



Rising to the Challenge in Aceh: NGO-Led Shelter Construction

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EXECUTIVE SUMMARY

The December 11th Inter Agency Shelter Construction Forum, sponsored and hosted by Oxfam, was a response to the challenges faced by NGOs involved in reconstruction programmes in Aceh. It was the first event of its kind for organizations involved in shelter to meet in the UK and to share experiences with a view to common learning. Eighteen participants representing eight different international organizations met to share their recent experiences.

Since the tsunami of 26th December 2004 that left over 100,000 dead in Aceh and obliterated the housing stock, many NGOs have been engaged in emergency shelter, transitional shelter and are now constructing permanent housing. Challenges include not only the scale of the emergency itself but the lack of capacity that currently exists within NGOs and governments to tackle housing people quickly and appropriately after disaster. Specific issues in Aceh concern responding to changing government policy, sourcing sustainable materials and labour and building quickly while addressing long term needs. While these challenges are specific to the context of Aceh they also represent key issues that in many other shelter responses. The scale of the tsunami highlighted both the importance of shelter programmes and the need for NGOs to build their capacity in this sector. Some organizations already have significant institutional knowledge to share and other organizations are rising to this challenge by focusing on shelter as a new programme area. This is therefore a critical moment in the history of the sector when NGOs have the opportunity for going forward together.

FORUM AIM

The aim of the Shelter Construction Forum was to improve sector wide shelter programming and practice through inter-agency sharing of lessons learned in Aceh. To that end the agenda was structured around four presentations, each followed by a learning session with questions and answers.



The sessions focused on the relationship between NGOs beneficiaries and contractors, the advantages and disadvantages of using community labour or contractors and technical aspects of construction such as seismic resistance and site selection. Discussions carried on through the coffee break and over lunch. The forum concluded with a short discussion on the future of such forums, their format and venue.

WELCOME

The group were welcomed by Robin Palmer, a Global Land Rights Advisor with Oxfam for the last 20 Years. Robin stressed the importance of looking at the whole picture in order for relief efforts to succeed in Aceh.

Oxfam's recent Briefing Note on Land Rights may be downloaded here:

[The Tsunami Two Years on: Land Rights in Aceh \(121k\)](#)

Tom White, Chief of Party, CHF Indonesia

Tom presented CHF's Catalyst Model for reconstruction. CHF are primarily a housing organisation with a development focus, but in recent times they have worked in disaster relief.

The Catalyst Model

In the Catalyst Model CHF acts as a mediator between beneficiaries and contractors. CHF facilitates and manages contracts for communities but responsibility for materials and labour is held by the contractors. Communities are responsible for checking the work but CHF also has oversight to check quality. This approach relies heavily on good contractor selection and management so the roles of all parties are clearly defined in written agreements.

Community Participation

Beneficiary identification and sign off are all done in front of the community as this ensures a level of verification at a later date. Beneficiaries sign off on how the houses will be built, what they will look like and where they will be built. There is no individual house design because this would challenge the speed at which contractors can build. CHF use photographs of beneficiaries holding written agreements to ensure accountability in the absence of rule of law in some developing countries.

The community are asked to elect a Community Reconstruction Committee who will have oversight, attend meetings, will accept materials delivery and sign off. There are 2 months of 'punch card issues' (snagging) and after this time the communities take full responsibility for the houses.



Finding Good Contractors

Following CHF's advertisement for contractors in local papers, over 2000 contractors applied, but approximately 10% were real contractors with any experience. Contractors pay 2million Rs to be part of the prequalification process, which is refunded if they do not get through the process. Following a public bid opening for tenders there is a unified price negotiation in order to ensure fairness. The contract document is used to illustrate the relationship between contractor and the beneficiaries. There is no relationship between CHF and materials suppliers so responsibility for deliveries is on the contractors.

CHF employ 1 expat supervisor per 150 houses who monitor the labour. Clauses for termination and change orders included in the contract. It takes 2-3 weeks for termination and CHF have terminated two contractors so far in Aceh.

Conclusion

The Catalyst Model is intended to be progressive as it teaches contractors best practice and they become more professional through learning how to take responsibility for finances, materials and construction

A Catalyst Approach to Housing in Aceh

quality. It promotes role of law through rigorous paperwork and the democratic process through the elective process to form the Community Reconstruction Committee.

The intention is always that CHF as 'The Catalyst' always plans to leave so communities expect to take final responsibility for the houses.



Q & A

Tom discussed rent seeking behaviour as a problem in Aceh. This is described as beneficiaries attempting to own more than one house in order to rent property to others. Although this is natural entrepreneurial behaviour it thwarts the property registration process.

Tom described the urban areas as a real challenge. He explained that they found the more rural communities in Aceh Jaya more cohesive. In Aceh Besar many had been killed by the tsunami and the land had also been heavily impacted. Many agencies overlapped in this area making it difficult to verify claims to land or infrastructure needs. CHF staked out plots community committees to avoid disputes over land.

Contractors responded very differently to CHF's approach. The best one had 280 people on site in uniform in just a few days. Some walked off site so CHF had to build directly to complete the construction. This proved to be three to four times slower because it is hard for an agency from outside to understand local labour laws and procurement methods.

It was usually the contractor's financial management that failed. 60-70% works complete is the tipping point when they can no longer finance the construction. However Tom stated that the ones that fail seem to learn from their mistakes because if they are inclined to finish CHF tells them what they need to do. If they had no inclination to finish their contract was terminated.

Lisa Reilly from Oxfam stated that they had started houses in Baba Ei as direct build earlier than CHF but CHF had finished at the same time because their construction was faster. CHF's system allows for pressure to be put on the contractors but also offers incentives. Those who perform best get more houses to build.



Vicki Wooding, International Programme Manager, Habitat for Humanity



Vicki explained that Habitat for Humanity are new to Disaster Relief. 99% of the housing they build in a development context. However, Habitat recognises that construction can be therapeutic for those who have been traumatised by disasters. They are building relatively fast but their allocations are a lot smaller than many other NGOs.

Habitat were working in Aceh before the tsunami and will continue development projects there. Based in a different geographical region, they were aware of prejudice against Aceh from their Javanese staff.

Speed of Build

Funding was available for the first year so houses had to be completed in order to retain it. In this timeframe using volunteers proved too slow so they began to use contractors. This dramatically improved quality and speed of build. They used small contractors and trained them in financial management. Some of these contractors have been retained and used in different areas. There is an expectation that contractors will make a profit and this is taken into account, but contractors can still build cheaper than NGOs.

In some areas they spent two months for trying to work with community. After this time if the community do not want to participate Habitat will leave. In some areas there was a vote between which NGO the

community wanted. Communities that do not want to work with Habitat will then get picked up by another NGO or BRR.

The Construction Process

Habitat are direct implementers using volunteers. Each homeowner puts in 200 hours of sweat equity towards the cost of building their own home and volunteers come from outside to help with unskilled tasks. Experienced supervisors oversee the works. Communities must find their own volunteers but if they are unable to find enough volunteers a labour contractor is brought in.

Sub village heads initially identified homeowners but Habitat has since gone away from this approach due to corrupt claims for houses and they now identify homeowners individually.

Habitat work to build the capacity of local contractors. They interview the labourers of the contractors for prequalification in order to find out what the company is like.

HFH has workshops and warehouses and handles all procurement and delivery so their contracts are labour only. Contractors get a small advance for first week and the foreman disburses the pay to the workers. Progress is checked and then payments are made twice a week. The short time between payments is an incentive to work steadily and to improve quality.

Habitat is developing a Resource Centre in Aceh to provide training and a workshop. It will remain after the relief efforts are complete. They also have a concrete block workshop in Melaboh to supply their projects.

Participation

Habitat has found that people far more interested in resuming normal life than building their own houses now. Speed of

Using Contractors in Aceh

construction is more important to families than the participatory process. Individual interaction does affect sense of ownership though. Habitat staff live within the community, eating in the local restaurants etc.

Families have the ability to influence house design even with contractors, which gives them a sense of ownership. Even small changes can have a significant effect. People want to be on site to watch their house being built, which also encourages ownership and helps with quality control, but people do not really see it as theirs until the defects month is over. Habitat also offer a loan at a later date to improve and change the house.



Q & A

Vicki explained that the majority of their field staff are local so they can build local capacity for the organisation at the same time. Tom White contrasted this approach with CHF's model because CHF intend to leave.

Robin Palmer supported Habitat's approach to working with the whole community not just those affected by the current disaster.

He reminded the group of the elections held the same day. If peace doesn't hold after the elections everything could change. We have to find imaginative ways to reach out to conflict affected communities and other vulnerable groups such as renters and squatters.

Vicki explained how Habitat handle security of materials. Habitat make daily deliveries to site so the warehouses are never full at any one time. Habitat has some very strong materials controls and arranges materials are in the warehouses to support this. Main contractors are working on one house at a time so it is easy to follow their materials consumption. Habitat also has its own trucks for deliveries. Habitat hopes to scale up and become a resource for other organisations.

There is a perception that once all the reconstruction is done there will be less demand for trained labourers but Vicki explained that Habitat are only training a small number of builders. There will be a change in the region if there is peace, which will mean road building so Habitat are not just training people to build houses. Habitat are training skilled labourers such as carpenters with power tools so they can get a better income. Rick Bauer confirmed that reconstruction may take up to 10 years so building will be the main economic mover in years to come.

The phenomenon of NGOs providing free houses to people was questioned by the group. It was pointed out that it had happened in Bosnia and Armenia with a higher unit cost. However, although the organisations present have done housing before but there are many in Aceh who have not. Jo da Silva pointed out that existing institutional knowledge allows an organisation to make a judgement but if they have none they should not start a construction programme.

Elizabeth Babister, Interim Programme Shelter Coordinator, Oxfam GB

The session opened with a description of beneficiary led reconstruction. There are two commonly understood approaches:

Self Build - each family builds their own individual house.

Cooperative Reconstruction - skilled and unskilled labor is found within the community. The NGO normally supervises, trains and provides materials.

Oxfam took the second approach in Aceh providing construction managers, materials, warehousing and launching a campaign to raise awareness about seismic safety. Communities were encouraged to form housing committees to identify local skilled labour. Beneficiaries approved the design and managed materials distribution in community based warehouses. Oxfam liaised with BRR for electrical connection, land and property rights. The local Camat signed a letter of donation when the house was finished and ownership was transferred to the family.

Why do we use a beneficiary led approach?

It appeared to be the default option after the tsunami but why do NGOs think it is important? In the past Oxfam had bad experiences with imported designs, labour and materials as these led to low occupancy levels. This was particularly the case for prefabricated housing units that were not always recognized as homes. They were sometimes abandoned in favour of traditionally built dwellings, or used as storage or animal shelters.

Construction work can also provide a temporary livelihood for beneficiaries during the emergency period and a



therapeutic activity with a practical goal. Generally beneficiary led construction is less expensive than using contractors but this must be weighed against hidden costs of the longer build period.

Success in Aceh

These were often due to a participatory approach. The design was received well because it was based upon local architecture. Local materials used were recognizable and local building methods were achievable by communities. Villages were often pleased to use local labour because there is still conflict between villages and outsiders are not necessarily trusted. In individual villages the community warehousing system worked well. Oxfam built good relationships with most communities and refused to promise what it could not provide. In one area a scheme to train women as painters proved very successful.

Problems in Aceh

Some things did not work. There was a severe lack of staff with site supervision skills. The affected area was so wide that the

Beneficiary led Reconstruction in Aceh

demand was very high. In trying to rely upon local labour Oxfam had to cast its net over a small area. The quality of construction was sometimes bad and therefore unsafe. Involving the community in design decisions meant that the safest decisions were not always made. More experienced staff might have refused unsafe changes requested by the communities. Staff required more training in certain technologies such as confined masonry. In some areas beneficiaries expectations were raised through a lack of understanding of the participatory approach by inexperienced staff. Staff felt they must always react positively to community demands but this created promises that were impossible to keep.

There was also lack of coordination generally among NGOs using different approaches in the same area so where other NGOs used contractors it became difficult to encourage people to support a cooperative reconstruction process.

The underlying tensions from the conflict also made it difficult to promote participation village to village. For example, community warehousing in one village only worked for that village. Storing materials for other villages led to security issues.

Ultimately the beneficiary led model took too long and soon it became inappropriate because the situation had moved on and communities to get on with their lives now. There is currently little interest in cooperative construction and most communities want to hire contractors.

The session concluded with some key principles:

An appropriate assessment is required that asks the right questions about local construction methods, availability of materials and labour.

Discussions with beneficiaries concerning acceptance of new technologies are critical in a seismic zone.



It is key to know capabilities of the beneficiary community. It is also key for the NGO to know its own capabilities in order to see whether enough good site supervision is possible. Staff need to know how long construction takes and why it can be delayed, e.g. seasons and festivals.

It is important to recognise what stage we are at in the game. If communities have been waiting a long time and have returned to their normal livelihoods they will be reluctant to build themselves.

It is important to know what level of participation is appropriate. People do not have to physically lay the bricks of their house to feel ownership. Sometimes consultation can be enough.

Q & A

There were shared experiences in beneficiary led reconstruction between CHF, Habitat for Humanity and Oxfam. The major issues appeared to be slow construction speed and poor quality construction.

Beneficiary led Reconstruction in Aceh



There was a general consensus in the group that the game has now changed in Aceh nearly two years after the tsunami. A changing context requires a change in participation models. Construction methods have also changed due to government and community pressure. Reinforced concrete confined masonry is now the norm over safer semi-timbered. The group discussed pivotal points of change which include:

- March 2005 the Government of Indonesia announces that if NGOs want to stay in Aceh they have to begin building houses.
- Nov / Oct 2005 there is confusion over how long reconstruction will take
- Spring 2006 timber houses have become no longer acceptable
- June 2006 NGO not relieved of their responsibility until houses are signed off by community
- BRR now require resources from NGOs on roads, water and infrastructure. (4000-5000 USD per house on infrastructure)

It was felt that NGOs have not been very effective in influencing BRR. There was a suggestion that this could be because of a

lack of expertise within BRR. NGOs seem to have been more effective in altering the government's position in Sri Lanka, India and Pakistan.

It was recognised that BRR has shifted from a coordination role to an implementation role in housing construction. This has adversely affected their ability to coordinate, and there remain issues with the quality of BRR's houses, which puts them in a weak position to advise NGOs.

There was general agreement concerning a lack of coordination between NGOs themselves compared with other emergencies. NGOs appear to be working individually rather than as combined voice. It is hoped that this forum will aid coordination at headquarters level.



Jo da Silva, Associate Director, ARUP

In January 2006 ARUP were introduced to Muslim Aid who were concerned about the technical aspects of their permanent housing in Aceh. ARUP took on the task of reviewing their design and particularly its seismic resistance. Arup have also recently been advising the Canadian Red Cross.

ARUP understand that it is important to make sure that people want to live in the houses, but they must also be fit for purpose and be resilient to future disasters.

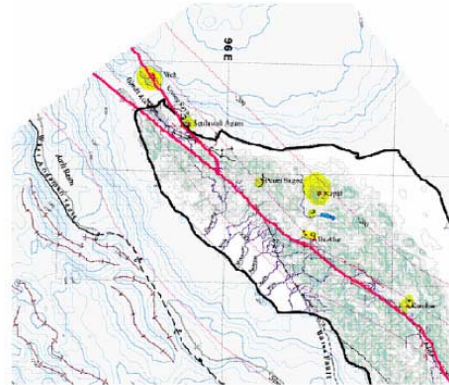
What is the risk?

Is tsunami really the issue? Does the available technical guidance help and was the framework for coordination conducive to success? People were interested to know why their region had been hit and whether it would be hit again.

ARUP concluded that it is almost impossible to design tsunami proof houses. Surviving a tsunami is about site layout, evacuation plans and routes. However, early on little was done about looking at the opportunity for evacuation routes and putting back urban infrastructure to support this. Looking at the problem strategically gave ARUP the opportunity to see these solutions.

Although Aceh is prone to storms, wind hazard is not great enough to be a design factor. Flooding and landslides are the real issues. There is a lack of understanding that where you put houses is key to avoiding these hazards. There was no standardised procedure for site planning or identifying infrastructure needs as the focus has been on houses.

Land has been cleared but the drainage systems required on these sites need to be engineered. With little context of land rights so there is now confusion between who holds responsibility between NGOs and



Aceh's Public Works. ARUP also found little perception of earthquake risk as everyone thought that the tsunami was the issue. However, the seismic risk in Aceh is from a different fault to the one that caused the tsunami. It will produce more than twice the ground acceleration in Banda Aceh and is therefore a greater risk.

Quality of Design

Performance of buildings in earthquakes is dependant on appropriate quality of design and construction. This is controlled to a certain extent by Building Codes. The Indonesian seismic code is one of the best in Asia but it excludes single storey dwellings. Consequently there is little understanding about how to make single storey dwellings safe. ARUP were shocked to find that they were the first people to speak to the Engineering Department in the University in Aceh. No NGOs or the UN had made contact.

There was a real lack of consistent technical guidance. BRR brought out regulations but these missed some key issues. 90% of UN

Habitat's guidance was good but there were some key errors. The internationally recognised Indonesian seismic engineer, Teddy Boen produced good publications but they were too technical for general consumption. There was a comic book produced but it was impossible to gain international comment without a translation. UNDP produced a handbook but it contained mostly negative guidance about what not to do. This led to various technical myths and those whose voices were heard were those who spoke with confidence but did not depend upon the size of the NGO to which they belonged.

There are simple seismic characteristics that ring alarm bells. Symmetrical buildings work well in earthquakes. It is the twisting of a building actually destroys it so asymmetry will encourage this. Lintel beams, cill beams and ring beams are fundamental. ARUP had previously added these to school project in Pakistan and the cost was trivial.

ARUP was present when there was pressure from the government to change from timber to masonry construction. The result was a range of quality and corruption. In this situation NGOs require quality assurance strategies so that something is planned to be done if something goes wrong rather than waiting until it happens without a plan.

Various organisation came up with different designs with various advantages. UNHCR tried reinforced blockwork as it is commonly used in Java, but in Aceh it was met with resistance. CRS provided training with their construction work which boosted the pride of those involved. Several small organisations produced bespoke precast houses. These can survive shake-table tests but there is still some doubt about their safety.

Design Review

Muslim Aid took a traditional timber house and adapted it. ARUP reviewed the design identifying key details. Fixing details are critical at particular points because of the path of the load. In particular roofing fixings are important because they transfer the load down through the building. Umpak, the traditional large stones that the timber columns rest upon, will become knees that bend with load in an earthquake so they need securing well.

One drawback was that the contractors had been left to do the details but the quality of craftsmen varied, particularly between old and young. Local labour had an average age of 60 because younger labourers do not have skills in timber. So you cannot necessarily build with a vernacular technology once a new technology such as masonry has started to come in. Another challenge was when families extended the houses using masonry. Masonry extensions to timber houses will act like book ends in an earthquake as the load will crush the timber house against the heavy extension.



Conclusion

Jo described key learnings including understanding disaster mitigation through quantifying the risk. This understanding must underpin reconstruction and site selection must be underpinned by technical knowledge if it is to mitigate against future hazards. She concluded that technical leadership was missing after the tsunami. Expertise is needed and the way forward is partnerships between the engineering communities and the humanitarian community.

Q & A

The group began with a discussion of the phrase 'Build Back Better', Bill Clinton's catch phrase when he visited Aceh. The general view was that this phrase has often been misused and misunderstood and that 'Build Back Safer' might be a clearer message.

ARUP's call for more professional expertise was echoed by the group. Too much emphasis on speed had caused houses to be built badly with not enough time being spent on designing safely. There was a suggestion that some professional expertise could be provided remotely and another suggestion was to pool resources between NGOs. NGOs also need technical staff so a dialogue can happen. You cannot transfer knowledge to someone who does not have any technical knowledge at all. It was also acknowledged that there had not been enough technical knowledge within BRR. Tom described CHF's global network of engineers linked through their Construction Practices Unit. They are used as consultants and do reflective work on designs.

Oxfam described their experience with civil society organisations through advocacy and livelihoods programmes. It was difficult to find enough who had the right experience because it will take too much time to build their capacity. There were many more partnership organisations to be found in Yogyakarta. It was also pointed out that Aceh had also lost a third of their professionals and that compounded the lack of local capacity.



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CONCLUDING REMARKS

The group concluded that the forum had been informative and that further forums should be organised. There was a general agreement that there was a lack of coordination in Aceh in comparison to other disaster sites such as Darfur and Sri Lanka, but it was acknowledged that there was also a lack of coordination at headquarters level and that these forums would be one way to improve the situation.

Habitat for Humanity has offered to host the next forum to take place in April.

PARTICIPANTS

Oxfam	Rick Bauer	rbauer@oxfam.org.uk
	Lizzie Babister	lizzieshelter@yahoo.com
	Graham Barnes	gbarnes@oxfam.org.uk
	Lisa Reilly	reilly_lisa@hotmail.com
	Robin Palmer	rpalmer@mokoro.co.uk
	Simon Springett	sspringett@oxfam.org.uk
	Emily Christensen	echristensen@oxfam.org.uk
ARUP	Jo da Silva	jo.da-silva@arup.com
British Red Cross	John Taylor	jtaylor@redcross.org.uk
CAFOD	Henny Ngu	hngu@cafod.org.uk
CARE	Miles Murray	murray@careinternational.org
CHF	Tom White	twhite@chfindonesia.org
Habitat for Humanity	Vicky Wooding	vwooding@hfhgb.org
World Vision	Julian Srodecki	julian_srodecki@wvi.org
Independent	Joseph Ashmore	joseph@josephashmore.org
	Bill Flynn	billemily@compuserve.com

APOLOGIES:
IFRC Muslim Aid
Islamic Relief

