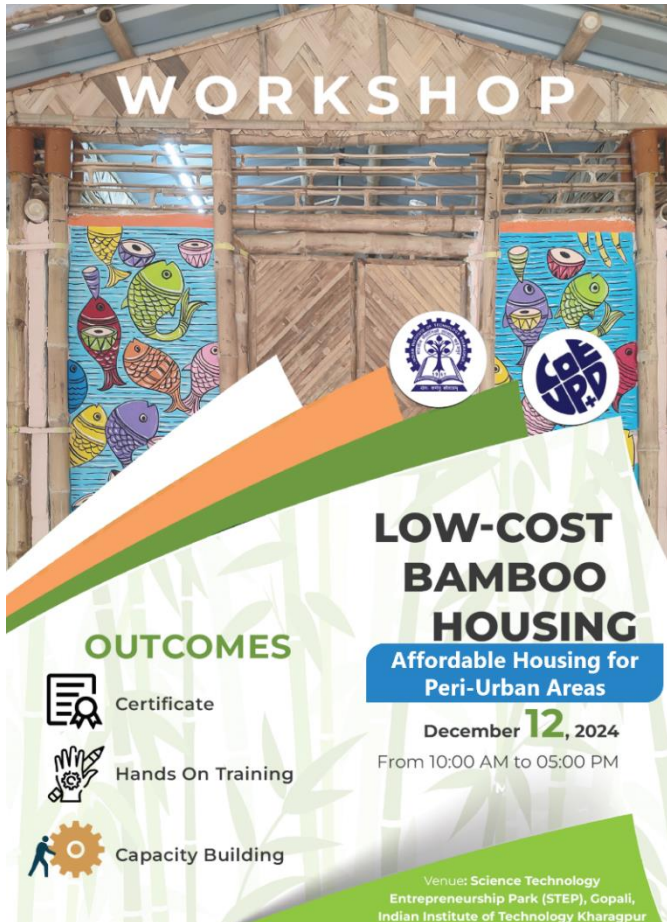


Capacity Building Programme on *Low-Cost Bamboo Housing* for Peri-Urban Areas



It was a calm Thursday morning, the 12th of December, 2024, when the STEP (Science Technology Entrepreneurship Park) Campus of IIT Kharagpur in Gopali, Kharagpur welcomed a gathering with a meaningful purpose. A one-day Capacity Building Programme on Low-cost Bamboo Housing – an affordable and sustainable housing solution was organised for the residents of the peri-urban areas of Kharagpur.

The success of the workshop was made possible by the dedicated efforts of a well-coordinated team comprising Prof. Subrata Chattopadhyay, Advisor to the Centre of Excellence in Urban Planning and Design (CoEUPD) and Prof. Haimanti Banerji, Deputy Team Leader of CoEUPD, both from the Department of Architecture and Regional Planning, IIT Kharagpur; Associate Professor Shankha Pratim Bhattacharya from the same department; Professors Damodar Maity and Aritra Chatterjee from the Department of Civil Engineering, Mr. Shyamal Kumar Biswas, Senior Executive Engineer at IIT Kharagpur and Mr. Satyan Mishra, a key member of the incubation team at Drishtee Foundation.

The main reason behind doing this programme was to spread awareness among the local community about a low-cost housing solution using bamboo – an eco-friendly

and sustainable technology pioneered by IIT Kharagpur. The team wanted to teach people about how bamboo, mud and other vernacular materials can be effectively utilised to construct affordable and sustainable homes, particularly for those residing in peri-urban areas, lacking proper housing. The programme featured live demonstrations of bamboo construction techniques, coupled with hands-on sessions, allowing the participants to gain a clear and practical understanding of the building process.



The morning unfolded with a gentle buzz of anticipation as participants gradually gathered in the venue, many uncertain of what lay ahead but keenly eager to learn. The atmosphere was warm and welcoming as the session commenced with opening remarks and introductions.

Bamboo's booming across India—budget-friendly, eco-smart, strong, and seriously stylish. The snag? People still don't fully trust it. So, this workshop was to remove those doubts and give a proper technological understanding.

As the session progressed, the speakers shifted the focus to a broader national vision by presenting the mission of the Ministry of Housing and Urban Affairs. They highlighted how innovative construction technologies, promoted under the Global Housing Technology Challenge – India (GHTC – I), are paving way to achieve the ambitious targets of the Pradhan Mantri Awas Yojna – Urban (PMAY – U).



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Bamboo based construction, once a niche and informal practice, is now getting traction across various parts of the country. However, until recently, this method was often used sporadically and without standardized engineering principles. GHTC -I seeks to change that by promoting cutting-edge innovations in building materials and techniques, aiming to deliver ready-to-occupy homes in the shortest possible time and at the lowest cost, all while ensuring high-quality and sustainable construction methods. More than just a showcase, GHTC-I serves as a dynamic platform that fosters innovation by supporting startups and researchers through incubation programmes and accelerator workshops. This initiative is building a strong ecosystem for next-gen housing solutions, placing India at the forefront of sustainable and affordable construction.

Following the initial sessions, a tea break was arranged for all participants, offering a moment to relax and exchange thoughts informally. After the break, the programme shifted focus to an insightful session on bamboo-intensive construction projects from across the globe. Examples from countries like Malaysia, Vietnam, Indonesia and Mexico showcased how bamboo is not a humble natural material, but a serious player in the future of sustainable housing.

Next came one of the most awaited segments of the day – bamboo selection, splitting and treatment. The session took a deep dive into the lesser-known science behind bamboo construction. Experts shared that despite its natural abundance, not all bamboo is suitable for building. The audience learned that choosing the right bamboo species, along with its maturity and condition, is essential for ensuring both the strength and resilience. As the conversation moved forward, participants were introduced to the art of splitting bamboo. Demonstrations made it easy to grasp how clean cuts and proper shaping directly affect a structure's long-term integrity. The session further explored various treatment methods essential for preserving bamboo's lifespan. Soon after, everyone gathered for lunch, where conversations flowed freely beyond the formal sessions.



After lunch, the participants reconvened for the post-lunch sessions, bringing renewed energy and interest into the room. The afternoon unfolded with a series of insightful presentations by the experts. They began with the fundamentals of bamboo reinforcement, foundation and plinth. This was followed by an engaging discussion on wall panel and column construction, where the strength and adaptability of bamboo truly came to light. This focus then shifted to the roof – its truss and covering installation. The experts also touched upon cost-effective solutions and the long-term sustainability of bamboo housing.



By the end of the day, the villagers were no longer just passive listeners. The participants absorbed a wealth of knowledge, discovering that bamboo construction could be both practical and easy to understand. The team from IIT Kharagpur, with their clear, thoughtful guidance, broke down complex ideas into simple, relatable steps. It became clear to everyone that low-cost housing doesn't have to mean low quality—especially when traditional wisdom is combined with modern technology.

This was more than just a training. It was a spark. A step towards turning grass into shelter, ideas into homes, and knowledge into community strength.

