INFOSHEET: BUILDING WITH BAMBOO IN GHANA

Topic: Sustainable Construction with Bamboo

Bamboo is a versatile and sustainable building material that is widely used in Ghana and other tropical regions. It is especially suitable for constructing roofs and frames for small clay-bamboo houses. This worksheet will introduce you to the properties of bamboo, its use in roof structures, and key construction techniques.

1. What makes Bamboo Special?

Bamboo is a unique building material with several advantages:

- **Strong yet lightweight:** Bamboo has a high strength-to-weight ratio, making it ideal for supporting roof structures.
- **Flexible and shock-resistant:** Bamboo can bend without breaking, making it perfect for areas with strong winds or minor earthquakes.
- **Fast-growing and sustainable:** Bamboo grows quickly and regenerates easily, making it environmentally friendly.
- **Abundant in Ghana:** Bamboo is locally available and cost-effective.

Question:
Why do you think bamboo is better for construction in Ghana than heavy materials like steel or concrete?

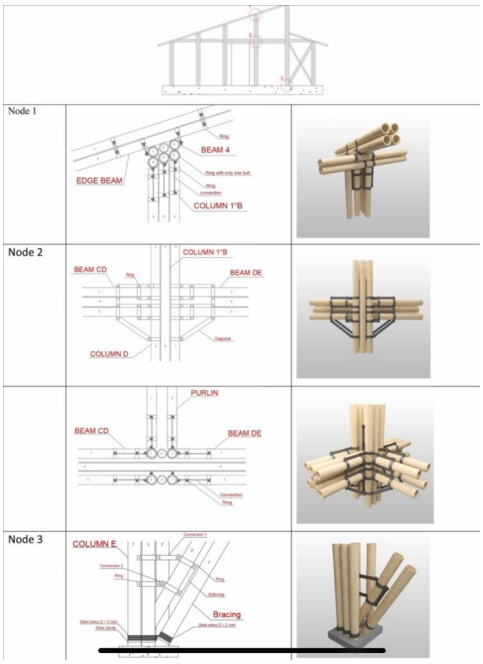
2. Bamboo in Roof Structures

In small clay-bamboo houses, bamboo is commonly used for:

1. **Roof Support Beams (Purlins):** Horizontal bamboo beams carry the weight of the roof.
2. **Rafters:** Bamboo poles slanting from the ridge to the walls form the roof's framework.
3. **Trusses:** Triangular bamboo structures provide extra support for large roofs.

Activity:
Draw a simple sketch of a house roof. Label the purlins, rafters, and trusses using bamboo.

3. Connecting and Bundling Bamboo Poles



Bamboo poles need to be securely connected for stability. Here are three common methods:

- **Lashing with ropes or vines:** Strong fibers are used to tie bamboo poles together, creating flexible joints.
- **Peg and hole system:** Wooden pegs are inserted into drilled holes in bamboo poles for a firm connection.
- **Cross-bracing:** Bamboo poles are arranged diagonally to increase structural stability.

Tip: When bundling bamboo poles, make sure the connections are tight to prevent slipping or shifting.

Task: Look at the image below (or imagine a bamboo roof). Write down how you would connect two bamboo poles for a roof beam.

4. Bamboo and Clay: A Perfect Match

Bamboo frames are often combined with clay walls in Ghana to create small homes. Why?
- Clay keeps the house cool in the hot weather.
- Bamboo provides structural support and flexibility.

Discussion Question: How does combining bamboo and clay make homes sustainable and affordable?

5. Build Your Own Model!

Using sticks (to represent bamboo) and string, try to build a small roof frame.
- Use the lashing technique to connect the “bamboo” sticks.
- Test the strength of your roof by gently pressing on it.

Reflection: What challenges did you face while building your model? How can you improve the connections?

Learn More About Bamboo Construction

- Watch this YouTube video on bamboo construction techniques: Bamboo Roof Building
- Download a guide to bamboo construction: Bamboo Construction Guide PDF
- See this detailed construction report: Bamboo building in Costa Rica