Roof Over Our Heads

ROOH CHALLENGE 2024

Roof over our heads

A Crucible for Change

CONTENTS

1 About ROOH and SPARC

2 ROOH Challenge Brief

3 Eligibility

4 Aim, Objectives and Outcome of the Challenge

5 Prizes

6 Multidisciplinary Jury

Challenge Components 7

Design Guidelines 8

Here's what you need to include in your proposal: 9

Submission Guidelines and Checklist 10

FAQs 11

Participation Agreement, Terms and Conditions 12

Up for the Challenge ?

REGISTER NOW

About

Roof Over Our Heads (ROOH)

"Roof Over Our Heads" emerged from series of conversations with women across Asia and Africa, highlighting the critical need for secure housing that can withstand extreme climate events like heat, wind, rain, and cyclones.

Over a billion people live in informal urban settlements without formal land tenure, constructing homes outside regulatory frameworks. With three billion people expected to need adequate, affordable housing by 2030 amidst increasing extreme weather, the urgency for resilient solutions is clear. This campaign addresses the gaps in climate adaptation for these vulnerable populations.

In India, 17 settlements across 9 cities serve as learning labs to explore solutions for climate-related challenges in informal settlements. These labs provide insights into sustainable housing within specific microclimatic zones. Phase 1 in India has deepened our understanding of these issues and marked the beginning of implementing sustainable housing solutions as part of Phase 2. Improving informal settlements' living conditions while addressing climate change is vital for a just and sustainable future.

About

Society for Promotion of Area Resource Centers (SPARC)

The Society for the Promotion of Area Resource Centers(SPARC) has been working on issues of urban housing and infrastructure in partnership with two community-based organizations- the National Slum Dwellers Federation and Mahila Milan. Together, we are known as the Alliance. Today, the Alliance works to produce collective solutions for affordable housing and sanitation in over 58 cities and 9 states in India. The Indian Alliance is also a founding member of Slum Dwellers International (SDI), a transnational network of the urban poor in over 30 countries.

ROOH CHALLENGE
Brief

Welcome to the Roof Over Our Heads (ROOH) Challenge! The Challenge invites undergraduate, postgraduate, and PhD students pursuing studies in design, architecture, planning, engineering, social sciences, and humanities to register and participate in this challenge.

Roof Over Our heads is a global campaign that seeks to create resilient homes by empowering women's collectives and their vulnerable communities. Our initiative focuses on equipping these groups to assess and mitigate the vulnerability of their homes to extreme weather, with the support of designers, contractors, material providers, finance experts, city officials, and mayors.
We invite young university students to take up this challenge and explore their potential role in developing innovative solutions to enhance the weather resilience of informal homes. This is a unique opportunity to address the issues faced by vulnerable neighbourhoods, particularly in the Global South, where homes are often built informally, with limited resources and despite these challenges, they design construct and finance their homes with what they know.

In Phase 1, ROOH Labs has successfully documented 17 informal settlements across nine cities in India, covering five different climate zones. We're calling upon participants to craft an incremental upgrade or retrofitting solution for a dwelling unit in an informal settlement located in one of five cities across different climate zones. Your task is to tailor your design to meet the needs of a specific family and location, leveraging detailed climate and contextual data provided from Phase 1 documentation of the ROOH Labs. Your challenge is to select one of the five challenge components from the documentation and analysis our team has conducted and use your knowledge to create recommendations for resilient homes capable of withstanding extreme weather conditions like heat, wind, and water.

Your solution should incorporate enhanced construction techniques using locally available materials or propose alternative building materials that are affordable, accessible, adaptable, and community-approved. The aim of the design is to enhance resilience, sustainability, and liveability within the selected context.

The competition is entirely VIRTUAL.

ELIGIBILITY

- No entrance fee.
- Open to local and international students from all countries.
- Exclusively for students from various academic backgrounds: Architecture, Design, Planning, Engineering, Social Science, Humanitarian, and Development Studies (undergraduate, postgraduate, or PhD).
- Participate individually or in groups (max 10 members)
- Inter- university and Inter- disciplinary collaboration are encouraged irrespective of your affiliations.
- Each participant may compete either as an individual or as a member of one group only throughout the challenge.
- Proof of student status is essential to be eligible
- Multiple entries are not permitted.
- Practicing professionals are not eligible to participate.

Aim:

Let’s transform hypothetical and theoretical ideas into tangible solutions for the communities living in the informal settlements in India, with a special focus on amplifying the voices and addressing the needs of women within these communities.

Objectives:

1. Foster Multidisciplinary Collaboration - Unite students from Architecture, Engineering, Environmental Studies, and Social Sciences to create comprehensive housing solutions.
2. Develop Practical Solutions - Design context-specific housing that addresses Heat, Wind, and Rain challenges in informal settlements with a focus on climate resilience and affordability.
3. Bridge Theory and Practice - Turn theoretical knowledge into practical designs that benefit vulnerable urban communities and enhance climate resilience.
4. Integrate Local Knowledge - Use local techniques and knowledge from the ROOH team’s research in India to ensure sustainable and effective housing interventions.
5. Empower Women and Artisans - Highlight and empower the role of women, artisans, and skilled laborers in community development through targeted housing upgrades.

Outcome of the Challenge:

The winning design will serve as a practical blueprint for resilient housing solutions tailored to the unique challenges of different climate zones, empowering local communities and fostering sustainable development.

Prizes

WINNER 1

US $5000

WINNER 2

US $3000

WINNER 3

US $2000

Best Entries will be showcased at the ROOH Session during COP 29 in Baku.

Get a chance to collaborate with Global Partners of the ROOH Campaign.

Certificate of Participation for All Participants.

Receive official acknowledgment and be featured on our website for an year.

Multidiciplinary Jury

Gonzalo Muñoz,
UN Climate Change High-Level Champion from the COP25 Presidency

David Dodman,
General Director, Institute for Housing and Urban Development Studies (IHS)

Hubert Trammer,
Architect and a Member of the Roundtable of the New European Bauhaus.

Nigel Tonks,
Sustainable Development Board Director, Arup and a Sr. Adviser to the UNFCCC Climate Champions Built Environment Team

Lauren Anderson,
Director of Programs, Perry World House, UPenn

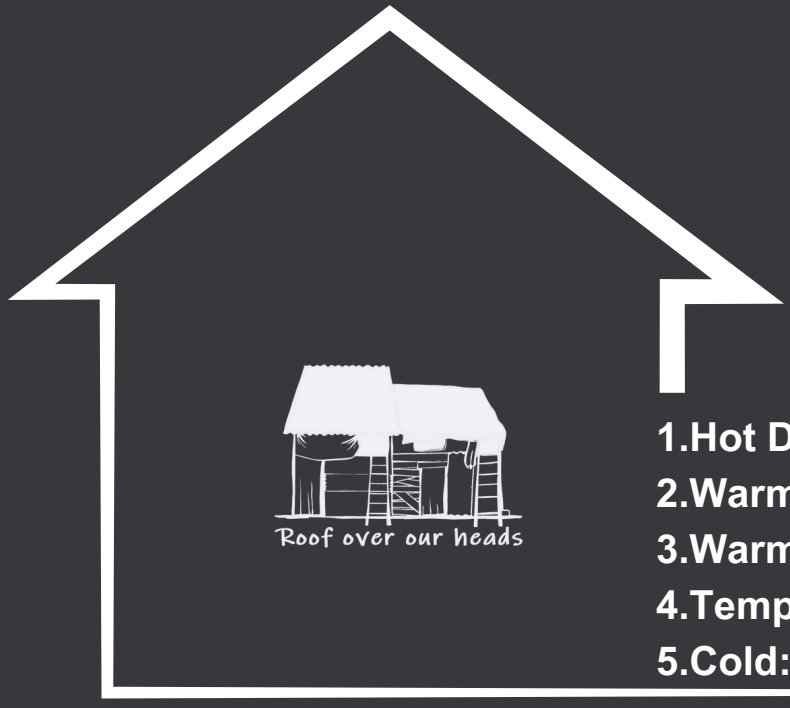
David Howlett,
Head of Policy, Global Resilience Partnership and Senior Adviser to RtR and RtZ and Loss and Damage Lead

Sheela Patel,
Founding Director of SPARC
Global Ambassador for RtR and RtZ

Challenge Components

The design challenge invites participants to create sustainable and resilient housing solutions tailored for specific climate zones in India. These solutions must address the multifaceted challenges faced by households, including extreme heat, cyclonic winds, floods, fire hazards, electrocution risks, and other intrinsic and extrinsic threats to vulnerable informal dwellers. The proposed materials should not only be suitable for the designated climate zones but also demonstrate robustness against local hazards. Affordability, safety, and security of the community are paramount, ensuring that the solutions can be made accessible for all residents.

ROOH Labs are documented in 17 informal settlements across nine Indian cities in five climate zones. Participants, whether individuals or groups, have the exciting opportunity to select any one of India's distinct climate zones (Hot Dry, Warm Humid, Cold, Temperate) and craft tailored solutions addressing the specific challenges encountered by the household in that zone.



1.Hot Dry: Surat City, Gujarat
2.Warm Humid: Bhubaneshwar City, Odisha
3.Warm Humid: Paradeep City, Odisha
4.Temperate: Bengaluru City, Karnataka
5.Cold: Gangtok City, Sikkim

After registering for the challenge, participants will receive a Google Drive link sent to their registered email address. If you are part of a group, the link will be sent to the Group Captain's email address. This link provides access to five city folders, each containing detailed information about dwelling units. Participants can review these folders and select one dwelling unit for the challenge.

Challenge Components

Delve into the data (Challenge Components) provided by the ROOH Team, each folder will include

- **A PowerPoint presentation with background information and details about the informal settlement and dwelling units, Photos, Information on issues, challenges, coping mechanisms and details about materials currently used for construction by the resident of the dwelling unit.**
- **A SketchUp file with a 3D model (.skp version: 2018)**
- **An AutoCAD file with plans and sections (.dwg version 2019)**

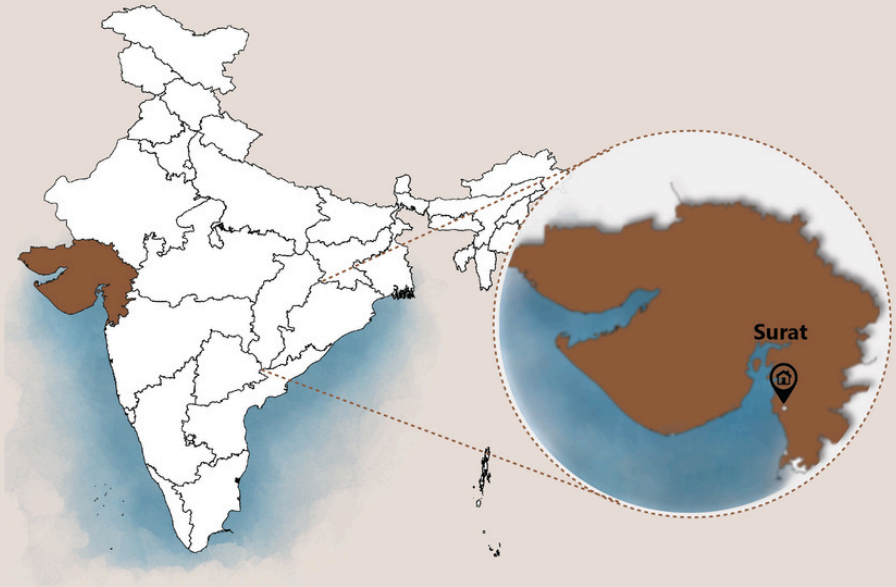
Focus on a specific dwelling unit and its settlement from the data provided. Utilize this information to gain insights into the context, challenges, aspirations, and material choices of the dwelling unit. Here's how you can engage with the data:

- Analyse 3D models, plans, sections, and photos provided by the ROOH Team.
- Dive into documentation and analysis to understand the nuances of the chosen dwelling unit.
- Gain insights into historical context, challenges faced, aspirations of residents, and material preferences.

These resources will assist participants in proposing their solutions and shall be used for ROOH Challenge purposes only.

Challenge Component: 1

Climatic Zone: Hot and Dry | Surat | Rasulabad



Settlement Details

Location of the Settlement
Rasulabad

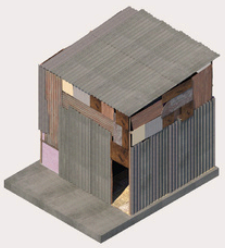
Area of the settlement
3.1 Ha (7.58 acres)

Total no. of Dwelling units
780 units approx.

Total Population
4056

Dwelling Unit -1

House constructed in 2015



Type of Housing
Temporary (Kutcha)

Type of Structure
Semi Detached

Area: **63 sq. mts**

Family Size: **6**

Family Occupation
Mason, Domestic Worker

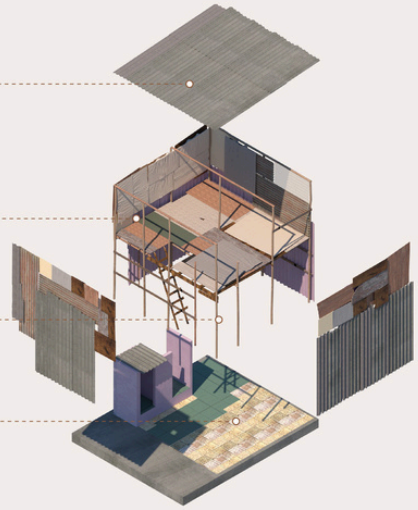
Family Income
Rs. 10,000

Issues & Challenges

- Leakage/ Seepage
- Urban Flooding
- Indoor Heating

Exploded View of the unit and Materials

Roof	Corrugated cement sheet, tarpau-line
Wall	Corrugated cement sheet, plywood, corrugated tin sheet, laminated ply, cardboard, brick, timber plank/ section/ column
Structure	FRP roofing sheet, brick, timber plank/ section/ column
Floor/Plinth	PCC flooring (Thin), terrazzo tiles, kota stone, plywood



Coping Mechanisms

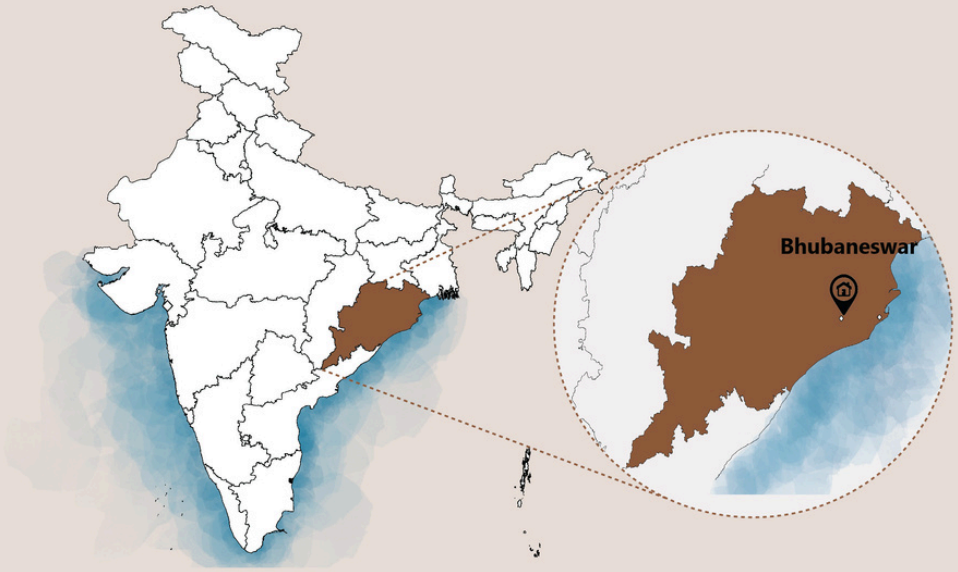
Polythene and tarpauline are used to prevent the entry of rainwater

Photographs of dwelling units

* The above information is for reference purpose only, after completing the registration, you will receive an email with detailed information of the folder with details of 5 dwelling units. This will include a PowerPoint presentation with background and other details of the settlement and dwelling units, a SketchUp file with an 3D view, and AutoCAD file with plan and section views which will help you in proposing the solutions.

Challenge Component: 2

Climatic Zone: Warm and Humid | Bhubaneshwar | Do Muhin



Settlement Details

- Location of the Settlement: Do Muhin
- Area of the settlement: 1.25 Ha (3.1 acres)
- Total no. of Dwelling units: 154 units
- Total Population: 700-800 appox.

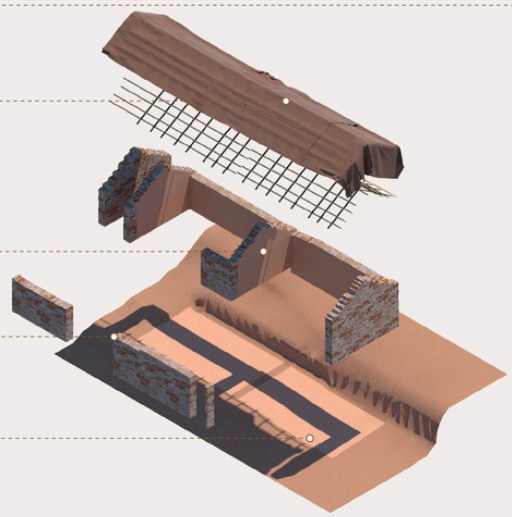
Dwelling Unit -2

House constructed in 2018

- Type of Housing: Semi Pucca, Semi Permanent
- Type of Structure: Semi Detached
- Area: 9 sq. mts
- Family Size: 3
- Family Occupation: Labour
- Family Income: Rs. 10,000

Exploded View of the unit and Materials

Roof	Timber beam, polyethene, bamboo
Wall	Mud
Structure	Brick
Floor/Plinth	Mud



Issues & Challenges

- Leakage/ Seepage
- Urban Flooding
- Pests
- Cyclones

Coping Mechanisms

- Polythene and tarpauline are used to prevent the entry of rainwater

Photographs of dwelling units

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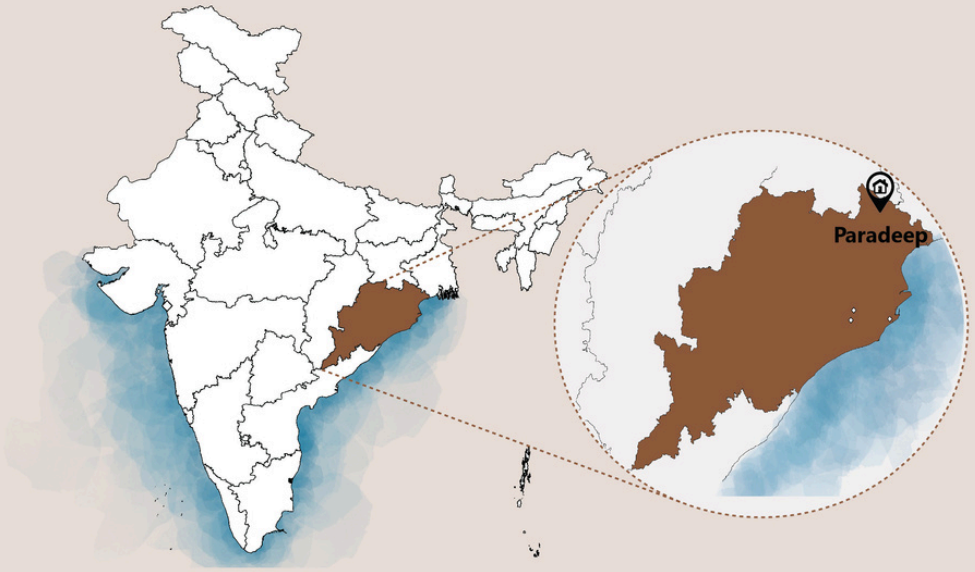
Challenge Component: 3

Climatic Zone: Warm and Humid | Paradeep | Lokpada



Settlement Details

- Location of the Settlement: **Lokpada**
- Area of the settlement: **3.4 Ha (8.4 acres)**
- Total no. of Dwelling units: **500 units approx.**
- Total Population: **2500 - 3000 approx.**

Dwelling Unit -3

House constructed in 1990's

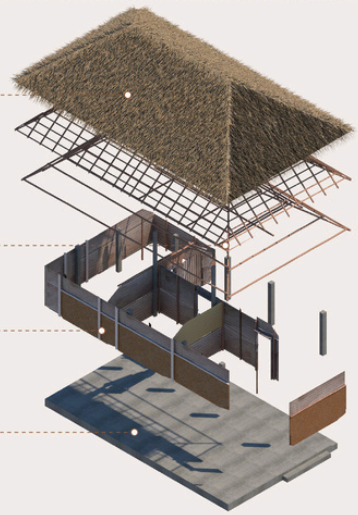
- Type of Housing: **Temporary (Kutcha)**
- Type of Structure: **Detached**
- Area: **50 sq. mts**
- Family Size: **4**
- Family Occupation: **Domestic Worker, Dockworker**
- Family Income: **Rs. 5000 - 10,000**

Issues & Challenges

- Leakage/ Seepage
- Urban Flooding
- Indoor Heating
- Pests
- Cyclones

Exploded View of the unit and Materials

Roof	Timber & plank, bamboo, thatch, polythene
Wall	Bamboo, foam insulated metal sheets, tarpauline
Structure	Timber section, bamboo, cement column
Floor/Plinth	Mud, PCC flooring (Thin)



Coping Mechanisms

- Ropes and fishing nets are used to secure the thatching roof
- Polythene sheets are used to protect the thatch and prevent the entry of rainwater
- Foam sheets salvaged from cooling containers and fishing boats are used to insulate the house during the summers

Photographs of dwelling units

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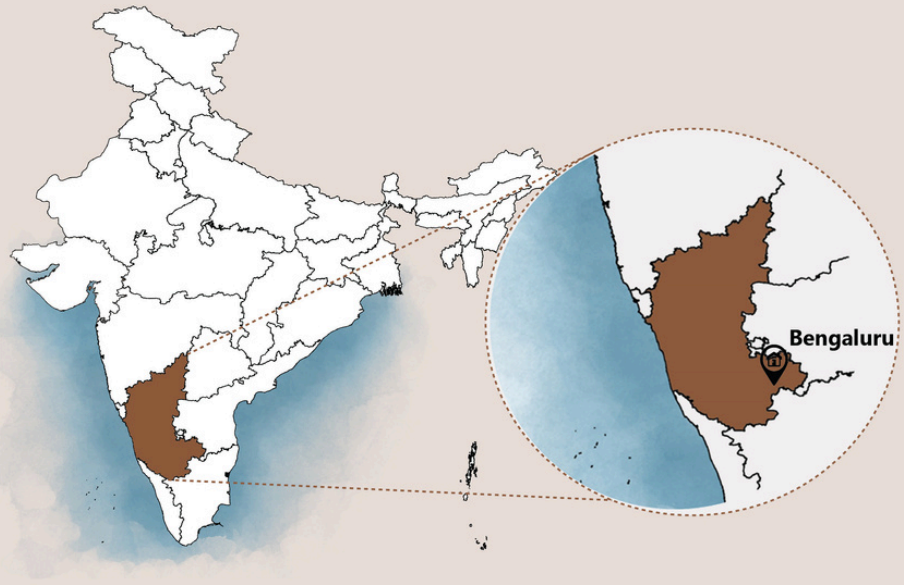
Challenge Component: 4

Climate Zone: Temperate | Bengaluru | Devaraja-Arasu



Settlement Details

Location of the Settlement
Devaraja-Arasu

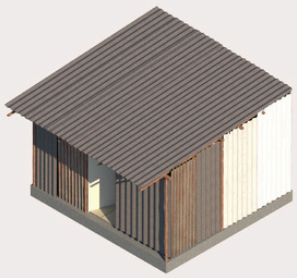
Area of the settlement
0.25 Ha (0.62 acres)

Total no. of Dwelling units
110 units approx.

Total Population
550 approx.

Dwelling Unit -4

House constructed in 2010



Type of Housing
Temporary (Kutcha)

Type of Structure
Attached

Area: **18 sq. mts**

Family Size: **5**

Family Occupation
Waste Picker, construction labour

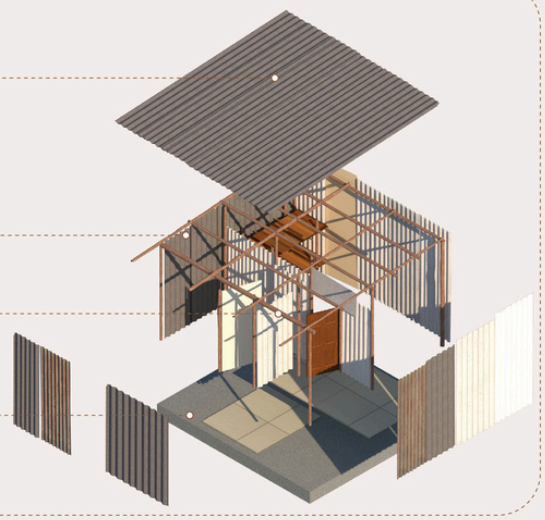
Family Income
Rs. 36,000

Issues & Challenges

- Leakage/ Seepage
- Urban Flooding
- Indoor Heating
- Pests

Exploded View of the unit and Materials

Roof	Corrugated cement sheet
Wall	Bamboo
Structure	Corrugated cement sheet
Floor/Plinth	PCC flooring (Thin)



Coping Mechanisms

Polythene, PVC flex banners and tarpauline sheets are all used in varying proportions to prevent the entry of rainwater into the dwelling

Photographs of dwelling units

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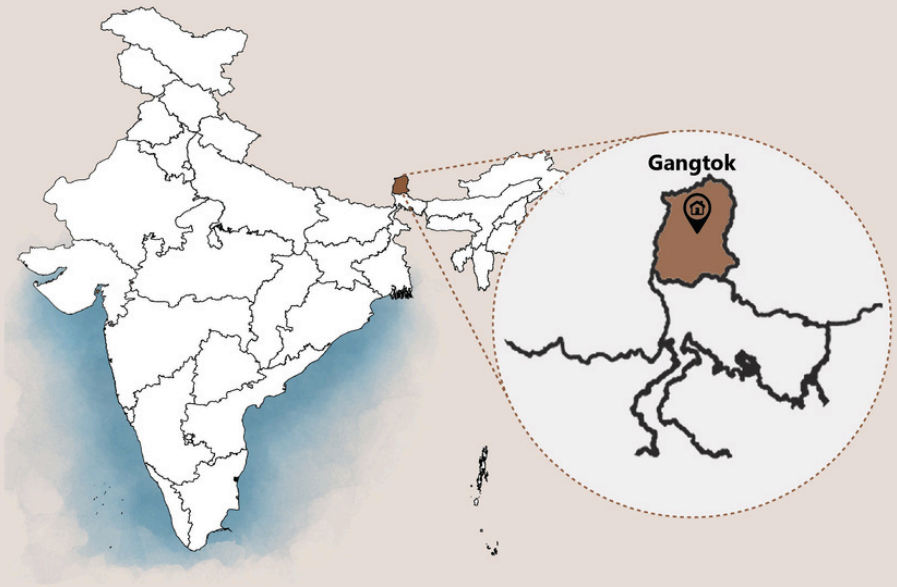
Challenge Component: 5

Climatic Zone: Cold | Gangtok | Suryagaon



Settlement Details

Location of the Settlement
Suryagaon

Area of the settlement
1.14 Ha (2.82 acres)

Total no. of Dwelling units
65 units approx.

Total Population
550 approx.

Dwelling Unit -5

House constructed in 1992

Type of Housing
Temporary (Kutcha)

Type of Structure
Detached

Area: **57 sq. mts**

Family Size: **6**

Family Occupation
Private
Lal Bazaar

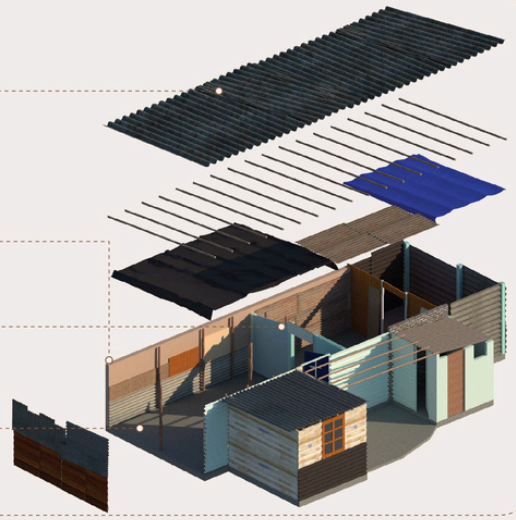
Family Income
Rs. 15,000

Issues & Challenges

- Leakage/ Seepage
- Landslides
- Cold Indoors
- Pests
- Urban Flooding

Exploded View of the unit and Materials

Roof	G.I. Corrugated sheet, polythene
Wall	Brick, G.I. Corrugated sheet, wooden planks
Structure	Wooden planks, bamboo
Floor/Plinth	PCC flooring (Thin)



Coping Mechanisms

Polythene and tarpauline are used to prevent the entry of rainwater

Photographs of dwelling units

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Design Guidelines

For each dwelling unit, the following components should be addressed:

- Roof: Select materials that enhance thermal insulation and can withstand high wind loads.
- Structure: Implement reinforcement techniques to improve overall structural resilience.
- Walls: Introduce materials that prevent seepage and enhance heat insulation.
- Floor/Plinth: Provide solutions to enhance flood resilience and moisture protection.
- Details: Integrate materials that align with local building traditions and aesthetics, incorporating thoughtful elements for optimal light and ventilation.

Proposals shall include:

1

Improved Techniques: Enhancing the use of existing local materials to make them more sustainable, resilient, and effective against climate challenges.

2

Alternative Materials: Introducing new, locally available, cost-effective materials with its execution techniques.

Should be backed by research on its suitability for the chosen climate zone and how it addresses the identified challenges and should benefit local artisans and skilled laborers that they should be able to use and benefit from the techniques suggested. Design approach that focuses on community and women-centric solutions to mitigate climate hazards. Propose designs that cater to:

- Individual dwelling units and shared walls with neighbours on either side.
- Individuals and the collective
- Living spaces and livelihood activities
- The overall microclimate of the area

Proposed materials should be cost effective and have future feasibility for local procurement and manufacturing, ensuring long-term sustainability and accessibility.
Designs should be executable if training is provided to local artisans and should be accessible to the community and should outline how materials can be scaled up for broader use within the community and also for the same climate zones with dwellings with similar conditions.

Here's what you need to include in your proposal:

Participants submitting proposed solutions for one dwelling unit shall include:

- Pros and Cons: Evaluate the pros and cons of the proposed solutions.
- Post-Application Impact: Describe the solutions' impact on the dwelling concerning Thermal comfort, Versatility, and Customizability.
- Material Specifications: Provide detailed specifications including size (sq.mts), thickness, shelf life, maintenance frequency, thermal conductivity, weight, and other technical information of the proposed materials.
- Structural Requirements: Outline the required structural components, joinery techniques, and how different materials will be bound together.
- Cost Analysis: Include the existing cost of proposed materials.
- Environmental Considerations: Discuss environmental impacts and sustainability aspects of the proposed solutions.

Participants are encouraged to propose solutions that include charts, sketches, concept diagrams, prototype models, photo montages, 3D axonometric/isometric views/renderings (Provide views showing the transformation of the dwelling unit before and after view including exploded views of joinery) for better execution and longevity, floor plans, elevations, and sections (Specifically highlighting the proposed solutions).

The drawings in the submission need not necessarily be on a scale as long as they have relevant dimensions mentioned. These elements should represent the proposed solutions comprehensively and effectively.

Submission Guidelines and Checklist

Participants are required to submit the final deliverable via submission link that will be available on the website and semi-finalists will be asked to share their editable files by the organiser over the email, through the link provided by the organiser. The Language of Submission is English. No extensions for the submission deadline shall be granted under any circumstances.

1

Research-Backed Report (A4 portrait - one single .pdf format): It includes researched findings with citations supporting proposed materials and techniques. Comprehensive Concept Note: A 1000-word concept note explaining the design solution's thought process.

File Size Limit: Total size of the file cannot exceed 100 MB.
Format of the file: .pdf format only.
Individual File Name: UID_Report.pdf
Group File Name: Groupname_UID_Report.pdf

2

Effective Presentation (16:9 aspect ratio landscape - one single .ppt/.pptx format: Slide deck of maximum 15 slides showcasing design process and solution effectiveness with visual aids.

File Size Limit: Total size of the file cannot exceed 1GB.
Format of the file: .ppt /.pptx format only.
Individual File Name: UID_Presentation.pdf
Group File Name: Groupname_UID_Presentation.pdf

There is no set minimum font size; however, it is important to keep the font legible and readable.

Have questions about the challenge? Check out the FAQs' section for more information!

Click Here or Scan

Participation Agreement, Terms and Conditions

Declaration by the Participants (Individual/Group)

- Participants hereby warrant that all information provided in connection with the ROOH Challenge is accurate and complete. Furthermore, they acknowledge that any personal information disclosed shall be utilized at the discretion of the organizer (SPARC).
- Participants, whether individuals or groups, must properly cite any best practices or adapted work from other sources that they incorporate into their submissions.
- By participating in the ROOH Challenge, if your cited work is modified or built upon, whether in whole or in part, acknowledgment will be given to you as the individual or group responsible for the original contribution. Participation in the ROOH Challenge ensures you will be credited for your original work if it is used or modified in its entirety or in part, even if you do not win.
- Should you or your team be selected as a semi-finalist by the judging panel, we will request your headshot, editable files supporting the submission and bank account details from the individual or group captain of the group. Notifications to ask for these details will be sent via email.
- If you are selected as a winner of the ROOH Challenge, your headshots and your submitted entry may be used to announce your status and to promote the ROOH Challenge for the following year.

Participation Agreement, Terms and Conditions

Disqualification Terms

- Any submission found to contain significant portions of unoriginal content without proper citation or any content generated with the help of AI will be disqualified by the organizer (SPARC) without any intimation.
- Any person or group falsifying any information will be disqualified.
- Participants are prohibited from attempting direct relationships with the organizer (SPARC) or jury, if found likewise will be disqualified.
- Any submission (Individual/Group) with names will be disqualified, submissions as directed in guidelines are only acceptable.

Participation Agreement, Terms and Conditions

Terms and Conditions & Copyrights

The below stated terms and conditions are subject to change at the discretion of the organizer (SPARC), and any such updates will be communicated to participants accordingly.

- The organizer (SPARC) reserves the right, in its sole discretion, to disqualify any participant who submits an entry and supporting statement that does not meet the requirements.
- Participants are expected to grant the organizer (SPARC) the right to promote and publish any or all of the entries on any platform from any location for non-commercial, research, educational, and development purposes. Any material that is published will be duly credited to the authors.
- In the event such a resubmission is discovered during or after the competition this will be publicly communicated after confirmation of such an action.
- Participants shall not use the data shared by ROOH team on any other platform without due acknowledgement. Copyrights belong to “Campaign for Roof Over Our Heads (ROOH) Team, SPARC.
- The sponsors/ organizer (SPARC) is not responsible for any expenses incurred by the participants for any activity carried out under the scope of this this challenge.
- The organizer (SPARC) reserves all the rights vis-à-vis ownership and contents of the ROOH Challenge website and is hence entitled to amend, terminate, or cancel the terms and conditions thereof, with or without prior notice at any time, at its sole and absolute discretion.
- All submitted designs and associated materials must be original works created by the participant(s). Plagiarism or unauthorized use of copyrighted materials belonging to others is strictly prohibited.

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Participation Agreement, Terms and Conditions

Terms and Conditions & Copyrights

- By participating in the ROOH Challenge, participants give consent to the organizers (and its affiliates) a non-exclusive, worldwide license to use, edit, modify, reproduce, publish, translate, distribute, and display the submitted designs on the ROOH Challenge 2024 webpage, social media channels, and other promotional materials related to the challenge. Organisers may also publish the designs in print or digital formats for educational or promotional purposes.
- Any disputes regarding copyright ownership or usage rights shall be resolved amicably between organizer and the participants. If necessary, disputes may be subject to mediation or arbitration in accordance with applicable laws in India.
- Winners will receive prize money in USD and must have a bank account that is eligible to receive foreign money. The winner is responsible for any taxes or conversion fees associated with the prize money. The competition organizer may be contacted for any questions or assistance. Winning groups should nominate a group captain to receive the prize money and it will be their responsibility to disburse the money. Sharing of prize money will be the sole responsibility of the group and its members. The Organisers will not be responsible for determining the value and mechanism of sharing.
- The decision of the jury will be final and binding and the organizer (SPARC) reserves all rights to determine whether submissions will be accepted or not.
- For questions or clarifications regarding copyright issues, please contact info.roohchallenge@gmail.com.
- By submitting the proposal, each participant agrees to give full use access to their work to the organizer (SPARC). The organizer will, however, acknowledge and credit the author at all times.

Timeline

23rd June, 2024

Launch Announcement

18th Aug, 2024

Registration Deadline

25th Aug, 2024

Submission Deadline

Sept, 2024

Winners Announcement

Organized By:

SPARC