

## CATEGORY

# POTENTIAL TECHNOLOGY – INCUBATION : GHTC-INDIA



## PRODUCT / TECHNOLOGY



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Technology Detail

## GHARAUNDA TECHNOLOGY FOR HOUSING USING TREATED BAMBOO & COMPRESSED MUD BRICKS

*Alternate to conventional Brick/Block load bearing structure*



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Video

## CONTACT DETAILS

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**DRISHTEE**  
SUSTAINABLE COMMUNITIES

## BRIEF

Gharaunda is Drishtee Foundation's housing initiative, supported by Indian Housing Federation, that is focused on the development of housing models for the lower-income population of semi-urban & rural India. It aims to improve the minimum standard of housing conditions in these areas and to create new livelihoods based on local resources and housing supply. Gharaunda's main guidelines are:

- Demonstration of use of locally available materials that are natural and renewable as permanent buildings' components;
- Introducing housing features that ensure safety, comfort, hygiene, disaster resilience and basic infrastructure.
- Development of local market-based mechanisms taking into consideration forward & backward linkages and supply & value chains.
- Develop & support implementation of capacity building programs for delivering such product/ service.



## SPECIAL FEATURES

- Treated bamboo as the primary construction material
- A strong and durable concrete plinth as a primary flood resilience feature
- A fire-proof central fire place as a means to preserve their culture
- Elevated floor and elevated platform (mezzanine) inside the house as a flood resilience feature
- Toilet, bathroom and clean drinking water source provided within the core structure
- A 3-layered roof to ensure optimal thermal insulation and acoustic proofing
- Double walls for structural strength and thermal insulation
- Modular partitions to keep the space organization flexible
- Double height ceiling to allow improved ventilation and exhaustion

## ECONOMIC ASPECTS

- Cost Effective
- Does not require skilled manpower.



### SUSTAINABILITY ASPECT

- Environment Friendly

### SUITABILITY AND AVAILABILITY

- It is especially relevant for seismically active regions like North-eastern India.
- Standardization of treatment process of bamboo to ensure strength, durability (termite infestation) & safety (fire resistance) is required.

### LIMITATIONS, IF ANY

- There is a need for standardisation of treatment process to ensure strength, durability (termite infestation) & safety (fire resistance)
- The roofing system tried in the existing prototypes is good in providing thermal comfort but is very complicated to assemble and uses thatch, which has very limited durability. Hence, there is a requirement for an alternative roofing solution addressing these issues.
- The current walling solution provides thermal comfort but is very prone to insect infestation, which needs to be solved.
- Determining the life span of the structure is essential.
- Applicable mostly to rural areas.





### MARKET LINKAGES

- Can be used in locations which have availability of bamboo.

### MAJOR PROJECTS

Due to the site characteristics of rural areas of Bihar, the first Gharaunda model house was built with compressed mud bricks and bamboo as the primary construction materials. The house typology is based on traditional ways of living but a few different features were introduced to alter some rooted habits mainly regarding hygiene and gender segregation.

Gharaunda II experimented with bamboo as a construction material and therefore, in 2018 Gharaunda initiated its second project for the Mising (a tribal) community of Assam. Durability and flood resilience emerged as the primary considerations for Gharaunda II.

### CERTIFICATION/INDIAN STANDARD/ENDORSEMENT

- Under incubation at IIT, Kharagpur.

