

Training Module on Bamboo Products



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गंगे



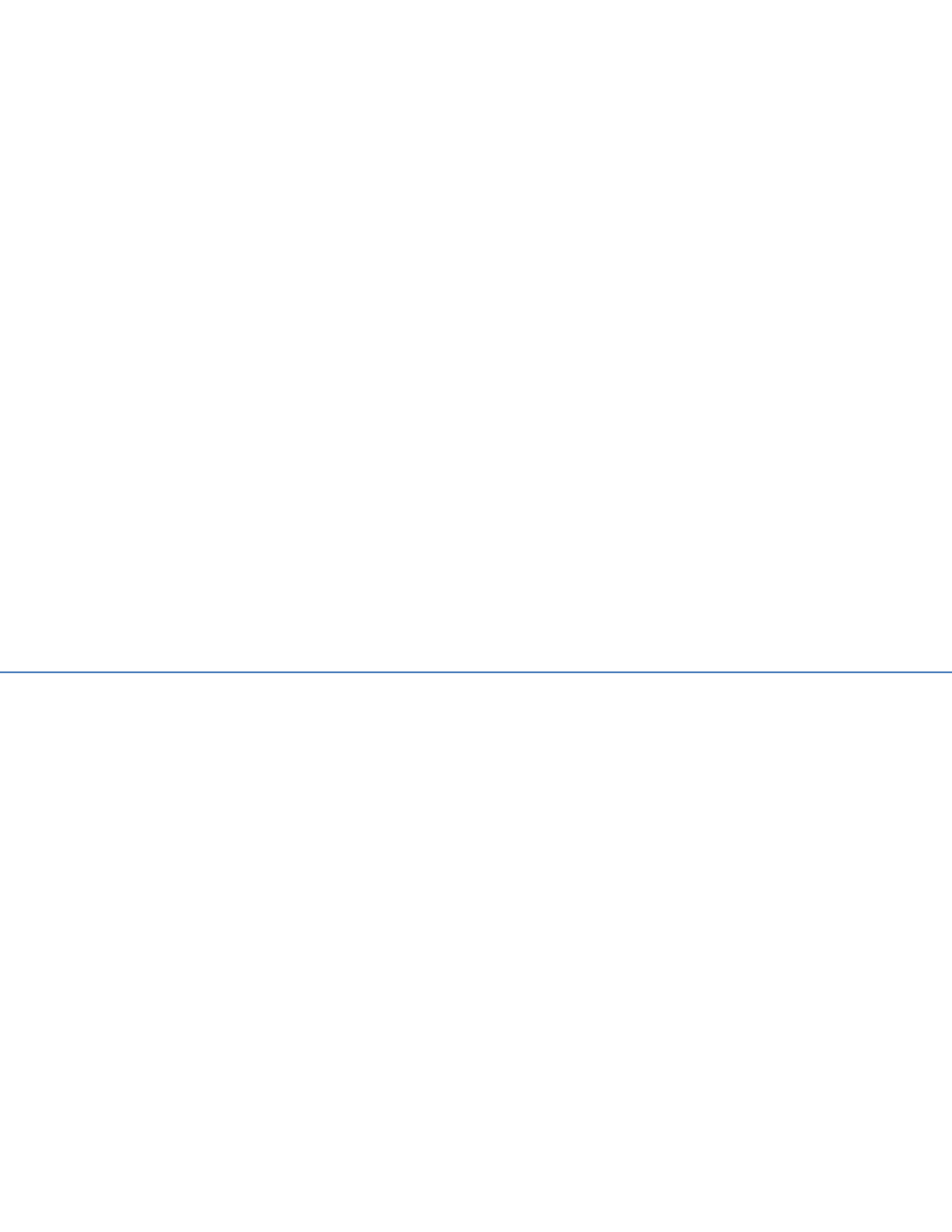
भारतीय वन्यजीव संस्थान
Wildlife Institute of India





*Jalaj: Supporting conservation
and livelihood through
sustainable resource use*





JALAJ-WII, NMCG INITIATIVE

The Ministry of Jal Shakti, Government of India through the National Mission for Clean Ganga (NMCG) entrusted the Wildlife Institute of India, (WII) a project entitled “Biodiversity Conservation and Ganga Rejuvenation” for developing a science-based aquatic species restoration plan for Ganga River by involving multiple stakeholders. This project successfully integrates livelihood and skill enhancement activities in alignment with Ganga conservation, employing both traditional livelihood centers and the innovative mobile livelihood unit known as "Jalaj." This pioneering business model has garnered recognition and adoption by district and state administrations across the Ganga river states. The core objective of the initiative is to interconnect local livelihoods with the conservation initiative, achieved through comprehensive training and the establishment of livelihood centers. These endeavors have been identified as a potential model for the broader "Arth Ganga" program. Consequently, this endeavors actualize the Arth Ganga vision within the Ganga River basin by fostering a mutually beneficial relationship between the river and its communities, epitomized by the innovative "Jalaj" approach.

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PREFACE

The Ganga River, a cradle of spirituality and life, faces unprecedented threats from pollution and climate change. Recognizing the urgency of these challenges, this module will guide you to craft a collection of bamboo products that seamlessly blend traditional craftsmanship with modern sustainability practices.

Bamboo, a symbol of resilience and versatility, takes center stage in this module. Each product is a testament to the artisans' skill, weaving together functionality and aesthetics while embracing the inherent eco-friendliness of bamboo. The revenue generated from this collection will be channeled into Ganga conservation projects, ensuring a direct and tangible impact on the restoration of this vital lifeline.

As you explore the diverse bamboo offerings in this module, we invite you to join us on a journey of mindful consumption and environmental responsibility. By choosing these products, you contribute not only to the promotion of sustainable materials but also to the ongoing efforts to safeguard the Ganga River. Together, let us forge a path towards a greener, cleaner, and more sustainable future for the Ganga and our planet.

MODULE 1: INTRODUCTION TO BAMBOO

Bamboo, the giant grass, with more than 111 genera and about 1575 species, occur in a wide variety of soil and climatic conditions around the globe and play a critical role in providing ecological, livelihood and food security to mankind. In India, although bamboos occur throughout the country, the largest area under bamboo is in north-eastern India followed by the Western Ghats. There are about 1500 traditional uses of bamboo broadly classified under household, industry, weapons, energy, transportation, fisheries, agriculture, medicine and construction. Recently, in East and Southeast Asia, especially in China there has been a rapid growth of bamboo industries. The major reasons may be ascribed to development of new products like laminated bamboo, parquet flooring, ply bamboo, bamboo composites and bamboo charcoal. Mechanization of the traditional sectors like bamboo shoots for food, chopsticks, toothpicks and bamboo handicrafts are other possible reasons.

Considering the large bamboo resources of India, which is second only to China, the potential for developing bamboo sector appears to be very high. In India, 136 species of bamboos in 36 genera are found to exist. The North East India holds the largest stock and diversity of bamboos. Next to the N.E., the West to other countries like China, Malaysia, Costa Rica etc. It is estimated that 8 million artisans depend on bamboo craft for their livelihood. The annual turnover of the bamboo sector in India is estimated to be around Rs. 2400 crores. By and large, this is a totally unorganized sector and bamboo has always been considered from the craft point of view and if otherwise for pulp making only. This craft has been practiced by the North Eastern States for centuries as their prime income source and, in the process, the weaving skills of the artisans had evolved to levels comparable with the craftsman from more affluent societies like Japan, China etc.

MODULE 2: BAMBOO SPECIES

There are mainly two species of bamboo found in these clusters visited which are: *Dendrocalamus strictus* (Desi bans) and *Bambusa bambos* (Katang bans).

Bambusa bambos (Katang bans)

The Indian thorny Bamboo, is a species of clumping bamboo native to southern Asia (India, Bangladesh, Sri Lanka, Assam, etc). Culms: The fast growing, strong woody culms of *Bambusa bambos* have an average diameter of 10- 18 cm, and are between 20-30 m tall (although the tallest recorded culm measured 40 m). The internodes are dark green colored with very thick walls. Nodes are slightly swollen Culms are used for house construction, scaffolding, rafters, thatching and roofing, handicrafts and art objects, basket making, bows and arrows, furniture, floating timber and rafting, cooking utensils and fencing.

Dendrocalamus strictus (Desi bans)

Also known as Iron bamboo or Calcutta bamboo in the West, A deciduous densely tufted bamboo. Culms 8-16 m high, 2.5-8 cm diameter, pale blue green when young, dull green or yellow on maturity, much curved above half of its height; nodes somewhat swollen, basal nodes often rooting, lower nodes

often with branches; internodes 30-45 cm long, thick-walled. Culms-sheaths variable, lower ones shorter, 8-30 cm long with golden brown stiff hairs on the back, sometimes glabrous in dry localities, straight, rounded at the top. This species occupies 53 per cent of total bamboo area in India. Widely distributed in India in semi dry and dry zone along plains and hilly tracts usually up to an altitude of 1000 m., also commonly cultivated throughout the plains and foot hills. They are also growing in other part of Asia and Latin America.

MODULE 3: BAMBOO CRAFT

Bamboo had been one of the raw material used in villages for various purpose like fences, gates, agricultural implements, baskets etc. Since its availability and ease to work with simple tools makes this material a very special and favorite among rural side. Bamboo also has been used to make the houses especially the walls. The flattened or bamboo slivers are woven and fixed with poles are very strong and stable to make walls. Some places a mud paste mixed with rice husk, cow dung etc. are applied on bamboo for smoother surface and thicker wall and also protect the bamboo from insect moisture and fire. The CFC's of various villages are also been introduced with new products and they also makes their own innovated products. Various furniture and other lifestyle products are some of it has been produced in the villages.

MODULE 4: BASIC TOOLS & EQUIPMENT

List of general tools/equipment used in bamboo-based industries:

1. Measuring tape (5 meter / 3 meter)
2. Divider
3. Rightangle
4. Steel scale
5. Chisels (various sizes)
6. Hammer / mallet
7. Files (various shapes and sizes)
8. Cutting plier
9. Nail remover
10. Nose plier
11. Sheet / strip cutter
12. Bench vice
13. C' clamp
14. Carpenter's vice
15. Emeric stone
16. Dao (big knife)
17. Small knife
18. Spanner set
19. Screw driver set
20. Adjustable jacksaw
21. Hacksaw
22. Hand saw
23. Power hand saw
24. Fastener drill bits
25. Drill machine
26. Power drill
27. Various drill bits

28. Disc sander
29. Angle grinder
30. Gas cylinder
31. Gas blow torch
32. Blow torch
33. Hot air blower
34. Bending stand
35. Disc sander
36. Angle grinder

List of general materials used in bamboo-based industries:

1. Various bamboo species (as required for various products)
2. Bamboo ply
3. Rubber foam
4. Resin
5. Cloth
6. Rubber solution
7. Fevicol
8. Super glue
9. Araldite
10. Sand paper
11. Borax powder
12. Boric acid powder
13. Water
14. Melamine
15. Thinner
16. Lacquer
17. Wood strainers
18. Colour dyes
19. Metal rod (stainless steel 4 mm for hanger hook)

20. Kerosene
21. LPG Gas
22. Electricity
23. Metal wire (brass 22gauge, copper 22gauge)
24. Nuts and bolts (as per the required size)
25. Cotton rope
26. Screws
27. Metal pipe (rectangle-20x50 mm, circle-22 mm and 30 mm)
28. Wooden planks
29. Plywood

MODULE 5: CRAFTING BAMBOO PRODUCT

Creating a bamboo product involves a combination of craftsmanship and attention to detail. Many products can be prepared using bamboo such as hanger, tea tray, fruit basket, lamp shade, tongs, memento, dustbin, jewellery, jewellery box, baby walker, book rack, stool center table, chairs, rocking chair, study table, folding table, bamboo sofa set

Here are general steps to guide you through the process:

1. Select and Harvest the Bamboo:

- Choose a mature and straight bamboo stalk.
- Harvest it carefully to avoid damaging the rest of the plant.

2. Cut the Bamboo:

- Use a fine-toothed saw to cut the bamboo stalk to the desired length for the product.

3. Remove the Nodes:

- Trim away the nodes or joints on the bamboo stalk, as they can create irregularities in the product.

4. Split the Bamboo:

- Carefully split the bamboo into sections, depending on the size you want. This can be done using a knife or a small saw.

5. Hollow Out the product:

- Use a combination of knives, gouges, or a specialized bamboo carving tool to hollow out the bamboo section for products like cup, pen stands. Take care to maintain an even thickness for the walls.

6. Smooth the Interior:

- Sand the interior of the hollow products to create a smooth surface. This step is essential for both functionality and aesthetics.

7. Shape the Exterior:

- Carve and shape the exterior of the product, giving it the desired form. This step allows for customization and creativity.

8. Sand the Exterior:

- Smooth the outer surface of the product with sandpaper to remove any rough edges and enhance the finish.

9. Treat the Bamboo:

- Apply a food-safe finish or sealant to the bamboo to protect it and prevent absorption of liquids.

10. Add Finishing Touches:

- Decorate the bamboo product with carvings, burn designs, or other embellishments according to your preference. This is optional step and depends on the type of the product prepared.

11. Let It Cure:

- Allow the bamboo product to dry and cure for a period of time to ensure that it is fully seasoned.

12. Apply a Final Finish:

- If needed, apply a final coat of food-safe finish for added protection and a polished appearance.

Remember, making a bamboo based product requires patience and skill. It's important to use the appropriate tools and take safety precautions throughout the process. Additionally, be mindful of environmental considerations and choose sustainable practices when harvesting bamboo.

LINKING LIVELIHOOD AND CONSERVATION

Linking livelihoods with the conservation is paramount for the sustainable future of both people and the environment. The Ganga sustains millions of livelihoods through different sectors such as agriculture, fishing, tourism. However, these activities often harm the river and its diverse ecosystems. To ensure the health of the Ganga River and its biodiversity, it is essential to promote eco-friendly livelihoods. Initiatives like Jalaj that implements practices like organic farming, sustainable fishing practices, and responsible tourism can provide economic opportunities while safeguarding the river. Additionally, raising awareness and involving local communities in conservation efforts can create a sense of ownership, fostering a collective commitment to conserve the rich biodiversity of the Ganga River, ensuring a harmonious coexistence between humans and nature.



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