



Case Study

Roofing Solutions at Jyothi Pura
with cBalance



Hasiru Mane Project is experimenting with a new roofing system in collaboration with cBalance (<https://cbalance.in/>) under their FairConditioning Project. In 2021 cBalance reached out to Hasiru Dala to collaborate in their project (funded by FairConditioning.org) to upgrade/repair houses for the waste picking community.

At cBalance they work on carbon accounting for organizations along with developing tools, strategies, and GHG emission reporting. They work towards utilizing better methods of measuring and quantifying impact to generate more meaningful mitigation strategies to reduce carbon footprints.

The current 'Informal housing thermal comfort' project is a sub-program under Fairconditioning. It aims at working towards both, climate crisis adaptation and mitigation with a focus on thermal comfort, through engagement with communities inhabiting informal settlements who are amongst

the most vulnerable to injustices propagated by human induced climate change. We have designed this project with a vision to co-create passive cooling retrofit designs with support from experts and other stakeholders.

As the resource organisation, Hasiru Dala put them in touch with the Dr B.R Ambedkar Nagar slum dwellers welfare association in Jyothi Pura.

A total of 15 roofs will be retrofitted in Jyothi Pura. The project began with a baseline study of the dwelling and recording the current level of thermal comfort in the homes of waste pickers and identifying the housing types to design the roofing systems/solutions.

This is a first of its kind project in India where work is done in the slums/informal settlements addressing their thermal discomfort.

Copy paste link to watch:

<https://www.youtube.com/watch?v=wdeyV8Gywd8>



The flow of project is as follows:

Household Survey Visit: We conducted a survey of 25 households and invited the selected households to participate in the listening workshop.



Listening Workshops: All the information pertaining to the project was shared with the householders during the 'listening workshops'. The listening workshops created a safe-space for empathetic listening with the community residents of Jyothi Pura.



Each listening workshop was conducted in the presence of 10 community members, comprising of 2 representatives from 5 households respectively. In total 4 such Listening workshops were held.

Cases	Case 1	Case 2	Case 3
Structure type	Semi - Kuccha	Semi - Pucca	Pucca
No. of floors	G	G	G+2
Area	20 sqm	20 sqm	105.6 sqm
Roof	Metal - tin sheet	Metal - tin sheet	RCC Slab
Wall	GI metal sheet	Burnt brick	Burnt brick

Household structural audit:
Once the context of the project was set, the team conducted structural audits for all the 25 households to understand the stability of each of the dwelling unit to carry the load of the solutions to be installed.

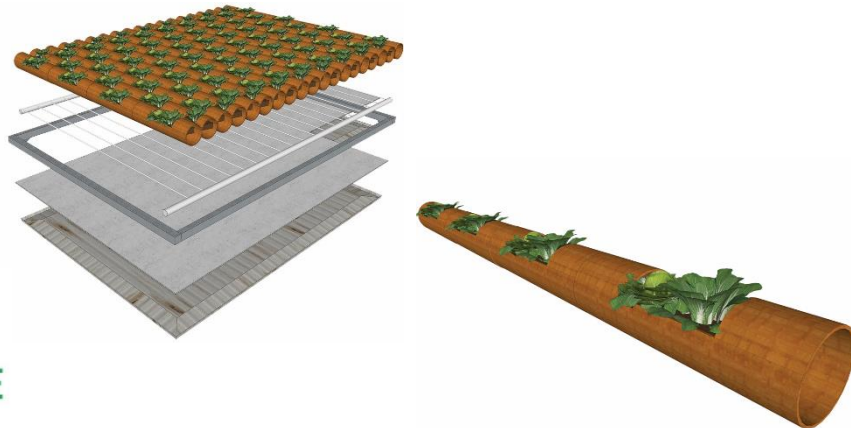
Sensors for the temperature readings:
In all the households which were selected for the implementation of the solutions, temperature sensors was installed to record the indoor temperature.





Participatory Design Workshop:

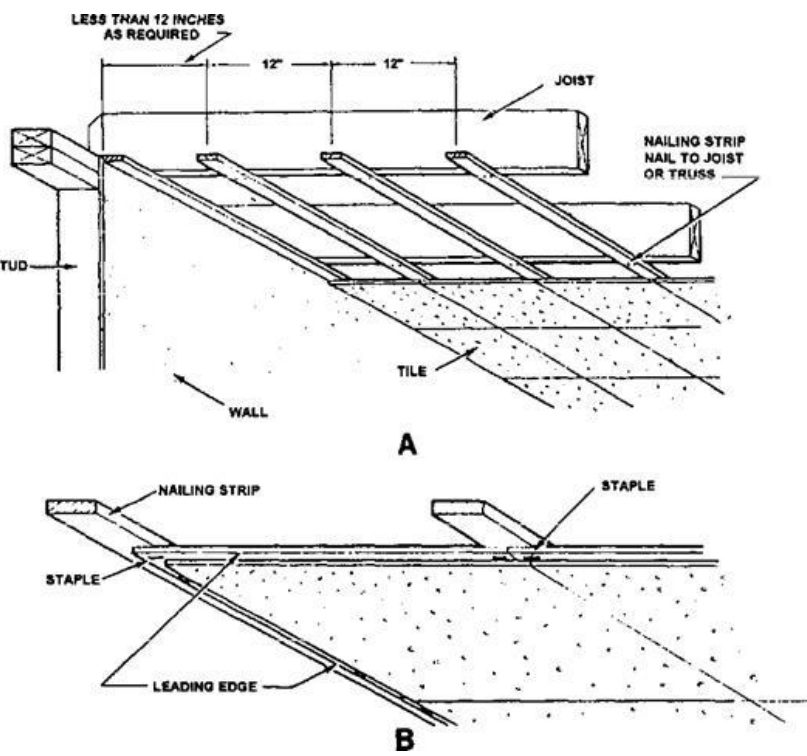
The inhabitants were shown passive design prompts explaining the retrofit roofing solutions. Then we invited the inhabitants to share/suggest their thoughts about the designs in the collaborative design workshop.



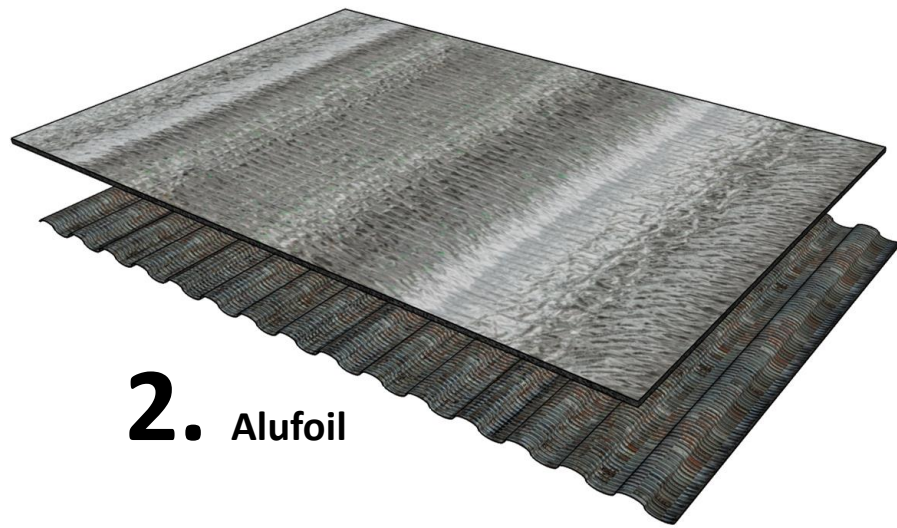
Phase 1

In phase 1, we completed the installation of the solutions on 6 roofs out of which 5 were for the individual households and 1 was on the community library.

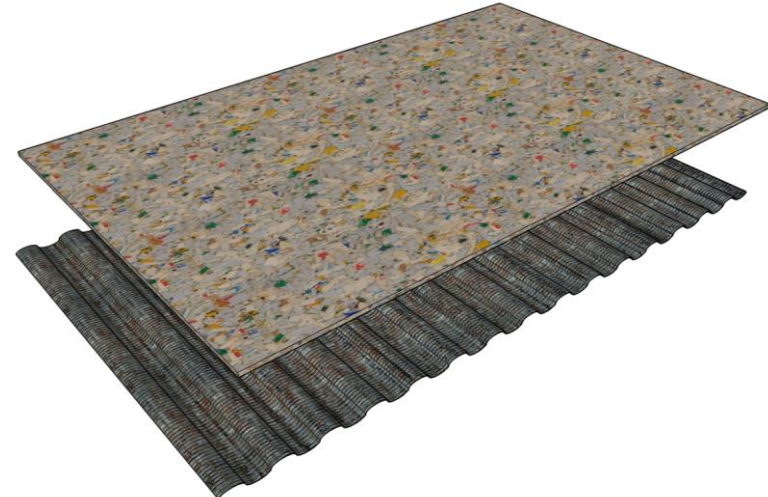




1. Wood Wool panel

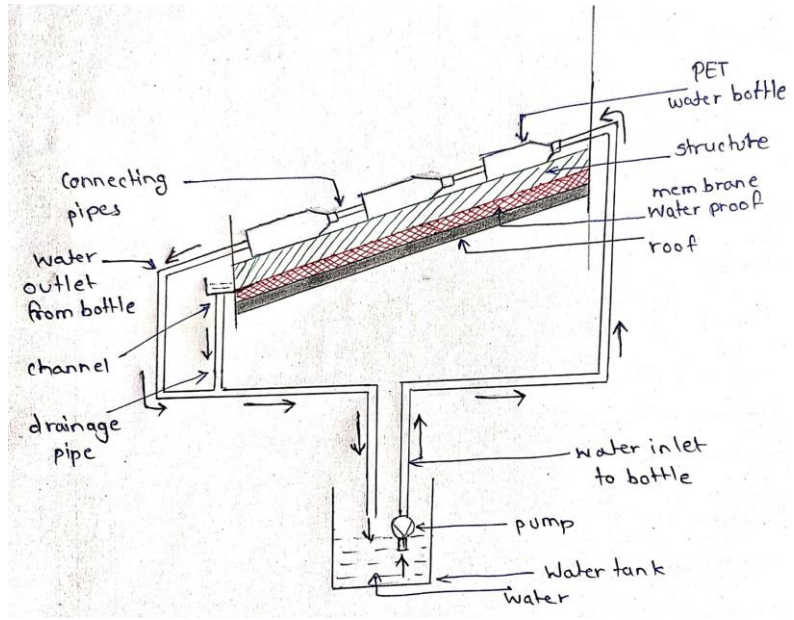


2. Alufoil



3. Ecoboard/PolyAl roofing sheets

4. Water-filled PET-bottle tubes







PET bottle solution was installed at
Bugari: Children's library initiative by Hasiru Dala



Wood Wool panels has been installed at
Savitri's house

Story 1

Vijayalakshmi: 44 years old

Vijaylakshmi is one of the beneficiary of the project. She was born in Jyothi Pura and has been living in the same community from the past 40 years. There are 5 people in her house. She has worked in construction and waste picking since she was 20 years old. Currently, she is making a living by selling vegetables in the community. Her household is run by the support of her daughter's Rs. 20,000 salary. She had taken a loan of 6 lakhs for her daughter's marriage but has managed to repay only 1.5 lakhs till now. She has known Hasiru Dala since 2014. The organisation has since then helped her family to access social security benefits.

Before our intervention, she was not aware of Climate change or thermal comfort solutions. Through our engagement via series of workshops she has gained information about it. She was scared of the solution assuming that it might damage the house or the



roof and the walls. She had several rounds of discussion with her children before agreeing to install the solution.

After the installation Vijayalakshmi says, “the indoor temperature has reduced a little bit compared to earlier. Household work is happening smoothly. Usage of fan has been reduced. I used to stay indoors only and that has continued. Now summer has started so we have to see how the indoor temperature will be in the coming days”.

Story 2

Lakshmi: 29 years old

Lakshmi is a 29 years old single woman who lives with her disabled mother and disabled brother. Her brother works as daily wage labourer. He is the only earning member of the household. Lakshmi used to do segregation at event waste management. After the pandemic began she stopped working. Her household income is around Rs. 12,000 per month and it is difficulty to run the household.

She has known Hasiru Dala from 2018. When we approached her for installing the roofing solution she immediately agreed. She has faith in the organisation and believes that the organisation will work for her betterment.

Now, she is aware about climate change and how it impacts our day to day life. She says that the project seemed interesting.



After installing the solution she said, “I am able make out the differences in the indoor temperature from last summer to this summer. After the installation the indoor temperature has been reduced. She only use fan if they feel hot and mostly at night. Household work has became easier to do.”

Phase 2

The phase 2 installations of the project has been completed. We have installed the solutions on 4 roofs in total.





Installations in the phase 2 was completed in the end of April 2022

