

Report on Technical Workshop on Bamboo Buildings at Kochi on 23 September 2017

Kerala State Bamboo Mission (KSBM) has made several interventions in promoting the bamboo sector in the State. In this regard, the Mission has organised several promotional activities for bamboo products like low value handicrafts, decorative items and interiors, utensils, and furniture. Buildings constructed of bamboo are presently in fashion and very few of our artisans / NGOs are engaged in the making of bamboo buildings. It is understood that most of them are not aware about the engineering aspects of the construction. This lack in technical knowledge may result in faulty buildings made of bamboo. Consequently, this may wrongly convey the message that bamboo is not suitable as construction material.

To address the above issue and to promote use of bamboo in construction, the Mission organised a State-level technical workshop on various applications of bamboo in construction of buildings on 23rd September 2017. Shri. Paul Antony IAS, Additional Chief Secretary (Industries and Commerce) & Vice Chairman of the Mission was inaugurated the workshop at 10 AM in Grand Hotel, Kochi. He also released a book of Ms. Neelam Manjunath about “Symphony of Bamboo”



The participants were Bamboo artisans / NGOs / PSUs who are engaged in construction work, architects, builders, final year students and faculty from Engineering colleges, and Government officials.

The technical sessions were handled by the following persons who have vast experience in the applications of Bamboo in construction of buildings: -

1. **Padmasree Sankar** is a senior architect and the founder of Habitat technology, Thiruvananthapuram. In his presentation he focused on the potential of bamboo in building construction by describing about the selection of appropriate varieties and their properties. He also described use of bamboo in the joineries in column structures, beams and roofing.



2. **Dr. Suresh Balla**, Professor at the Department of Civil Engineering, IIT Delhi. His main areas of interest are smart structures, structural health monitoring, electro-mechanical impedance (EMI) technique, bio-mechanics/ bio-medical applications of smart materials, piezoelectric energy harvesting and engineered bamboo structures. Dr. Bhalla has published over 50 papers in international journals, and over 70 in international/ national refereed conferences/ workshops. He has co-authored two books “Piezoelectric Materials: Applications in SHM, Energy Harvesting and Bio-mechanics (Wiley)” and “Smart Materials in Structural Health Monitoring, He had discussed in his presentation about the developed designs of bamboo columns, beams and its strength analysis methods done in his department at IIT Delhi.



3. **Ms. Neelam Manjunath** is an architect, planner, scientist, activist and theoretician. She is a practicing architect since 1991, currently based in Bangalore. Her architecture is distinguished for the use of low energy materials and technologies with special emphasis on Bamboo. Since global warming issues are widely discussed and the construction sector is a major contributor, scientists across the globe are looking towards low energy, resource efficient building materials and technologies for solving the problem of keeping the pace of development without further raising the carbon levels. In her presentation she had gone through her experiences in evolving building designs from low cost to higher end. One of her books titled “Bamboo Symphony” was released during the programme by Shri. Paul Antony IAS, the Additional Chief Secretary (Industries and Commerce), Govt of Kerala.



4. **Sanjeev Shashikant Karpe** is a qualified Electrical Engineer who has been associated with rural development for last fifteen years and has pioneered the work in setting up of bamboo based enterprise in rural India. He is a Founder Director with Konkan Bamboo & Cane Development Centre (KONBAC), an organization working for sustainable development through use of bamboo as a resource & implementing various Bamboo projects successfully for last 12 years. In his presentation, he explained grading and straightening of Bamboo for various applications like handicraft, furniture and construction. He also presented various designs of construction implemented in Goa, Hyderabad, Mali etc.



5. **Dr. EM Muralidharan** is a Principal Scientist at Kerala Forest Research Institute, Peechi, Thrissur and Coordinator, Bamboo Technical Support Group. His presentation looked at the diversity of bamboo species available in India, Kerala in particular, and their characteristics. The special features that make these bamboo species suitable for an array of uses ranging from furniture making to construction were examined. The availability of the bamboo species in the region and the potential for cultivation in plantations and basic information on propagation, cultivation, and harvesting and post harvest storage was provided. The bamboo information resources available in the country and organizations involved in research and development were also examined.



6. **Kalpesh Dhodia:** is a Project Manager at Centre for India Bamboo Research Technology (CIBART),Gujarat. Hemade a presentation aboutBamboo Livelihood Business Enterprise Project. It elaborated the interventions of CIBART in the bamboo sector with landless village communities as well as enterprises. The Bamboo construction at various levels that was developed by their technical centre in Gujarat was shown during his presentation.



7. **Shri.GhaniZaman** has been working as a full time professional on bamboo structures since 1997. During this time he was also a visiting lecturer at PilooModi College of Architecture, Cuttack till 2011. Presently, he is associated with the projects in Sikkim. He discussed the importance of using Bamboo in Construction from a social action point of view. Even if there is no one solution to all problems in the context of environmental degradation, he stressed on how the bambao plant can make a dramatic positive impact in many areas. The overarching theme of his presentation was "Bamboo, People and the Environment" and the need to provide the tools and information to everyone including architects, civil engineers and real estate builders to respond in one's own way in their own world.

After the presentation of the above resource persons a panel discussion was held with the Participants with Dr. Murali as the chair and all other presenters as the members of the panel.



The architects and civil engineers who participated in the programme asked the panel questions on structural requirements of various designs shown during the technical sessions, how to train the people who are interested to engage in the bamboo related work and also about the investment requirement.

Regarding structural designs of the building Ms. Neelam and Mr. Sanjeev replied that they have engaged qualified structural engineers to develop structures as per their design. Shri. Kalpesh replied to the question on investment that based on the project the investment required can start from Rs. 2 Lakhs. For the requirement in training, the panel suggested that they can contact the State Bamboo Mission and the mission will engage a proper institution or organisation in this sector.

The workshop concluded at 4.30 PM with thanks to the panel and the participants.

This workshop helped to create awareness among participants from various sectors about the proper methodology to be used in fabrication of bamboo building and to get to know about how to blend bamboo in various stages of construction work.