggested research approaches may include a longitudinal study of ten prominent post-disaster shelter responses, diverse in their scale, hazard, shelter typology, geo-climate setting and socio-economic context. The study can lead to an advocacy pack, a learning module and a field operators' guide on ensuring an inclusive approach that reduces long term resilience. Learning from the current research, this study must also document and learn from the negative long-term impact that a short sighted approach of inclusion may pose.

Green rehab: sustainability in shelter programmes

Shelter programmes have usually used materials, equipment and skills imported from outside the work location; without consideration to the ecological footprint of the production and transportation. A case in point is of Corrugated Galvanised Iron sheets which are used extensively; and sometimes, as in the case of Bangladesh, imported from other countries! Not only is a bulk of the aid money going to commercial producers, traders and transporters outside the target community, but the carbon footprint is huge. Worse, the risk of the emissions is put elsewhere, in some other unrelated community. Research needs to first establish the size of the carbon footprints of existing shelter initiatives and accordingly find ways of reducing it, so that shelter programmes are greener.

Balancing vernacular and modern technologies

Vernacular technologies need to be looked at since they are time tested, culturally suitable, environment friendly and cost effective. At the same time, it needs to be kept in mind that they may not be able to offer a desirable level of disaster resistance; particularly in the face of climate change and unprecedented risks. The example of flash floods in the deserts of Rajasthan and Ladakh poses such challenges. A research initiative can document prominent vernacular shelter technologies for the main geo-climatic regions and assess them against possible future disaster risks. A well considered menu of what modern technologies can fill specific gaps could subsequently be drawn and made available to shelter aid agencies.

Climate and disaster resilient housing

Climate resilient housing implies features that will withstand hazards that were so far not considered real risks in a specific geographic area; as they have not occurred in living memory or recorded history. For example, houses in hot deserts were traditionally built at the base of trough-like topographic formations so that surrounding dunes offered protection from hot winds and sand storms. Now the new threat of flash floods exposes these houses to inundation risk. Since they are built of mud, this is a significant threat. There are similar new threats being faced in mountain regions, river basins, coastal areas and small islands. Research needs to look at the threat of climate change on current housing practices in different geo-climatic regions and propose ways of adapting shelter designs.

Shelter in urban disaster response

Half of India will soon be living in cities, with over half of these urban dwellers living in sub-standard housing with very high levels of risk. While there have fortunately been no large urban disasters in the region so far; there is a need to learn from global experiences like the Haiti Earthquake of 2010. This fast growing risk needs to be urgently addressed. There is hardly any available knowledge on post-disaster shelter aid in the urban context in the region. What is available, mostly from Gujarat where four towns were affected by the 2001 earthquake, projects a very scary picture of challenges ranging from land rights, migrants and rehabilitation of multi-storied housing to informal sector livelihoods, density and conflicts. Research is urgently required to map the urban risk with a focus on the urban poor. A set of principles, practice guides and options are required for shelter assistance in urban disasters.

Shelter guidance for aid workers, homeowners and construction workers

Vision documents, lessons learnt reports and organisational policy notes are of little use in changing behaviour unless there are simple practice tools targeted at the workers on the ground; and communicated in a language that works at that level. User friendly guidance material is required for field practitioners and end users in the shelter assistance domain. This could use various media for different audiences. Research could look at the current perceptions and behaviours in these sets of audiences and guidance kits created accordingly to meet specific needs.

Christian Aid

S J House, D 25 D, South Extension Part II, New Delhi - 110049, India Web: www.christian-aid.org

