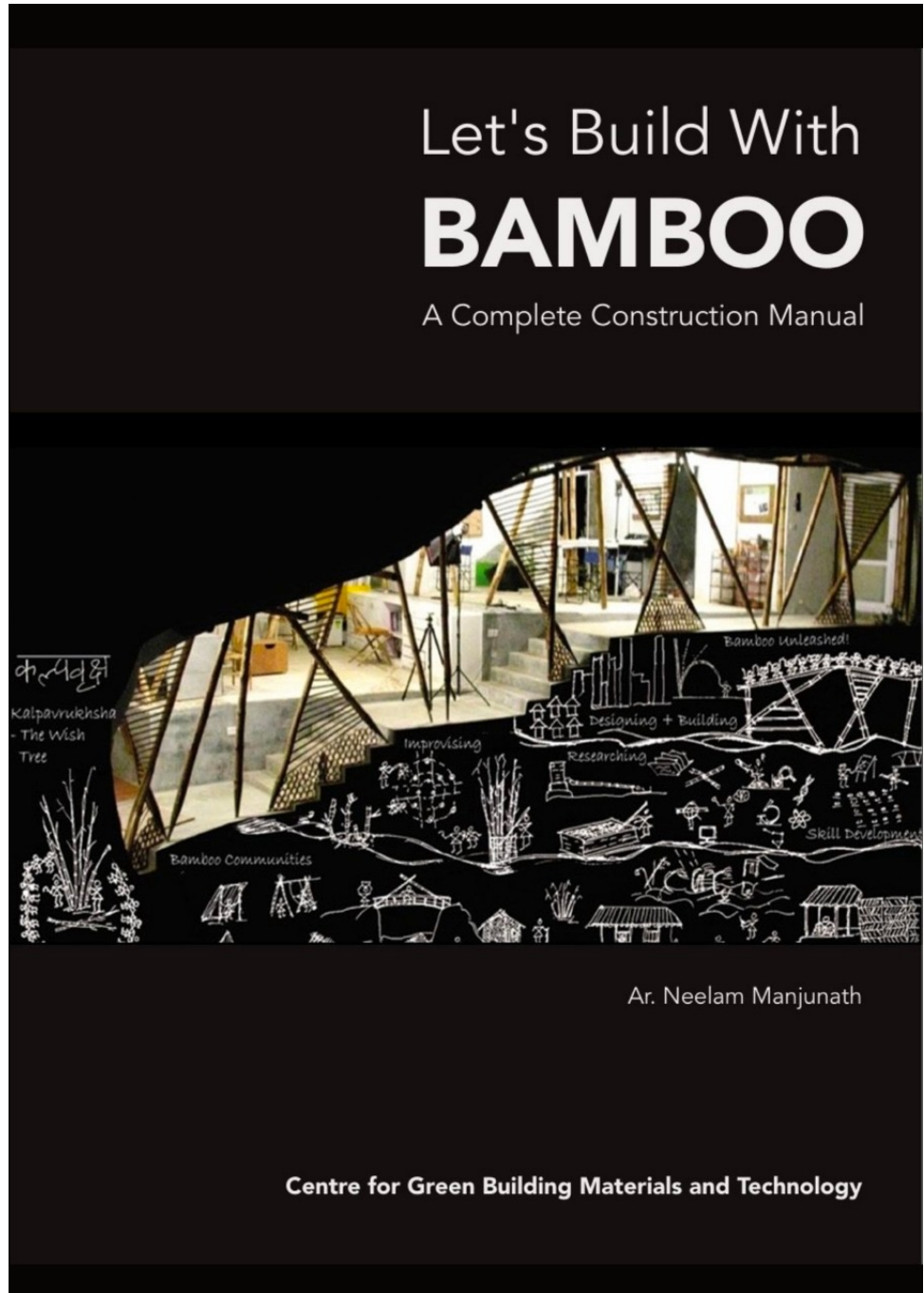


Let's Build(the world) with Bamboo!

Ar. Neelam Manjunath

Proprietrix, Manasaram Architects, Bangalore, India
CEO, Founder and Chairperson, CGBMT,
Sustainability & Bamboo Consultant, DEI, Dayalbagh, Agra
World Bamboo Ambassador, WBO
Key Expert, Bamboo Const Task Force, INBAR
National Convenor, WC-ADCE, BSI
Member, NGC, Bamboo Society of India
Member, Sub Committee on Bamboo Construction, Niti Ayog
C40 Cities Wome4Climate, Bangalore Cohort
Member, BIS-CED, GOI



Ar. Neelam Manjunath

Centre for Green Building Materials and Technology

My journey with Bamboo 1999-...

- Climate responsive design solutions- chanced on bamboo
- Found it versatile, abundant, economical, traditional, developed technology... Used in buildings in my Private practice
- **Diminishing skills, no data, tough capitalistic market**



Housing



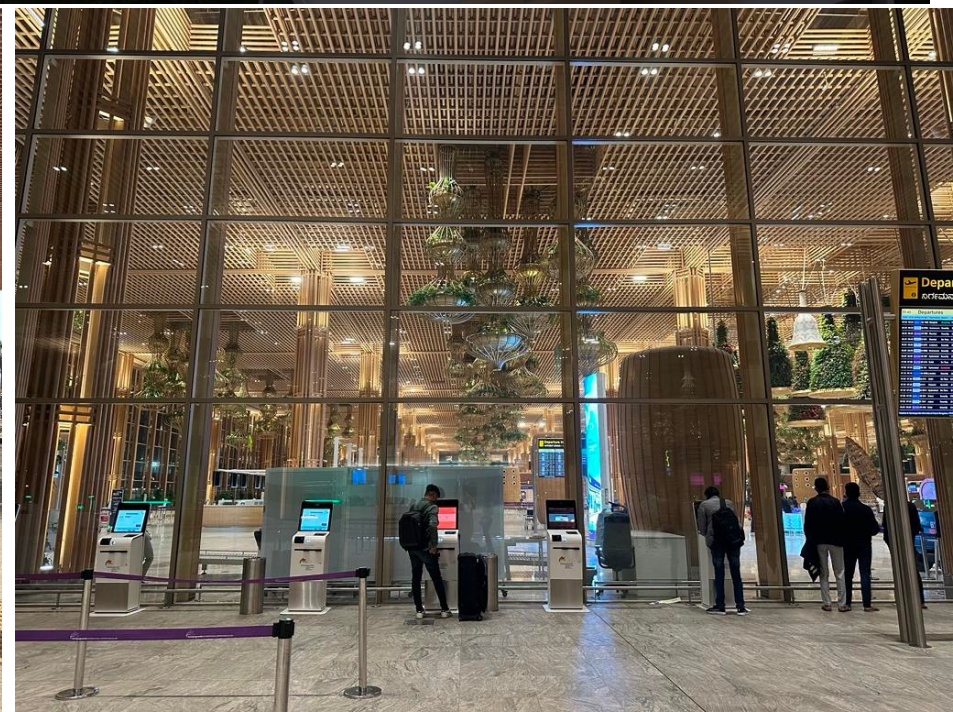
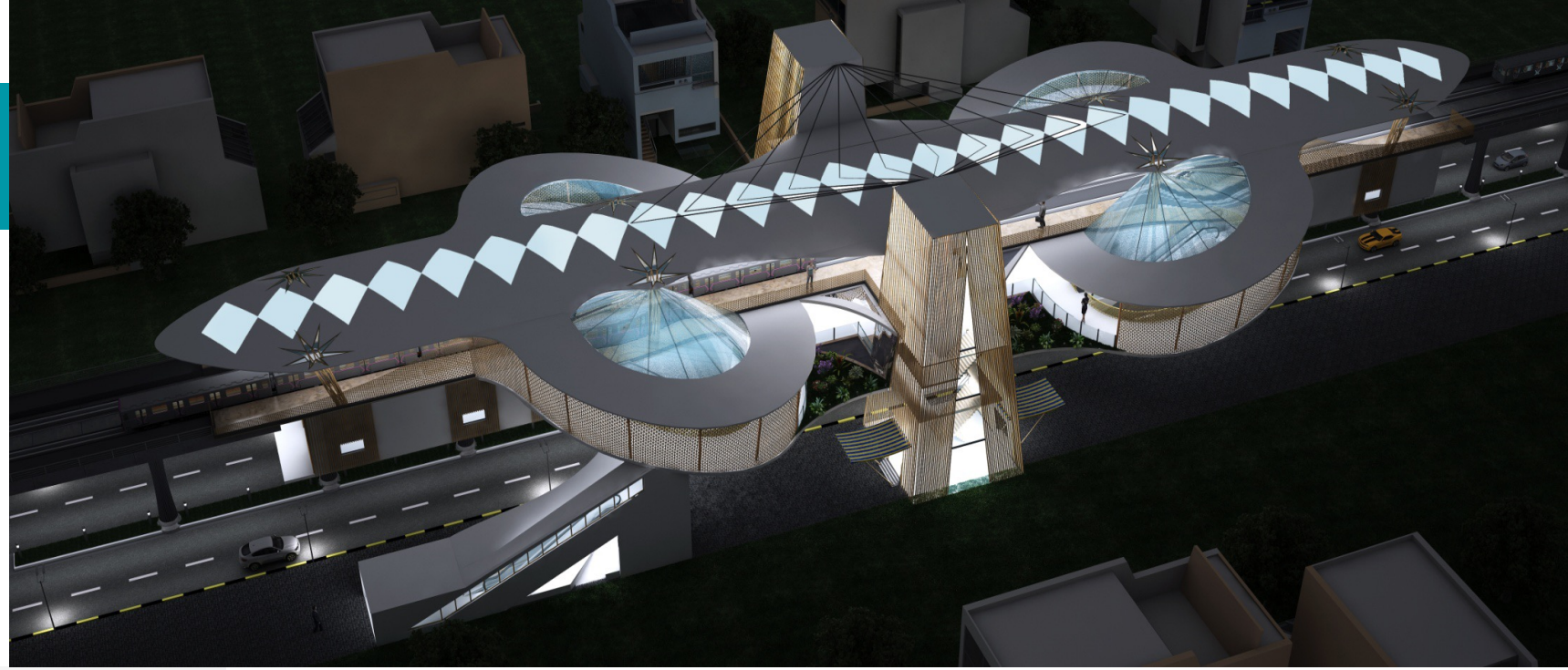
Institutional



Office spaces



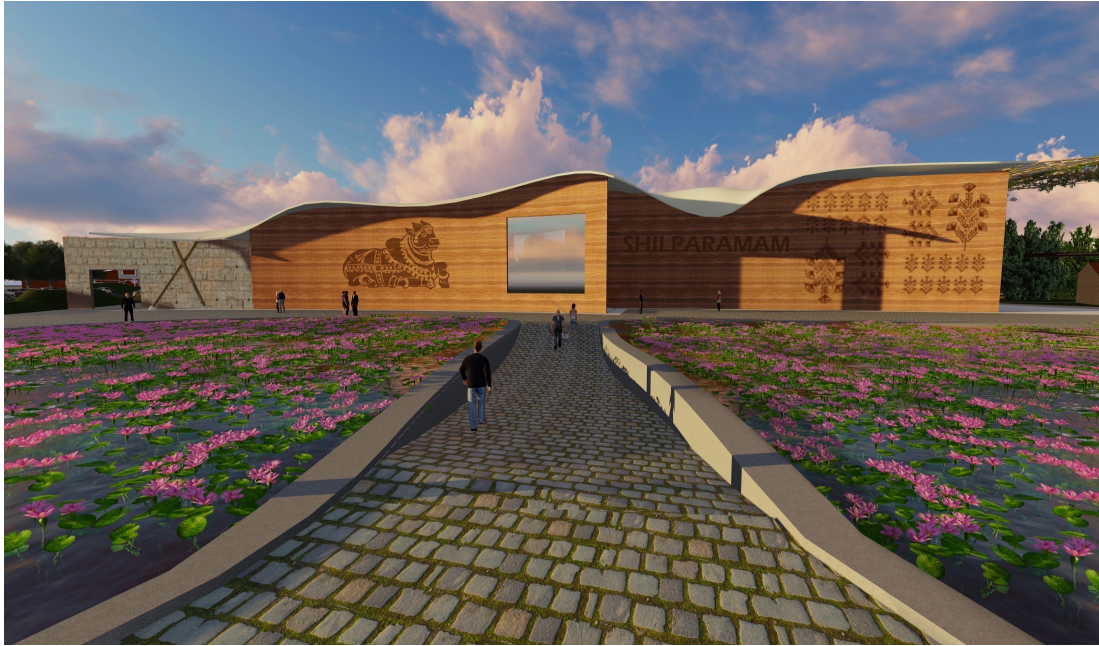
Infrastructure



Community infrastructure



Cultural



Park structures



Symphony of the Bamboos @Venice Biennale 2016

- International Architecture Venice Biennale – 6 months Exhibition, Book Launch, workshop and presentation



Assessing the issues –Global perspective

- Mainstreaming Bamboo in Building sector , paper @WBC2015, Damyang, S. Korea
- Global survey 2017
- Paper on Survey @WBC 2018, Mexico



RESEARCH REPORT on “Mainstreaming Bamboo as a Building Material in the Construction Sector Globally”

by:

Neelam Manjunath

Research assistance by:
Ruben Boas



CGBMT

WBO

Survey partner:
ArchDaily

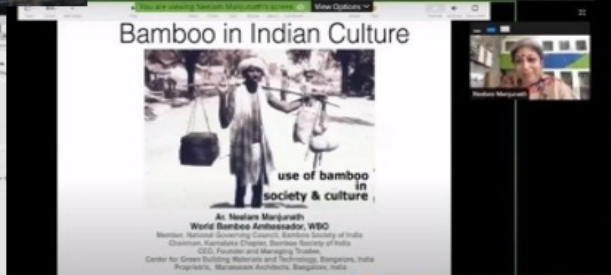


9th August 2018





BAMBOO PLANTATION, TREATMENT, PROCESSING



MAJOR INDUSTRIES OF BAMBOO

25,000 bamboo based Industries provide employment to about 20 million people. Of the 13.47 million tonnes of bamboo consumed, 11.77 million tonnes are used in:

- Construction
- Small and cottage industries
- Handicrafts
- Paper production, as wood substitutes
- Domestic purposes

Ar. Neelam Manjunath
Chair BSI-KC, World Bamboo Ambassador.



ADVOCACY, SEMINARS, WEBINARS



COLLABORATIONS



SKILLING THROUGH WORKSHOPS



Samsung Quad Camera
Shot with my Galaxy A31



Samsung Quad Camera
Shot with my Galaxy A31

Two main steps seemed urgent:

Data compiling and a
Framework for closing the loop



The 101 Bamboo City project

- **Bamboo for Ecology-** Grow bamboo at the site of utilization in areas where bamboo grows naturally or can be acclimatized without compromising on biodiversity-
- **Bamboo for development-** in Infrastructure, building, industry, energy etc

“ At COP27, bamboo was declared as one of the top five solutions to mitigate global warming, and replacing traditional housing materials such as carbon and steel with bamboo helps reduce carbon emissions caused by the global housing sector.” (Washington Post 2022)

SAVE THE DATE

THE BAMBOO CITY

PROJECT LAUNCH

3 DEC
2023
11.30 AM IST
ON ZOOM



COP²⁸
UAE

UNITE.
ACT.
DELIVER.



Project at a glance

Project Title	“The Bamboo City – Nature-Based Development Model for a Regenerative City through Bamboo: A Case of Bengaluru 2030” (Climate Action Plan)
Author	Ar. Prof Neelam Manjunath
Initiative	Neelam Manjunath , Incubated at CGBMT, pitched in C40- Women4Climate Cohort Programme
City (Area, Elevation)	Bengaluru (2196 sq.km, 920m)
Coordinates	Latitude: 12°58’18” N Longitude: 77°35’37” E
GDP	\$ 313 billion
Project Timeline	2023-2030
Stakeholders involved	BBMP, BMRDA, BIAPPA, BDA, Citizens, Construction Professionals, Bamboo Industry, Academia , and others
Proposed to be involved	WBO, INBAR, Individual researchers, NGOs, Private Institutions, and others

Project at a glance (cont.)

Project Title	“The Bamboo City – Nature-Based Development Model for a Regenerative City through Bamboo: A Case of Bengaluru 2030” (Plug-in Climate Action Plan)
Aim	Make Bengaluru a Carbon Neutral and Circular City by 2030 and Regenerative thereafter
Important Sectors Addressed	

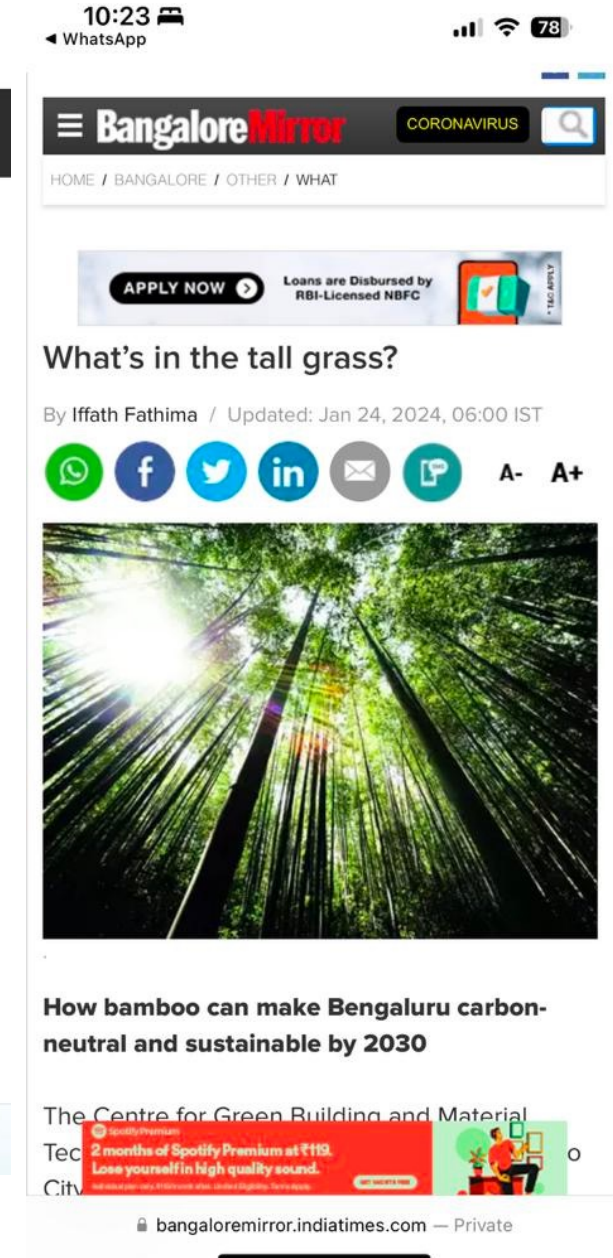
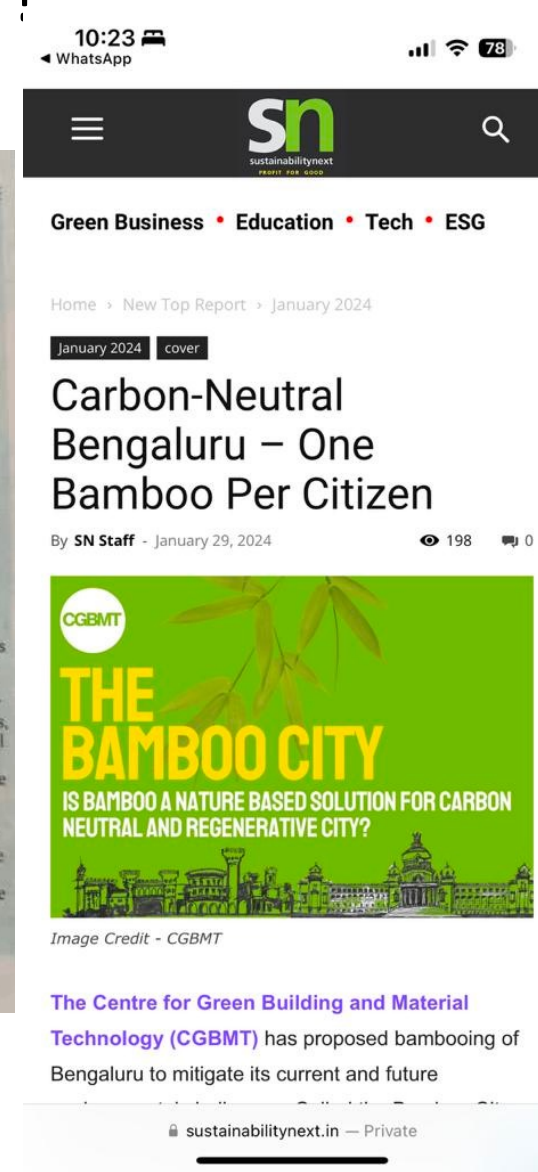
-  Housing and Infrastructure
-  Urban Greening
-  Air Quality
-  Water Resource Management
-  Energy and Waste Management
-  Community Resilience and Well-Being

- The project proposes *one bamboo plant per citizen* in the city.
- The project proposes *30 % inclusion of bamboo in the construction and development sector* in the city

The Bamboo City @ DESIGNURU 4.0 2024, Bengaluru, India



Bengaluru engages with Bamboo !



@Nagpur, India



Gadkari plans to make bamboo a ₹50k cr industry

Vijay.Pinjarkar@timesgroup.com

Nagpur: Union minister for road transport and highways Nitin Gadkari on Sunday said he plans to make bamboo a ₹50,000 crore industry in the next few years.

Speaking at 'Advantage Vidarbha' conclave organized by the Association for Industrial Development (AID), Gadkari appealed to bamboo experts and scientists to shun working in isolation and come up with innovations to strengthen the bamboo economy. "There should be a coordination between supply and demand for the growth of the bamboo industry. The success of any industry depends on the availability of raw material, processing, proven technology, and marketability," said Gadkari.

"The bamboo industry should come out with the products as per people's requirement and not what the industry desires and also think of economic viability," the minister added.

A battery of experts in the sector emphasised on integrated work mechanisms for the sector to grow. "We are scattered now and need to unite as there is no scope for competition in bamboo and the sky's the limit. It is high time big industrialists enter this sector as green gold can be an alternative to steel. It also has an immense potential to bridge the gap between the poor and rich," said Ganesha Verma, CEO of Bhavya Srishti Udyog, Verma, who was speaking about the philosophy of bamboo, has been credited with making the world's first crash barrier for the National Highways Authority of India (NHAI) in Maharashtra.

Verma said, "Our air is not worth breathing and water worth drinking, but bamboo can be the only solution to save Mother Earth."

While highlighting the utility of bamboo in the construction industry, experts lamented that the hopes of National Bamboo Mission (NBM) remain unfulfilled. World bamboo ambassador from Bengaluru, Neelam Manjunath, said there are several policies and schemes, but nothing is happening on the ground. "That is the biggest issue



Union minister Nitin Gadkari (right) with World Bamboo Ambassador Neelam Manjunath

There should be a coordination between supply and demand for growth of bamboo industry. The success of any industry depends on availability of raw material, processing, and marketability

NITIN GADKARI | UNION MIN

back. No efforts are being made to create a thriving bamboo ecosystem," she lamented. "Mud and bamboo have been used in construction work for ages. There is a lot of talk about the use of bamboo in construction, but it remains confined to building a few resorts. Most of the core area remains detached from bamboo which needs rejuvenation," said Manjunath.

Sanjay Singh of Green Solution India too admitted there were countless industrial opportunities, but "we are not moving ahead with technological innovations in the bamboo sector". Citing an example of China, Singh said, "During Covid in 2020, China exported ₹17,000 crore bamboo products the world over. Why can't India? We should now think of bamboo industrial parks to boost the sector by way of collective manufacturing."

Even as experts want the government to take some bold steps, Kamlesh Salam, founder and CEO of CanBoo, blamed policy deficiencies in promoting the sector. "We want to grow tobacco but not bamboo. We need to understand the value chain. There is low awareness and issues of capacity building grappling the sector. Besides, there is no institutional mechanism

Gadkari mulls making Nagpur 'Bamboo City'

Vijay.Pinjarkar @timesgroup.com

Nagpur: Union road transport and highways minister Nitin Gadkari has mullied the concept of 'Bamboo City' for Nagpur.

Experts say the idea should not be misconstrued as developing a city with bamboo material but making the city carbon neutral.

The concept has been developed by Bengaluru-based architect and World Bamboo Ambassador Neelam Manjunath, who gave a presentation and explained to Gadkari the 'Bamboo City' at the 'Advantage Vidarbha' conclave on Sunday.

Speaking on the development of the bamboo sector in Vidarbha, Gadkari was positive and said, "Bamboo City is a good concept, and we will take it forward."

What is 'Bamboo City'? Talking to TOI, architect Manjunath, who evolved the concept, said, "It is a holistic development model for a regenerative city through bamboo, which is an eco-friendly, resource-efficient building material and an excellent carbon sink."

Elaborating on the project, she added, "The project seeks to understand the current state of environmental impacts of air and water pollution in the city and intercede through nature-based interventions with bamboo as a mainstream material in construction, phytoremediation, and air pollution mitigation by identifying points of action, consistent with national and international climate action and sustainable commitments," she said.

'Bamboo City' is about identifying degraded and waste lands, lands along roads and highways, grounds, areas surrounding lakes, railway tracks, etc. "Bringing these lands under bamboo solves twin purposes of achieving climate change goals by making the city carbon neutral and promoting at least 30% of its use in core sectors like schools, low-cost housing, paper pulp, utensil buildings, guest houses, tourism, etc," the expert said.

Manjunath is developing a 'Bamboo City' framework (2023-30) for Bengaluru, which is a C40 city that has committed to fighting climate change. The aim is to make the city carbon-neutral by 2030, and regenerative thereafter.

The Bruhat Bengaluru Mahanagara Palike (BBMP) is the nodal agency within the C40 climate leadership network. It will have to pro-

BAMBOO BENEFITS

- Bamboo creates a micro-climate condition with a reduction of 4-5 degrees in temperature
- Planting bamboos can retain and increase groundwater table by holding up to 5,000 litres of water per bamboo, equivalent to 200-400 mm of water
- Bamboo's phytoremediation qualities make it effective in removing toxins from soil
- Bamboo reduces dust levels by 70%-90%
- Bamboo can be a replacement for plastic



Bamboo City is a holistic development model for a regenerative city through bamboo. The project seeks to understand the current state of environmental impacts of air and water pollution in city & intercede through nature-based interventions with bamboo as a mainstream material in construction and air pollution mitigation

NEELAM MANJUNATH | WORLD BAMBOO AMBASSADOR

pare a Climate Action Plan (CAP). Manjunath explained the concept to Gadkari and the latter pitched for it while addressing the conclave. The 'Bamboo City' will involve citizens, construction professionals, the bamboo industry, academia, experts and NGOs working in the field and others.

"The idea is in the initial stage. After getting an in-principle approval, a committee of scientists and experts will be formed to work out the modalities. There are some grey areas and intricacies which will be discussed before talking up the project," said bamboo expert Sunil Joshi, who coordinated the event.

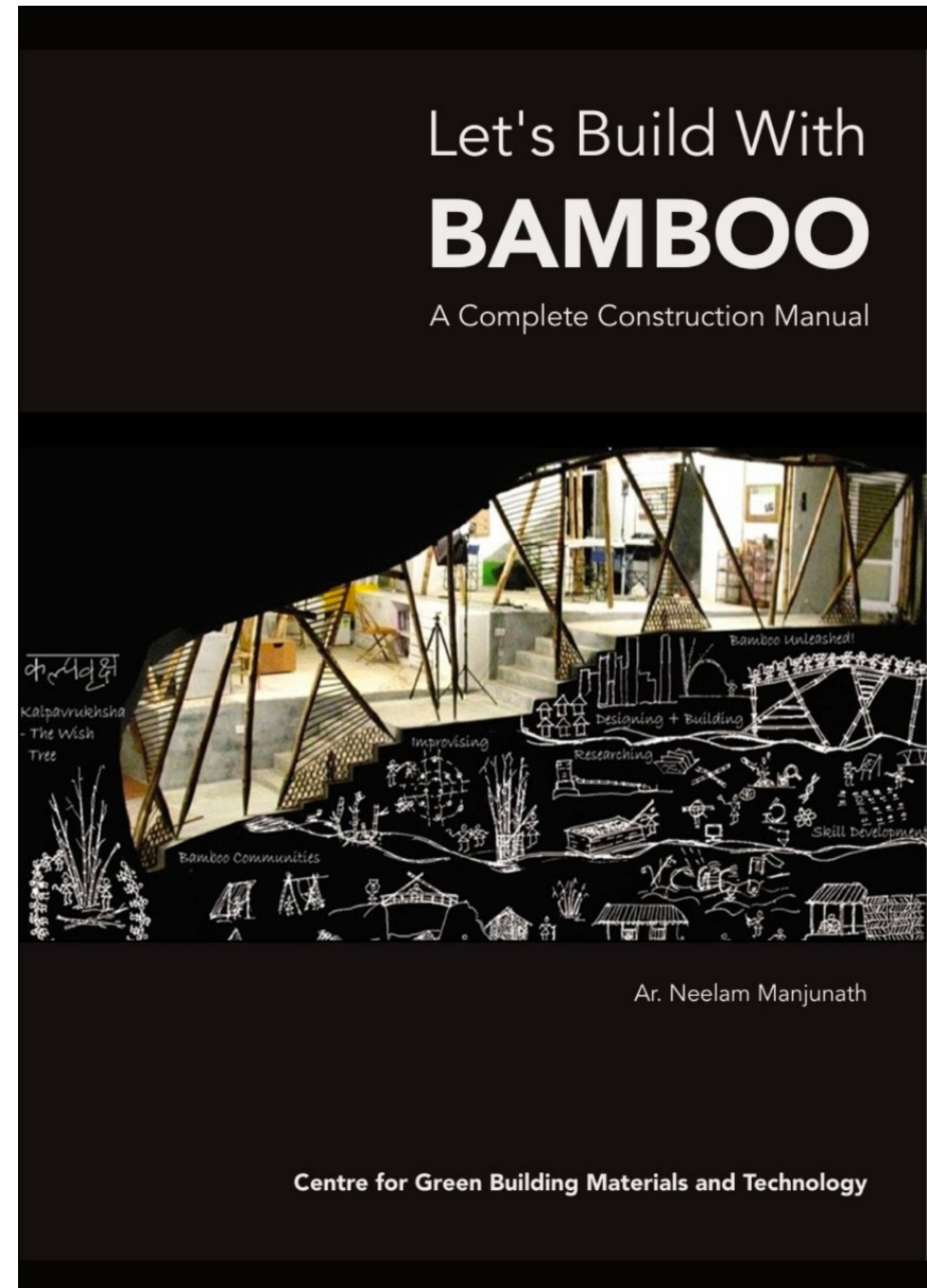
"The model will provide action points in strategic areas like housing and infrastructure, urban greening, air quality, water resource management, and enterprise development," added Joshi.



Let's Build with Bamboo

Bamboo for development- Buildings, products in daily life ,Infrastructure, landscape, energy, etc

Let's Build with Bamboo is our first step in our effort towards comprehensive consolidation of data on Bamboo in a usable format by any sustainability enthusiast !



Let's Build with Bamboo -Vol I &II

Let's Build with Bamboo Vol I & II

Introduction:

The book will introduce the inquisitive minds to the world of construction with bamboo gently and guide them through the full construction process step-wise. The book also delves into the basic myths, problems and issues concerning the use of bamboo in the building sector along with guidance to tackle the issues. This will encourage the young minds to come up with further research questions from various technical streams of building sciences, thereby addressing socially relevant research on bamboo.

The book is a compilation of R&D, knowledge and experiences from the bamboo sector of the author and other professionals which make it a go-to guide which informs and persuades the readers to use bamboo in their day-to-day buildings. The book will be in two volumes of approximately 170 to 180 pages each. The first book will deal with the context, species, harvesting, processing, treatment and joinery. The second book will deal with the complete construction process from foundation to roof for various types of buildings globally.

The proceeds from the sale of the book will go to CGBMT - School of Simple Living for promoting sustainability at the grass-root level to benefit communities at the bottom of the pyramid.



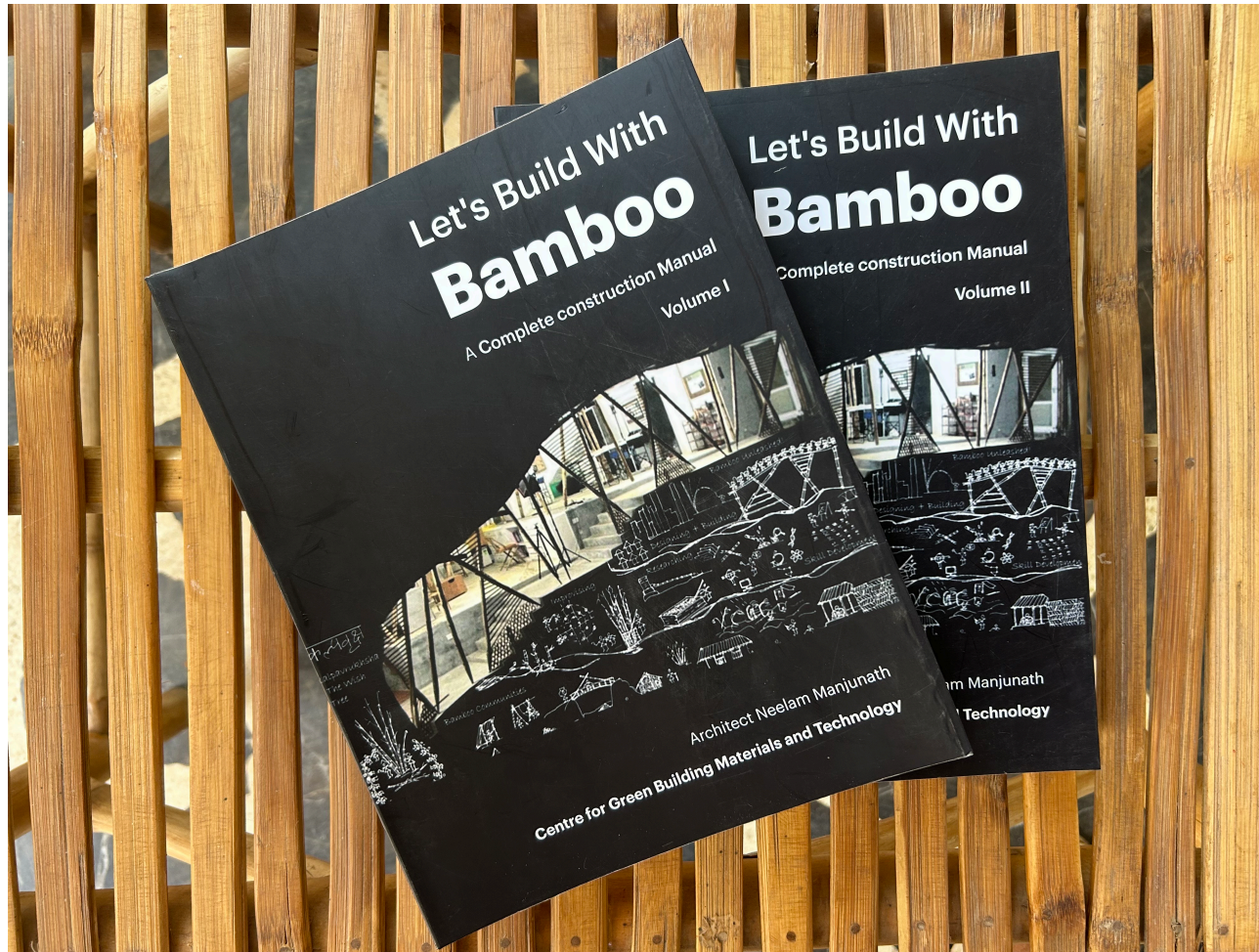
"An architect is a catalyst of change in society, setting the stage for all human activities on Earth. As architects we challenge ourselves to achieve a balance between Responsible Creativity and Creative Responsibility in all our projects to arrive at holistic solutions."

-Ar. Neelam Manjunath

Ar Neelam Manjunath

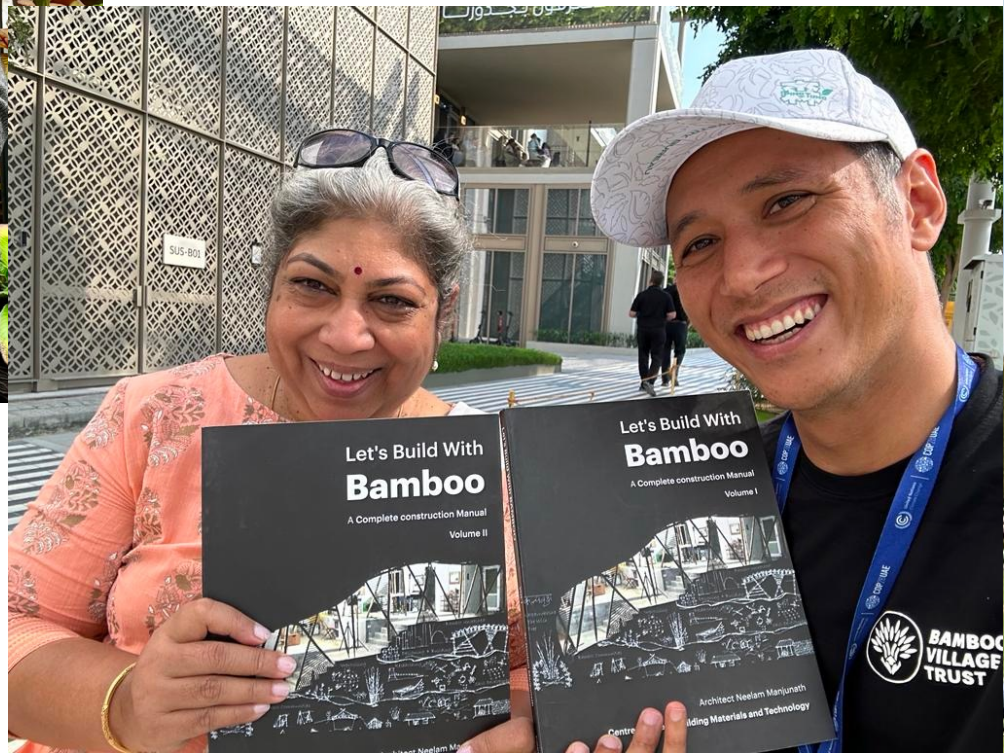
Architect and Sustainability Consultant

Ar. 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. She always believes in taking the engineering quality of Bamboo to be stretched to its limits and create cutting edge in bamboo engineering. "My buildings have been judged to be simple and direct solutions of problems concerning the general function of the buildings, its economics, its aesthetical and adaptive to the climate in context. In my buildings I try to be sympathetic to the immediate environment in terms of climate, statement of the building forms, local and green building materials etc. I believe that a building is a living entity that it has to have a spirit and it should be felt like a living entity by the occupants; forever changing with the seasons."



Book launch across several cities in India – Over 1000 copies sold! And Awarded !





Second Edition by 2025

- International Bamboo species data
- Updated technologies



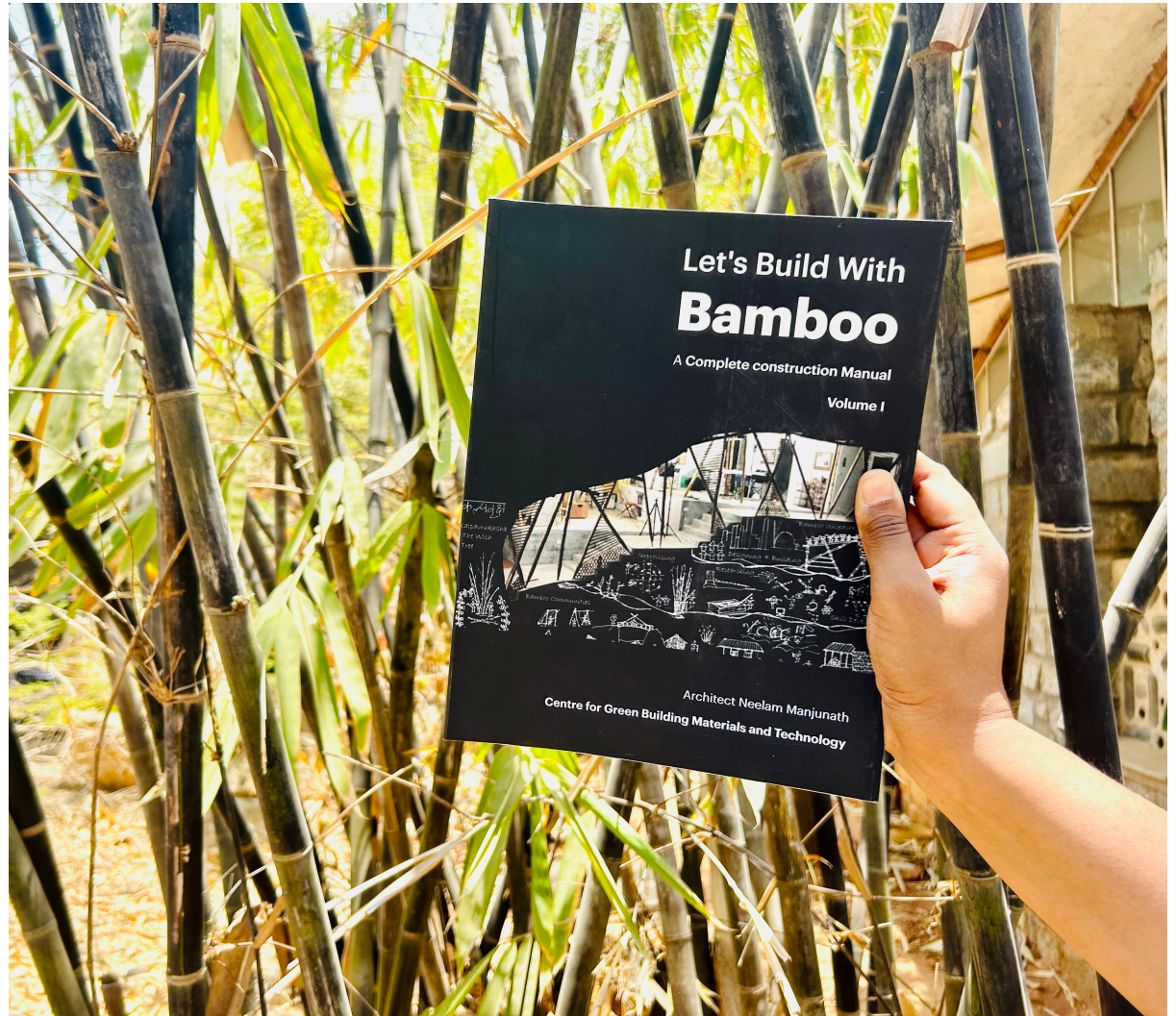
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You see things; and say Why? But I dream things that never were; and I say Why not ?– Sir Bernard Shaw



Thank You all for your kind attention

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Video of LBWB