



CONSOLIDATED FINAL REPORT ON SHELTER HUBS

WAYANAD , IDUKKI , PATHANAMTHITTA



November 2018 – June 2019

SUBMITTED BY,

HABITAT TECHNOLOGY GROUP

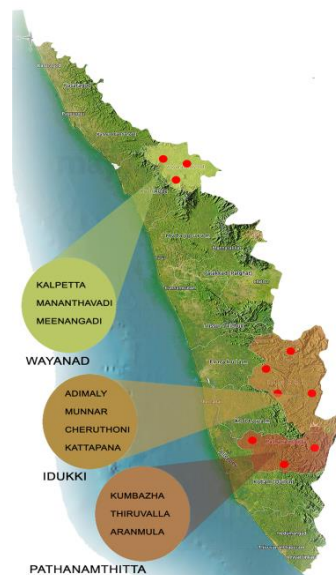
INTRODUCTION

In 2018, Kerala floods ravaged 12 out of 14 districts of the state. It is estimated that more than 15,000 houses were damaged severely. While rebuilding itself poses a tremendous challenge, it also provides us with the opportunity to build back better. In this wake, It was proposed to set up shelter hubs in the state which will promote disaster resilient and sustainable construction practices by providing technical assistance to flood affected house owners and artisans. 3 among the worst flood affected districts, **Pathanamthitta, Idukki, Wayanad** have been identified as the locations for the same. Habitat technology group is associated with UNDP to promote disaster resilient construction strategies, cost- effective and environment friendly construction practices through these 10 shelter hubs.

SHELTER HUBS

Shelter hubs were envisaged to be pivotal centers which will promote disaster resilient, cost effective and environment friendly construction practices in the disaster struck areas of Pathanamthitta, Idukki, and Wayanad. The main objective is to create a one stop solution for all shelter related activities. It will be easily accessible to intended beneficiaries with the aim of guiding and helping them overcome housing issues. The rampant destruction happened in the shelter sector of these districts calls for solution which are non - conventional and sustainable. It was towards this end that the shelter hubs were working for.

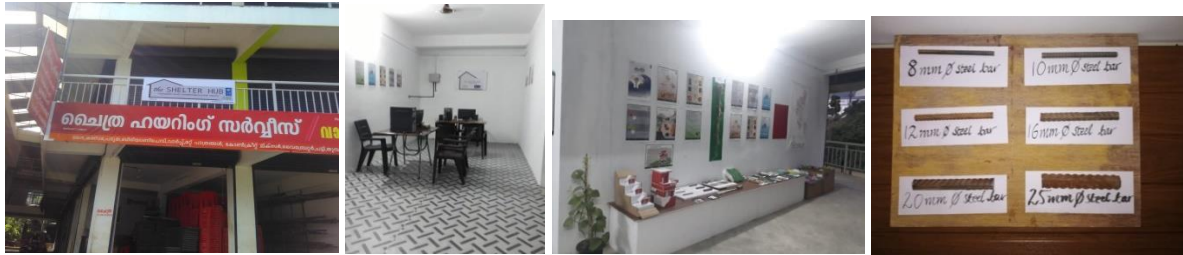
A Total of 10 shelter hubs were set up in these 3 districts. Kalpetta, Mananthavady, Meenangadi at Wayanad, Adimaly, Munnar, Cheruthoni, Kattapana at Idukki, Kumbazha, Thiruvalla, Aranmula at Pathanamthitta. Shelter hubs cultivated a new construction culture that is rooted in the social, economic and environmental sustainability as well as disaster resilience.



DISTRICT	HUB	Date of Hub Opening	HUB ENGINEER	ASST. ENGINEER	UN VOLUNTEER
IDUKKI	Adimali	20-11-18	Unnikrishnan B	Akhil T S	Amal John
	Munnar	20-12-18	Ajmal Ezahack	Aksharamol P.J	Manu Raj
	Cheruthoni	01-12-18	Arjun A	Jiya Jose	Nithin Lalachan
	Kattapana	05-12-18	Jibin.P.Reju	Haseena Abubaker	Divya Jose
PATHANAMTHITTA	Aranmula	15-11-18	Maanasy S L	Jugin	Arun Abraham
	Kumbazha	15-11-18	Vishnu Devan K S	Anisha Sussan Shibu	Remya Chadayan
	Thiruvalla	15-11-18	Anjali Shaji	Arya Surendran	Arya S
WAYANAD	Kalpetta	01-01-18	Jishnu Karunakaran	Abin Rahman	Muhammed Ajmal P
	Mananthavady	01-12-18	Vandana Arunkumar	Jibin James	Zainul Abid P
	Meenangadi	06-12-18	Fathima Jismi	Ranjith K	Soumya John

The above mentioned are the details of the shelter hubs formed in these 3 districts.

SHELTER HUBS AT ADIMALY, MUNNAR, KATTAPANA AND CHERUTHONY-IDUKKI



ADIMALY



MUNNAR

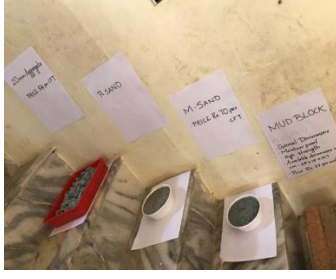


KATTAPPANA



CHERUTHONY

SHELTER HUBS AT MEENANGADI, MEENANTHAVADY AND KALPETTA-WAYANAD



MEENANGADI



MANANTHAVADY



KALPETTA

SHELTER HUBS AT ARANMULA, THIRUVALLA AND KUMBAZHA-PATHANAMTHITTA



ARANMULA



THIRUVALLA



KUMBAZHA

ACTIVITIES

❖ OUTREACH AND ADVOCACY

- **Masons training:** Due to unavailability, inaccessibility or unaffordability of professional support of engineers and architects, people in the rural areas mostly depend on senior masons for designing and constructing their houses. Therefore, sensitizing most of the masons in the rural and remote areas was necessary to promote disaster resilient housing. Masons were oriented in disaster resilient construction strategies and alternate construction practices. Kudumbashree women mason units were also selected in each district for training. A **training manual for masons** was prepared in Malayalam and distributed to the masons during these orientation sessions.



- **Contractors training:** Building construction contractors are important stakeholders even in the owner driven reconstruction process. Reaching out to them and orienting them on disaster resilient construction techniques was essential to ensure proper implementation. Hence orientation sessions were held for contractors in each district.
- **Students training:** Students from Industrial training institutes and Civil Engineering Diploma students from polytechnic colleges were oriented to inculcate the concept of disaster resilience and alternate construction techniques among the future professionals.



- Quiz programme was organized by the shelter hub engineers for seventh grade students of government upper primary schools with the aim of promoting the goals of sustainable living and spreading awareness on disasters to future and present generations.



❖ CONSULTANCY

- Technical support was provided to the following target groups during various stages of construction:
 - ODR beneficiaries(as per the updated list from district administration),
 - CERF beneficiaries (as per the criteria set by UNDP and KSDMA)
 - Other affected home owners, regarding repair, retrofitting or reconstruction of their houses.
 - People who are not affected by floods or landslides but are going to construct houses in the future.

- With UNDP and HTG being new entities to most of the beneficiaries, the number of drop-ins at the hubs was very less. The hub engineers proactively visited the sites of those enlisted in the government house damage list, in order to provide on-site technical assistance to the beneficiaries and masons.



- Multiple visits were paid to fully damaged houses to do a follow-up of the reconstruction and to provide stage-wise support.



- CERF beneficiaries were visited for verification of their eligibility as well as to suggest options for meaningful utilization of CERF grant.
- Other consultancy services provided include designing houses and drafting architectural drawings for beneficiaries in need.
- A **design menu** featuring house designs developed by LIFE Mission as well as those developed by Habitat Technology Group was prepared.

❖ **NETWORKING**

With the aim of helping beneficiaries make informed decisions, the following documents were prepared as a networking exercise:

- Directory of contractors and artisans in the district.
- Directory of masons who were oriented on disaster resilient and alternative construction practices by the hubs.
- Directory of vendors of renewable energy systems, decentralized waste management systems and rain water harvesting systems.

❖ **RESOURCE MAPPING**

- Inventory of locally available building materials, their costs and vendors have been prepared for 3 districts.
- Maps with critical life-line buildings such as schools and hospitals marked.

PHASE I

Duration: 25TH OCTOBER 2018 TO 24TH APRIL 2019

	MAJOR ACTIVITY	DELIVERABLE	ACHIEVEMENT
PHASE I	Consultancy: Provided technical assistance to flood affected house owners and masons.	Monthly reports	2470 sites of CERF and ODR beneficiaries visited.
	Conducted training sessions for masons and flood affected beneficiaries on disaster resilient and alternate construction practices. A basic tool kit was also provided to the masons during these sessions.	<ul style="list-style-type: none"> • Monthly reports. • Training modules. • Masons training manual in Malayalam. 	749 masons and 203 beneficiaries oriented on disaster resilient and alternate construction practices.
	Prepared an inventory of vendors and agencies that distribute the construction materials locally along with its price and location, which will be of better aid to the beneficiaries while choosing materials during construction.	Database on materials for construction and locations to source it for 3 districts.	
	Networking with contractors, masons and artisans	Database on skilled artisans in for 3 districts.	157 contractors and through them 3040 skilled artisans contacted.
	Documentation of best practices for larger outreach efforts.	Report	

Other activities- Value additions:

- Prepared charts and tentative estimates for cost comparison of house construction using various building materials.
- Designed site-specific and beneficiary specific houses as well as prepared architectural drawings for some of the beneficiaries in Pathanamthitta and Wayanad.

- Put up stalls in the **Surakshitha Keralam Campaign** (exhibitions on safe and resilient practices) conducted by Rebuild Kerala Initiative, Kerala State Disaster Management Authority and UNDP and exhibited posters and models on disaster resilient and alternative construction practices. Shelter hub engineers also gave classes on the same topic in order to orient masons during the exhibition. **322 masons were oriented during the programmes held in 8 districts.**
- Hub staff in Wayanad visited and interacted with people from various tribal colonies. This was done in order to design a prototype house for the communities in the district. Initial studies were done in order to understand their indigenous practices with respect to the kind of spatial requirements they would have.
- Prepared a comparative report on compressive strength of mud blocks, solid cement blocks and country burnt bricks by shelter hub Aranmula.

Deliverables submitted:

- Inception report detailing out the activities initiated.
- Monthly report of activities
- Training modules for sustainable building construction and manual for masons training
- Documentation of best practices
- Directory of artisans, inventory of local materials

Challenges faced:

- Establishment issues:
 - Physical space- Finding houses on rent for the hubs was difficult, especially, in worst affected areas of these districts due to several reasons. Rental housing facilities are very limited in rural areas of Idukki and Wayanad. Moreover, post floods, many flood affected families had to move to rental houses which further decreased the chances of finding a good space.
 - Human resources- The short duration of the project were an unappealing factor for many of the young prospective hub engineers and hence the recruitment process took more time than expected. Some of the engineers who joined the hubs quit later because the nature of work was different from usual civil engineering consultancies.
- Initiation issues: The team took a little time in the initial month to introduce the shelter hub concept among the public since UNDP and HTG were new to most of the beneficiaries in the three districts. Meetings were held with M.L.As, LSGD officials, other N.G.Os to introduce the project and its goals.



- Unavailability of a finalized/ authenticated beneficiary list and unwillingness to share the tentative list by the authorities during the first phase was a stumbling block to start the consultancy activities.
- In Idukki, Wayanad as well as hilly regions of Pathanamthitta, the sites were located in remote areas. Some of these areas were not even accessible by public transport, making it difficult for the engineers to cover more than 3-4 sites/ day in difficult terrains.
- Reluctance in accepting disaster resilient or alternative construction technologies: Many of the beneficiaries and masons who underwent orientation at the hubs were reluctant to implement these because of cost constraints and unfamiliarity to new alternatives etc. This also brought to light the major decision making role played by contractors in ODR.

PHASE 2

Duration: 25TH APRIL 2019 TO 24TH JUNE 2019

PHASE 2	ACTIVITY	DELIVERABLE	ACHIEVEMENT
	Consultancy: Provided technical assistance to flood affected house owners and masons.	Monthly reports	1127 sites have been visited including CERF and ODR beneficiaries.
	Completed orientation sessions for masons.	<ul style="list-style-type: none"> • Monthly reports. • Directory of contractors and masons who have been trained by the hubs. 	185 masons oriented on disaster resilient and alternative construction technologies.
	Conducted orientation sessions for contractors.		60 contractors oriented on disaster resilient and alternative construction technologies.

Conducted a survey among masons, who were oriented by the hubs, to assess the acceptance of disaster resilient and alternative construction technologies.	Survey report	849 masons surveyed. 433 masons found to have implemented at least one feature introduced to them through the orientation session.
Conducted a one day workshop for civil engineering diploma students on disaster resilient and alternative construction practices.	<ul style="list-style-type: none"> • Monthly report. • Training module. 	373 Civil engineering diploma students oriented on disaster resilient and sustainable construction practices.
Prepared a list of agencies and vendors that promote, renewable energy, rain water harvesting, and decentralized waste management.	Directory of agencies and vendors that promote renewable energy, rain water harvesting and decentralized waste management.	30 vendors from the three districts enlisted in the directory.
Mapping of critical public life-line buildings in the district.	3 maps with the locations of critical life line buildings and three position papers on the number of buildings that need repair or retrofitting.	61 Buildings were visited which consisted of 45 schools and 16 hospitals for reviewing whether the buildings needed any kind of repair or retrofitting.
Conducted a quiz program for seventh grade students of Government Upper Primary Schools in order to promote the goals of sustainable living and to spread awareness about disasters to future and present generations. Cash awards were given to the district level winners.	Monthly report	400 participants from 100 schools were involved various stages of the quiz program. Officials from district administration, ANERT, Suchithwa Mission etc. spoke to students about green practices during the three district level finales.

Deliverables submitted:

- Directory of contractors and masons (including Kudumbashree women masons) who have been trained by the hubs.

[Even though this was supposed to be uploaded in a web platform as per the ToR, due to the time constraint, it was decided in discussion with the UNDP project management unit in Kerala that the data would be submitted to the district administrations and KSDMA.]

- Survey report on the assessment of acceptance of disaster resilient construction practices among masons and contractors.
- Three maps (1 per each district) with the location of critical life line buildings and three position papers (1 per each district) on the number of buildings that need repair or retrofitting.

[Due to time constraint, only schools and hospitals were considered for this exercise. Further, schools with maximum number of classrooms (to accommodate people during disasters) and hospitals with in patient capacity were only mapped]

- Training modules in disaster resilient and alternative construction for students of vocational training institutes.
- Directory of agencies and vendors that promote renewable energy, rain water harvesting and decentralized waste management.
- Consolidated final report (for Phase 1 and Phase 2 combined) with summary as well as details of beneficiaries reached out to, with photos to demonstrate the progress in construction.

A GLANCE AT SUCCESS STORIES

At Aranmula, Pathanamthitta, Lakshmikutty Amma, a cancer patient who was staying alone, has been helped to construct a house through this mission under the supervision of shelter hub staffs and UNDP DPO. They have contacted a contractor nearby and have been supervising the construction through the usage of alternative materials and disaster resilient construction practices.



Lakshmikuttyamma's House Under Construction

At Ezhikadu Colony in Pathanamthitta, Janaki, a widow who is staying alone also has been helped by the shelter hub team. They designed the house for her and drafted necessary drawings. The team also supervised the construction at various stages.



Janaki's House Under Construction

At Wayanad, beneficiaries Praveen and Unnikrishnan were among the many who contacted the hubs. Praveen's house was at a hill top area and Unnikrishnan's house was nearby the Manathawady hub. The house was in Pilakavu and they both were masons. Unnikrishnan and Praveen had constructed their houses 20 years ago. Unnikrishnan's house didn't have lintel band or other disaster resilient features. The house could not resist the vibrations caused due to landslides. Due to this reason, their house was partially damaged, or their backside of the house was severely damaged with lots of cracks found in the house. After this, they bought a land nearby the hubs and consulted the shelter hubs as they were in need of relocation and our team also visited their new site. Shelter hubs also assisted in drawing plans for beneficiaries. Their new site was suitable for construction as it was not a water logging area, and they were also in need of a cost effective plan and drawings. Lot of revisions occurred in fixing the plan and also we checked the site accordingly. These beneficiaries were also inducted for mason training as they both were masons. They also tried to implement techniques introduced to them through the training as they had such limitations such as cost issues, etc.



Praveen's And Unnikrishnan's House Construction

SUMMARY

The following table summarises the activities and achievements of the two phases:

Sl. No.	Item	Total number
1.	Number of houses visited for providing technical assistance/ supervision	3597
2.	Total number of site visits	4249
3.	Masons oriented:	
	a) At shelter hubs	934
	b) Through <i>Surakshitha Keralam</i> Campaign	322
4.	Beneficiaries oriented	203
5.	Contractors oriented	60
6.	Civil engineering diploma students oriented	373
7.	Directory of contractors and skilled artisans:	
	a) Contractors	157
	b) Skilled artisans	3040
8.	Agencies dealing with renewable energy, decentralized waste management and rainwater harvesting enlisted	30
9.	Critical life-line buildings mapped:	
	a) Schools	45
	b) Hospitals	16
10.	Quiz programme for seventh grade students on disasters and green practices	400 students from 100 schools

Shelter Hubs made it possible for UNDP to directly reach the beneficiaries at the field level and provide them on-site socio-technical assistance. Despite the short duration of the project, shelter hub team was able to build rapport with the beneficiaries. Due to this trust and acceptance, many beneficiaries used to regularly contact hub engineers seeking technical advice as well as requesting supervisory site visits.

The mason orientation sessions conducted by the hubs were found useful by especially the Kudumbashree women masons who requested for continued refresher sessions.

Hubs explored the possibility of promoting alternate materials in hard to reach areas to reduce transportation costs and material costs. They have also ensured inclusiveness by reaching out to tribal population and women masons.