

STRC NEWSLETTER

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Opportunities of Using Locally Available Bamboo as a Structural Material

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Technology | Enterprise | Development



**Science & Technology Resource Centre
Gondwana University, Gadchiroli**

A centre of excellence for sustainable value creation, conceived and funded by Rajiv Gandhi Science and Technology Commission (RGSTC), Mumbai, Govt. of Maharashtra.

STRC is now a registered society 'Science & Technology Resource Centre Foundation Gadchiroli' under the Societies Registration Act, 1860 (XXI of 1860).

From the CPO's Desk >>>

Opportunities of Using Locally Available Bamboo as a Structural Material

Contribution of Bamboo in the socio-economic, cultural and ecological development of certain geographies is significant. Bamboo, contributes to subsistence needs of about 2.5 billion people around the world, a majority of whom are tribals, forest dwellers or communities dependent on forest resources. In India, bamboo is found naturally almost throughout the country except in Kashmir region. It is estimated that, there are about 2 million traditional artisans in our country whose livelihoods depend on harvesting, processing, value addition and selling of bamboo products such as baskets, mats, handicrafts etc. Major advantage of bamboo is its versatility in making a variety of products by small entrepreneurs without any major initial investment. Necessary amendments under Indian Forest Act 1927 through the Indian Forests (Amendment) Ordinance, 2017 for bamboo grown in non-forest areas has helped in better accessibility and trade of bamboo (*India State Forest Report 2021/Forest Survey of India*).

Bamboo has been widely used as a sustainable building material due to some reasons among others are bamboo can be easily cultivated and harvested in a relative short time and can be reused. Bamboo as building materials is easy to bend and lithe. Those characteristics makes bamboo very suitable for organic shaped building construction and as a potential alternative building material other than steel and concrete, whereas, certain challenges like relatively quicker deterioration, climate sensitivity and cost hinder its universal acceptance. Interestingly, there is an increasing demand for bamboo-based construction in recent times. This is both at the higher end (like eco-resorts where people want to stay in natural surroundings) and also at the lower end like bus stop sheds, road side dhabas, cow and goat sheds, small extension to house etc. In fact, many traditional artisan entrepreneurs are increasingly taking up bamboo construction units as well which is much more profitable and gives quicker cash flow.

Science & Technology Resource Centre (STRC) at Gondwana University Gadchiroli (Maharashtra), with technology and facilitation support from institutions such as IIT Bombay, Maharashtra Bamboo Promotion Foundation (MBPF) and other stakeholders in the sector is now shaping to venture in to bamboo as a structural / construction material. With an artisan centric approach, STRC is engaged in developing a cadre of skilled human resource for the purpose. Under the joint initiative of RGSTC, Mumbai Govt. of Maharashtra and IIT, Bombay, STRC is engaged in implementing a bamboo polyhouse pilot (as a tool for controlled farming operations) in Gadchiroli utilizing locally available bamboo. Subsequently, STRC envisages to develop products like small sheds and sit-outs to meet local institutional demands.

Strategic efforts in the coming months to develop an entrepreneurial ecosystem in bamboo-based structures utilizing locally sourced bamboo to promote livelihood development of local artisans is a challenge STRC is looking forward to.



Shri Ashis Gharai

Chief Program Officer & Head, Science & Technology resource Centre, Gondwana University, Gadchiroli

Conceived and funded by Rajiv Gandhi Science and Technology Commission (RGSTC), Mumbai, Government of Maharashtra, Science & Technology Resource Centre (STRC) is an autonomous institute established in concurrence with Gondwana University, Gadchiroli. STRC is entrusted with generating livelihood opportunities by deploying appropriate science and technology, particularly for the under-served tribal communities of the Gadchiroli region since 2014. As a centre of excellence for sustainable value creation, STRC is leveraging local resources, relevant knowledge and appropriate technologies for human capacity development. STRC acts as a catalyst to science and technology based development of the region and as a bridge between knowledge activities of the University and enhanced livelihoods in the neighborhood.

Harnessing Low-Cost Technologies for Sustainable Development in Gadchiroli: The Role of Science and Technology Resource Centre

Gadchiroli, a district placed on eastern boundary of Maharashtra is known for its rich biodiversity, tribal communities, and abundant forest resources. However, it also faces socio-economic challenges such as limited access to modern technologies and sustainable livelihood opportunities. In this context, the STRC at Gondwana University, Gadchiroli, plays an important role in bridging this gap by developing low-cost technologies and facilitating technology transfer for livelihood enhancement in sectors like aquaculture, bamboo crafts, agriculture, and minor forest-produce as an aid to the available traditional technologies.

Aquaculture plays a crucial role in the local economy, providing both sustenance and income to many families. However, limited access to low-cost inputs and scientific knowledge affects the productivity and income of fisherman community. STRC aims to address this challenge by leveraging its expertise in bringing low-cost aquaculture solutions for fish seed production, linking fisheries operation with off-farm activities through Integrated Farming approach etc. Bamboo, known as 'green gold', holds huge economic potential in Gadchiroli. It is widely used for construction, handicrafts, and various other applications. STRC recognizes the importance of naturally available bamboo for rural communities and endeavours to provide technical assistance in bamboo harvesting, processing, and cultivation. By introducing cost-effective tools for bamboo processing and harvesting, STRC involves traditional artisans and local farmers to generate greater income while preserving their traditional practices. In the agriculture sector, both on-farm and off-farm activities are vital sources of income for communities of Gadchiroli. STRC focuses on promoting sustainable farming practices, crop diversification, and efficient use of resources. By facilitating the adoption of low-cost, high-yield agricultural in-house developed and borrowed tools technologies, STRC enables farmers to increase productivity and reduce input costs. By promoting sustainable harvesting practices and facilitating the conservation of traditional medicinal knowledge, STRC ensures the sustainable utilization of forest resources while empowering local communities.

In conclusion, Gadchiroli stands at the junctions of tradition and progress, where the need for low-cost technologies is paramount. The Science and Technology Resource Centre at Gondwana University, Gadchiroli, plays a vital role in addressing this need, providing expertise, guidance, and support to communities engaged in aquaculture, bamboo cultivation, on-farm and off-farm agriculture, and forest-based activities. By fostering the adoption of low-cost technologies, the STRC is transforming the lives of local communities, empowering them to thrive while conserving their natural resources and cultural heritage.



Gandharv Pilare

**Scientific Officer,
Science & Technology Resource Centre,
Gondwana University, Gadchiroli**

What's Making News >>>

Skilling Local Bamboo Artisans of Palghar through STRC's Low-Tech Tools; An initiative in collaboration with Nirmala Niketan, Palghar



The primary objective of this initiative is two-fold; to enhance the artisans' skillset, particularly in producing symmetric bamboo craft items and to encourage them take bamboo crafts as an alternative source of livelihood through the entrepreneurship model.



To empower local artisans with enhanced skillsets in bamboo craft to create scope of an alternative livelihood option, Science and Technology Resource Centre (STRC) and the Gyanajyoti Community College (under the aegis of Nirmala Niketan, Palghar), has taken a significant step forward. Dr. Narendra Shah, Member Secretary, Rajiv Gandhi Science and Technology Commission (RGSTC), Mumbai, Govt. of Maharashtra played a pivotal role in connecting these two institutions.

After series of discussions with the Director, Gyanajyoti Community College, Sr. Clera Gonsalves, who expressed a keen interest in the innovative low-tech tools developed by STRC, a three-day training program for 20 local bamboo artisans was organized at Palghar, Maharashtra, during 24th to 26th May 2023.

STRC provided hands-on support to help participating artisans use the low-tech toolkits and trained them in creating bamboo-made Lotus Flowers. The three-day training program focused on an assembly line production process for the bamboo Lotus Flowers. Participating artisans were divided in to small groups and were assigned with specific tasks. This training approach helped them focus on specific aspect of the production through an assembly-line to develop symmetric products in an efficient manner. The program helped the participating traditional artisans to gain valuable skills in design thinking, product assembly and use of minor tools. Shri Antik Mallick, Scientific Officer-STRC encouraged the group to envision a sustainable and brighter future around Bamboo Craft.



“ *We are delighted to have collaborated with STRC to empower our tribal and local bamboo artisans. By integrating low-tech tools and sustainable practices, we believe we can elevate their skills and provide them with a pathway to a brighter future.* **”**

Sr. Clera Gonsalves
*Director,
Gyanajyoti Community College, Palghar*

Bamboo Polyhouse Project; STRC Embarks into Structural Application of Bamboo

Under the joint initiative of RGSTC, Mumbai Govt. of Maharashtra and IIT, Bombay, Science & Technology Resource Centre is engaged in implementing the project titled '**Bamboo Polyhouse: Feasibility of incorporating Bamboo Polyhouse into the framework of STRC Project**'. As a pilot, STRC aims to develop two such demo polyhouses, one each in the premise of Gondwana University Gadchiroli and Krishi Vigyan Kendra Sonapur, respectively.

Following the visit of the RGSTC, Mumbai led team of technical experts / faculties from Centre for Technology Alternatives for Rural Areas (CTARA), IIT, Bombay, to STRC during October 2022, a team of Scientific Officers from STRC visited Bhor to gain some valuable exposure of Bamboo Polyhouse pilot being implemented there.

As part of Bamboo Polyhouse pilot project initiation plan at STRC, Technical Resource Person from Bhor, Shri Datta Gholap recently visited STRC during May 2023 to interact with the STRC functionaries and a dedicated team of Artisans. Shri Gholap also assessed feasibility of both the selected sites for the pilot and conducted preliminary on-site demarcation. This project will be carried out under the guidance of the technical experts from CITARA, IIT, Bombay. The approved design plan and construction techniques will be used to erect the structures and the first structure is expected to be erected in July 2023.

It is expected that this project will;

- *Create a cadre of skilled artisans for Polyhouse construction*
- *Develop site and species-specific Standard Operating Procedures (SOP) for Bamboo Poly-house Construction in the Gadchiroli Context*
- *Erect one demo Polyhouse for Herbal Garden at STRC*

STRC has also initiated talks with SASMIRA, Mumbai with regard to covering material used for the polyhouse.



University appointed Monitoring Committee conducts its 1st monitoring visit; **NTFP Collectivization Project at Kharkadi, Dhanora**

STRC is implementing the Non-Tiber Forest Produce (NTFP) Collectivization Project at Kharkadi in Dhanora block to ensure scientific harvesting/ collection of selected commercially important Minor Forest Produces (MFPs) (*mahua flower, hirda, behda, honey and charoli*), deployment of good storage practices and subsequent establishment of primary processing facilities including facilitation of market linkages for sustainable livelihood generation of Primary Collectors.

The monitoring team comprising Prof. Manish Uttarwar, Director, Innovation, Incubation and Linkages (IIL), Gondwana University, Gadchiroli, Shri Ashis Gharai, Chief Program Officer and Head, Science & Technology Resource Centre (STRC), and Shri Gandharv Pilare, Scientific Officer, STRC visited project sites at Kharkadi in Dhanora to oversee the current progress and to provide recommendation on fund allocation to the project for repair of existing storage spaces and 'seed money' for the procurement of NTFPs from the primary collectors.

During the visit the committee also interacted with few members of the Village-Level Committee (VLC) to understand their views.



Three key outcomes have been outlined to address the challenges faced by NTFP collectors

1. Communities are capacitated to adopt best practices in scientific collection, harvesting and storage for MFPs
2. Primary collectors are exposed to an organised market and receive better value for their collected produce
3. Sustainable revenue generation leading to enhanced livelihood for project beneficiaries



STRC initiates implementation of Manav Vikas Mission supported projects on **Bamboo Common Facility Centre (CFC) and Integrated Fish Farming in Gadchiroli**

Science & Technology Resource Centre (STRC) initiates the implementation of the following two projects supported by the Manav Vikas Mission, aimed at fostering sustainable livelihood development for local bamboo artisans and marginal fish farmers, namely;

1. *Bamboo-based Common Facility Centre (CFC) at Maldugi, Kurkheda*
2. *Integrated Fish Farming (Fish and Poultry) Project in Aheri Block*

Part of the entry-point activities, public address events were organized at respective project sites to create awareness about the projects and project management committees were formed at community level through Gram Sabha resolutions. Subsequently, preliminary training programs have been planned during June 2023.



Group of women are exposed to STRC developed low-tech tools in bamboo craft (Bamboo CFC project) at Maldugi, Kurkheda



Selected Fish Farmers pro-actively participated in 1st interactive meeting (Integrated Fish Farming project) in Aheri Block



Mobile Demonstration Unit (MDU)

STRC Assistance for S&T Application Scheme; Review of Projects and New Research Grants



A comprehensive review meeting to take stock of the current projects and to assess viability and relevance of fresh applications under STRC Assistance for S&T Application Scheme was held at STRC on May 16, 2023 through virtual/physical mode. In the first session, Smt. Pragati Gokhale, Chairwoman, Project Appraisal Committee (PAC) along with other eminent members assessed the viability and relevance of new proposals based on the presentations made by the Project Investigators. During the afternoon session, members of PAC meticulously scrutinized the status of ongoing projects, to check whether they are on track and aligned with the scheme's objectives. Valuable insights and recommendations were provided to achieve desired outcomes and improve their effectiveness leading to their successful completion.

Experts and Faculties from Various State / Regional Agencies visited Science & Technology Resource Centre, Gondwana University Gadchiroli



01

Dr. Akhilesh Maurya, Professor, IIT, Guwahati, Assam during his visit to Gondwana University Gadchiroli on 26th April 2023,

expressed his interest to explore the Model Production Unit of Science & Technology Resource Centre (STRC) to understand the kind of approach STRC has for bamboo craft-based livelihood development and other R&D initiatives. STRC wishes to seek technical support and to create a knowledge exchange platform with IIT Guwahati in future.

02

Dr. Sampada Peshwe, Associate Professor, Smt. Manoramabai Mundle, College of Architecture, Nagpur visited

STRC to understand STRC's artisan centric approach to bamboo craft. She expressed her desire to explore possibilities of collaboration in this sector.

03

A team of plant researchers from **Tropical Forest Research Institute, Jabalpur, Madhya Pradesh;**

Shri Irshad Ali Saudagar and Shri Trilok Gupta visited STRC to explore possibilities of knowledge partnership in research medicinal and aromatic plants.

STRC Assistance for S & T Application Scheme

This scheme presents an unique opportunity for R & D inclined short term, small grant for relevant, applicable research projects to support STRC mandate and to help create an R & D eco-system.



Nature of Projects Under the Scheme



- 1 S & T Studies and Surveys
- 2 Location Specific Research & Innovative Technology Development
- 3 Pilot Scale Demonstration Project
- 4 Replication of Successful Models
- 5 Joint Programs
- 6 Awareness and Training
- 7 Projects with Students Participation

How to Apply



Ph.D. Scholars, Researchers, Faculties, Master Students, NGOs and Exceptionally Relevant R & D based Proposals from Independent Individuals / Institutes

Research Grant

Up to INR1.0 Lakh



Project Duration

Up to 6 Months



How to Apply ?



Go Through the Detailed Scheme Document



Assess the Proposal Relevance



Draft the Pre-Proposal in the Prescribed Format



Submit Your Pre-Proposal

Application are invited throughout the year

Please visit our website for scheme details and proposal format.

Contact Details: www.strc.org.in | +91 8080219036, +91 8446734219 | strc.academic@gmail.com | Gondwana University, MIDC Road, Complex, Gadchiroli - 442605





विज्ञान व तंत्रज्ञान संसाधन केंद्र गोंडवाना विद्यापीठ, गडचिरोली



एक वर्षीय पदविका अभ्यासक्रम बांबू उद्योजकता आणि रचना

आदिवासी व ग्रामीण तरुणांना बांबू क्षेत्रात भविष्य घडविण्याची संधी तथा सक्षम व कुशल मनुष्यबळ तयार करण्याच्या दृष्टीने गोंडवाना विद्यापीठाद्वारे सुरु करण्यात आलेला पदविका अभ्यासक्रम

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बांबू उद्योजकता केंद्रित
अभ्यासक्रम



बांबू क्षेत्रातील कुशल
तज्ञांद्वारे प्रशिक्षण



बांबू संशोधन व
विकासाकरिता
आधुनिक व सुसज्ज सुविधा



बांबूवर आधारित उद्योगांच्या
स्थापनेसाठी आर्थिक सहाय्य
मिळविण्याची संधी

प्रवेश घेऊ इच्छुक असणाऱ्या विद्यार्थ्यांकरिता ...

- ✓ निशुल्क - प्रवेश व वसतिगृहाची सुविधा
- ✓ शिका व कमवा योजने अंतर्गत आर्थिक सहाय्य मिळविण्याची संधी
- ✓ यशस्वीरीत्या अभ्यासक्रम पूर्ण केल्यास रोजगार सहाय्य

विद्यार्थी प्रवेश क्षमता



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इच्छुक विद्यार्थ्यांनी त्वरित
संपर्क साधा

शैक्षणिक पात्रता शिक्षण: १२ वी पास
वयोगट : १८ - २५ वर्षे