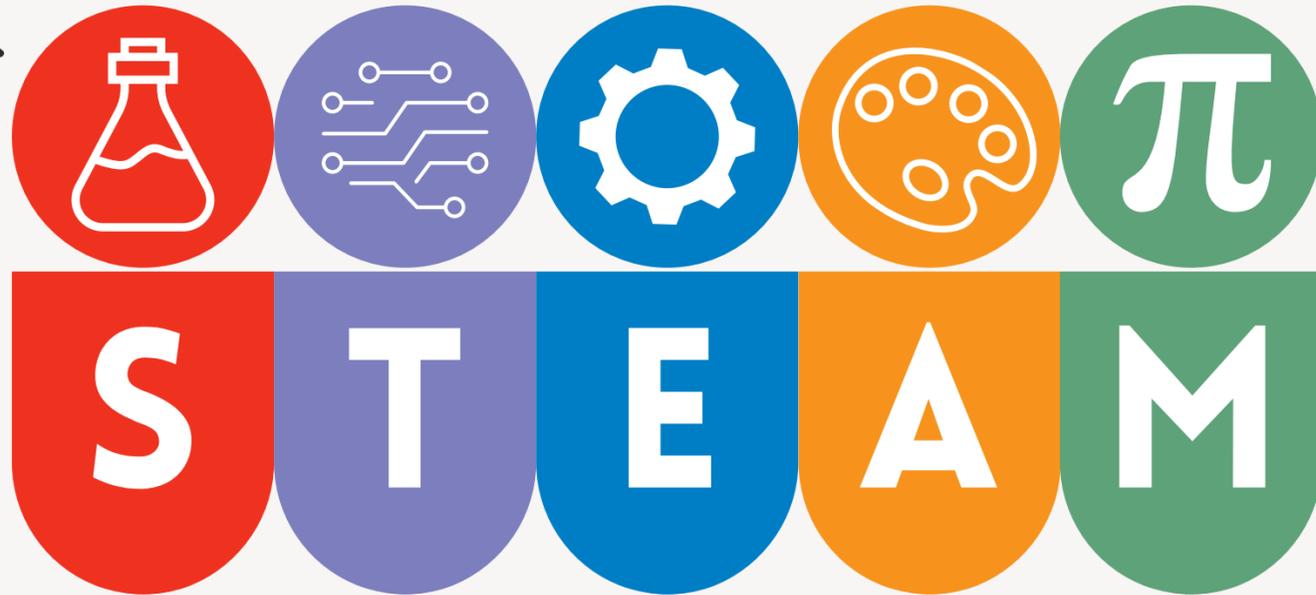


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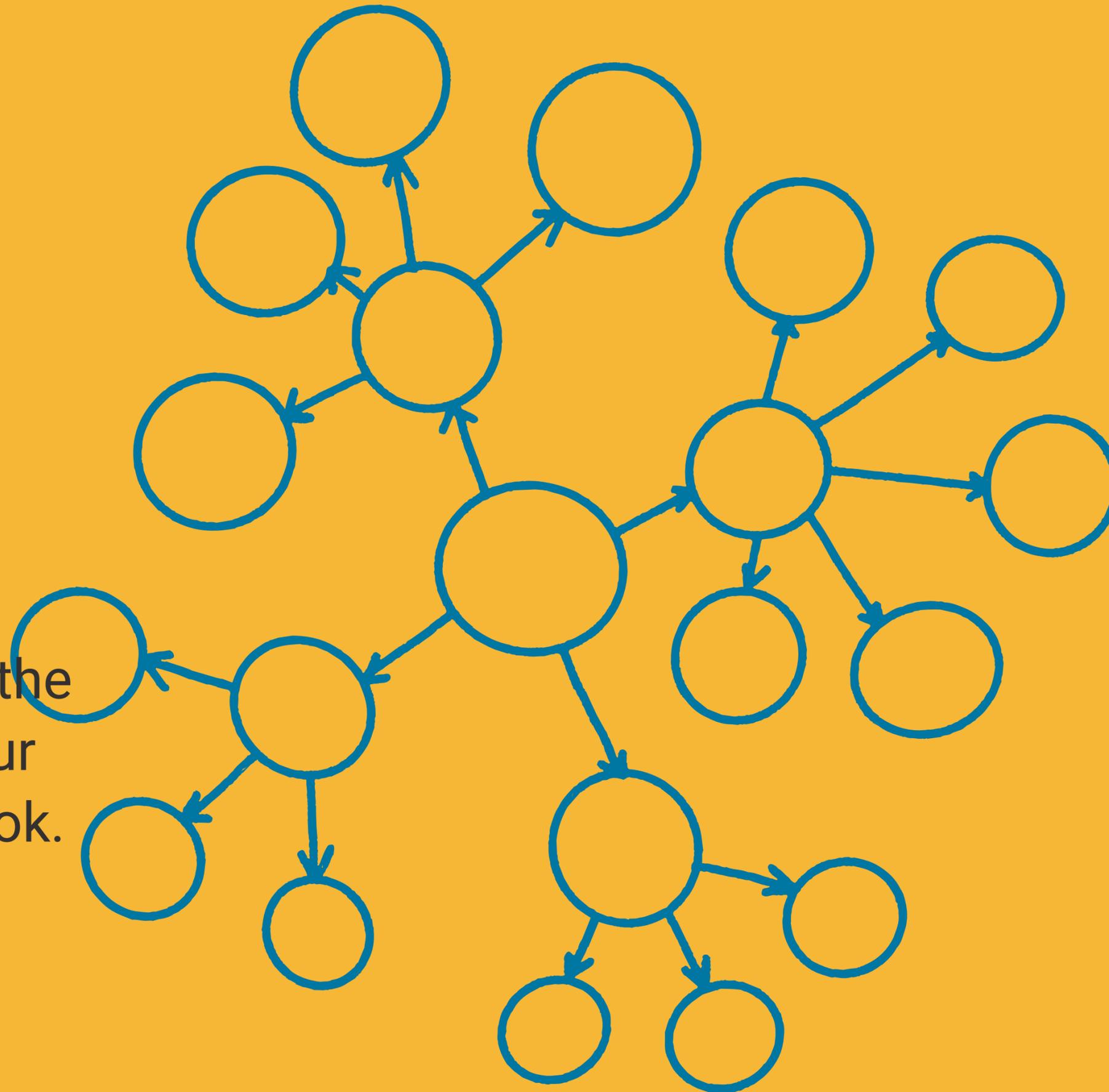


MATERIALS • UDA 2: Wood



# 1. CREATE YOUR OWN MAP

Have a look at the mind map in the following slides, then sketch your own version in your exercise book.



# Wood

## Origin and Composition

### Raw Material:

- Trees

### Composition:

- Cellulose and lignin
- 

## Characteristics and Properties

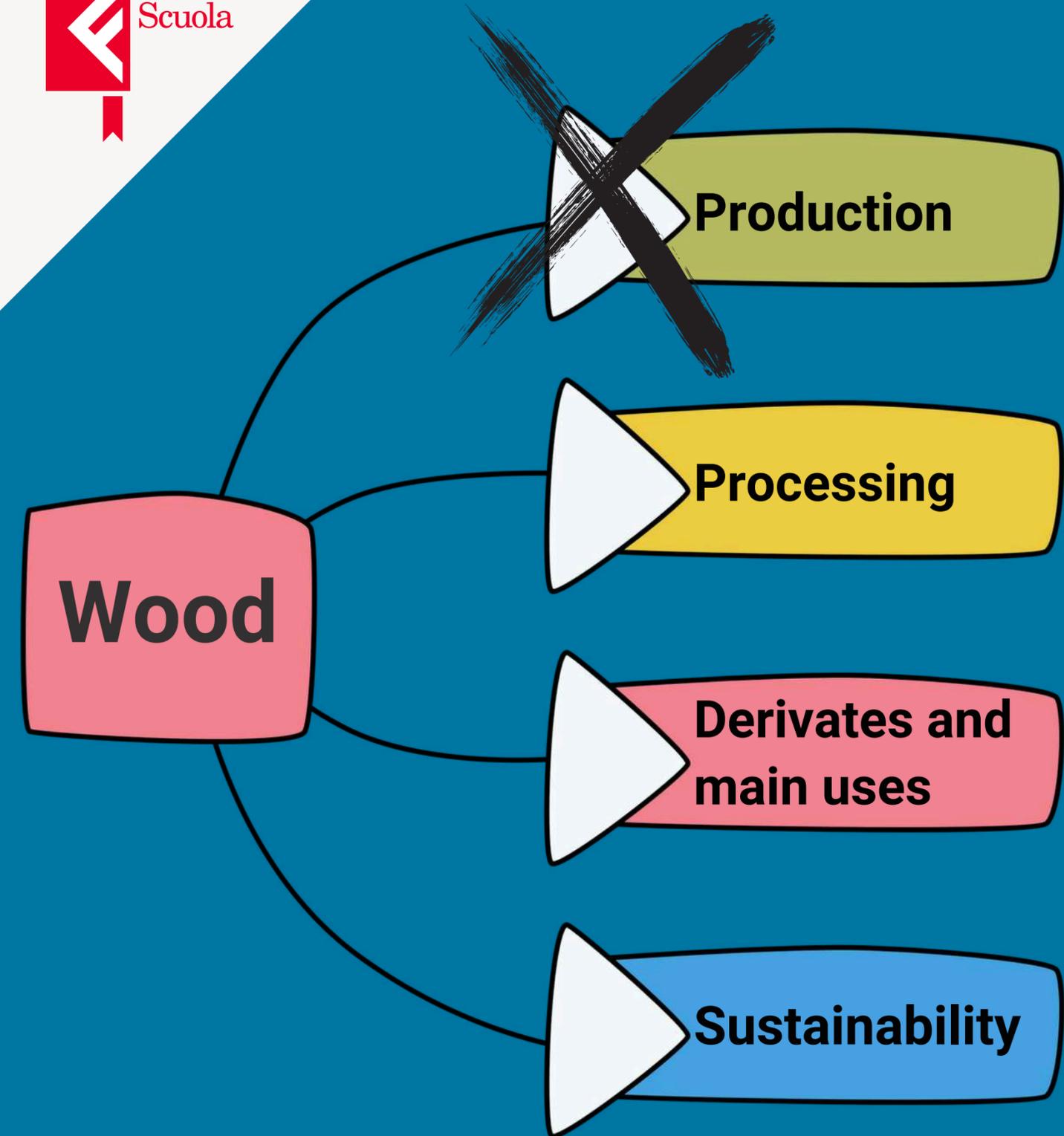
- Low specific weight
  - Strength
  - Low thermal, electrical, and acoustic conductivity
- 

## Types of Wood Species

- Based on density: Hardwood and softwood
  - Based on origin: Native wood and exotic wood
- 

## Advantages and Disadvantages

- Biodegradable, easy to work with, smooth surface
- Vulnerable to: moisture, insects and fungi

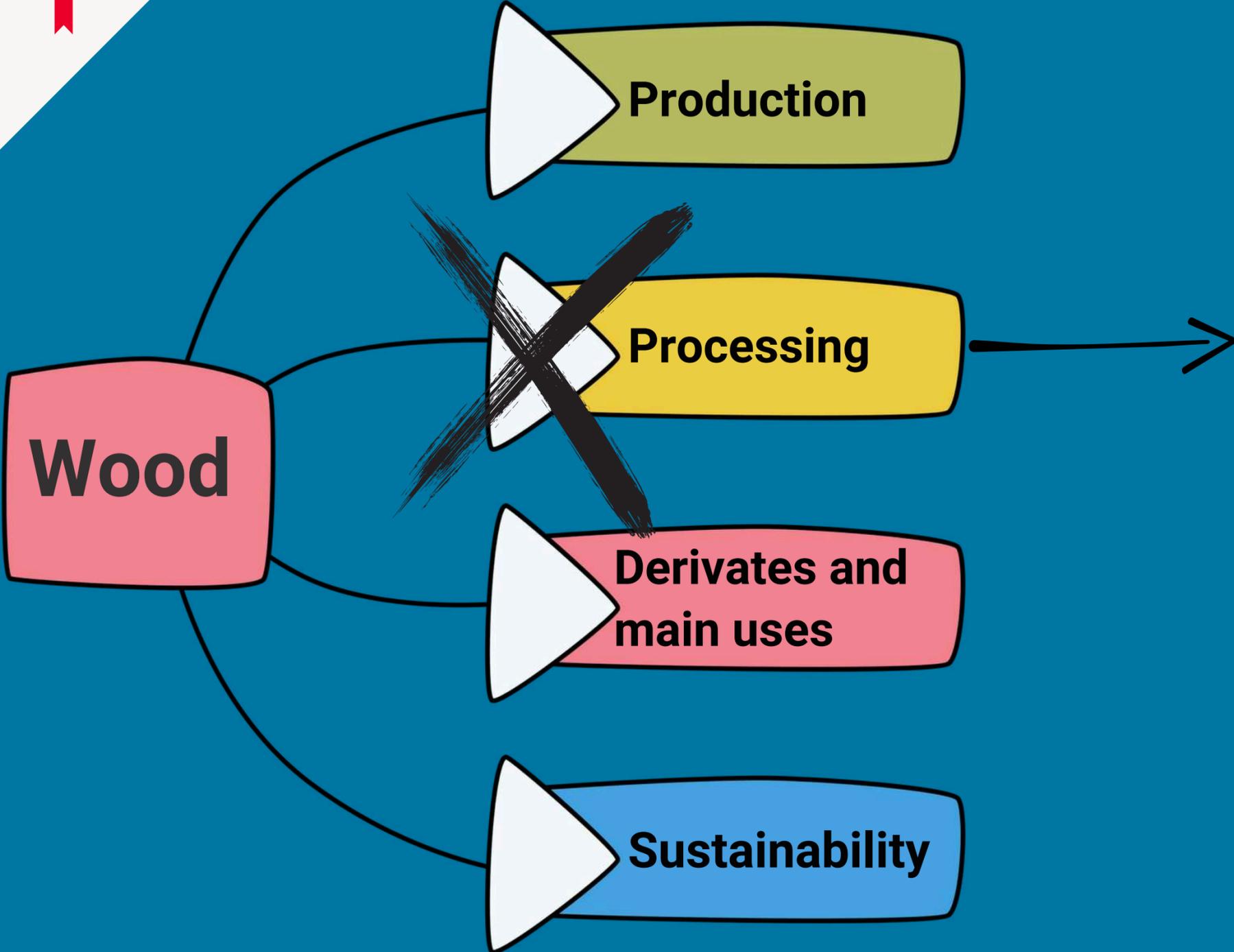


**Raw Material:**

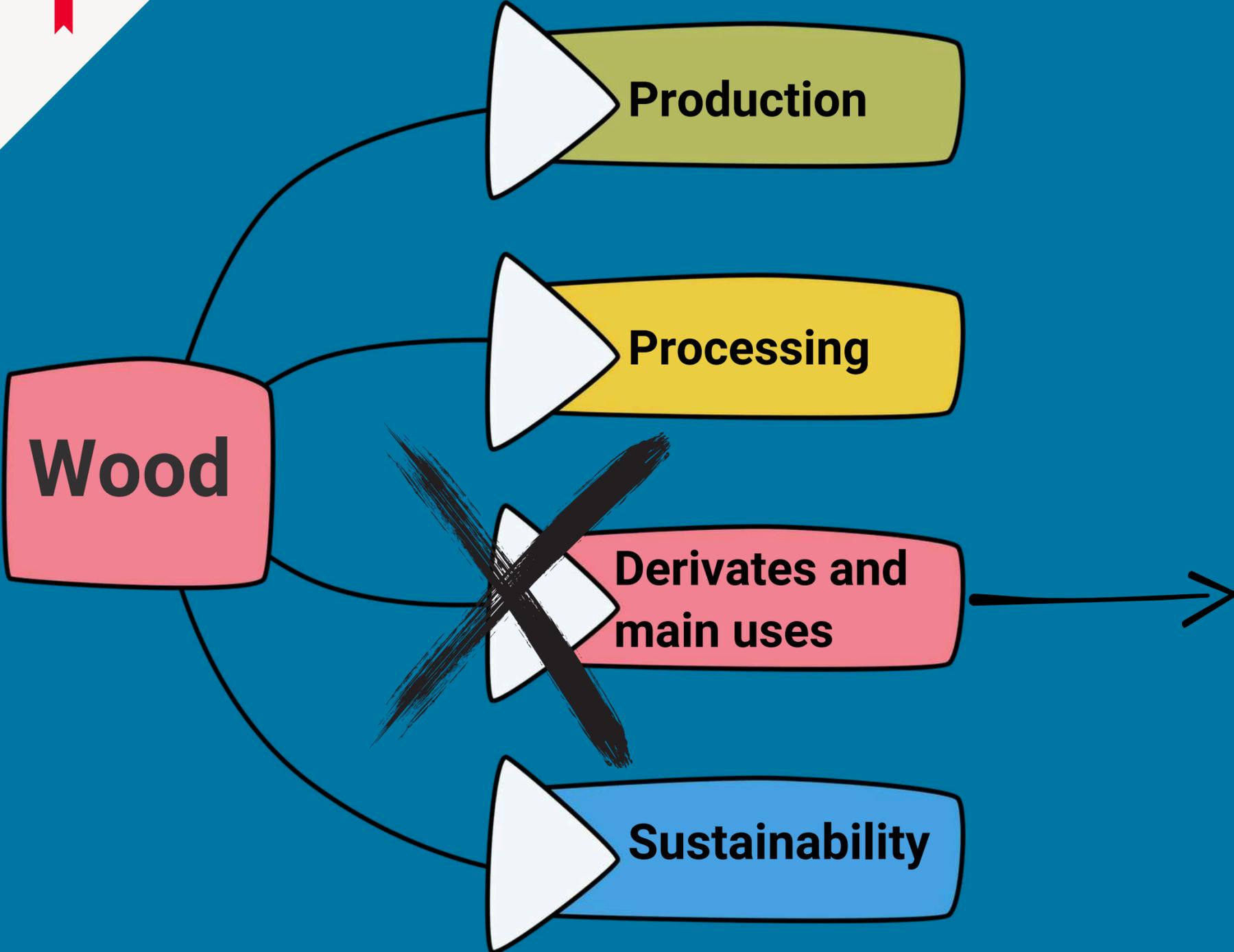
- Trees

**Composition:**

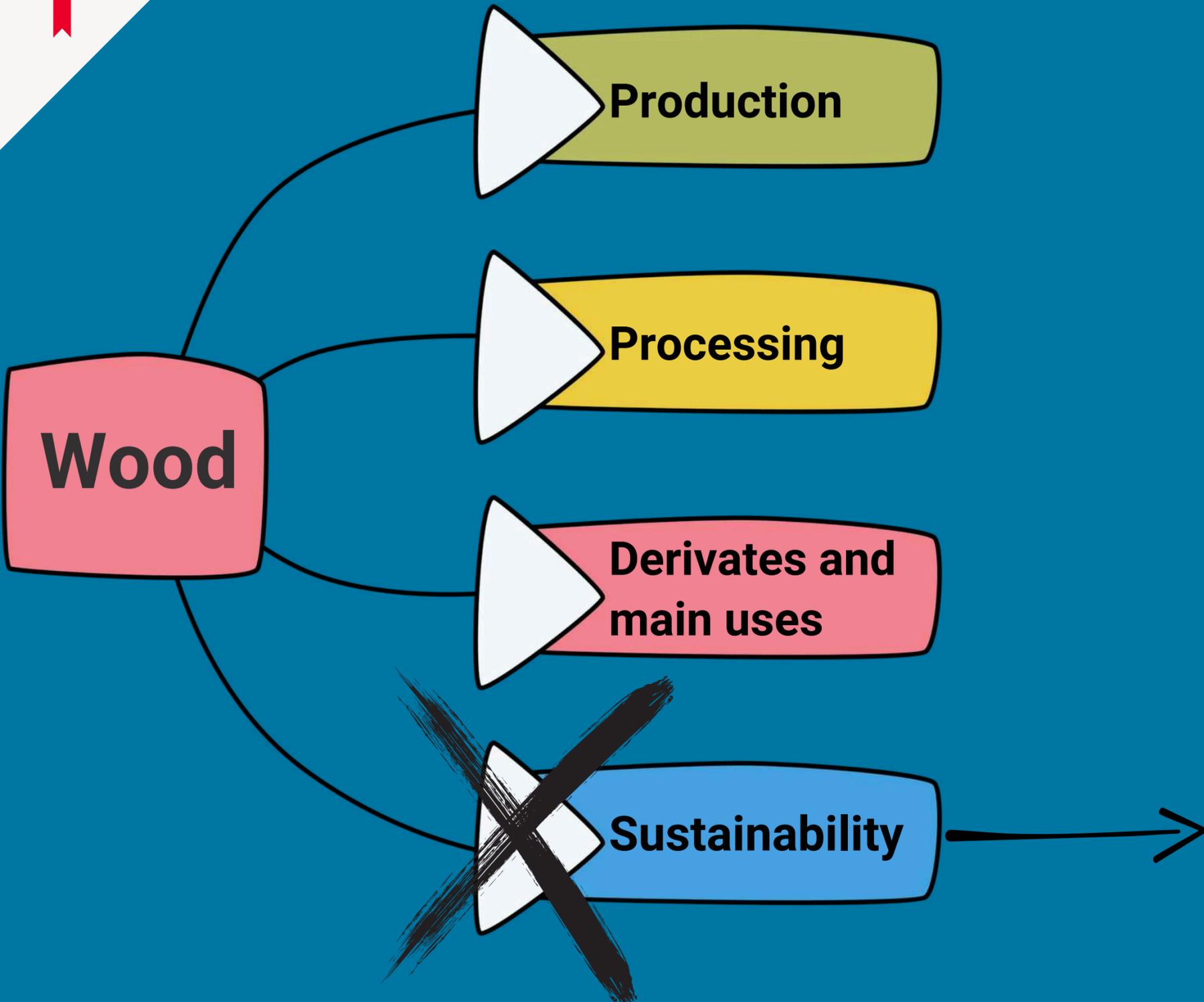
- Cellulose and lignin



- Using **hand tools**
- Using **CNC machine tools and robots**
- Using **3D printers** for composite materials
- **Cutting** (hand saw, circular saw, or bandsaw)
- **Drilling** (drill)
- **Shaping** (lathe or milling machine)
- **Sanding**
- **Joining** (screws, nails, interlocking joints)
- **Gluing**



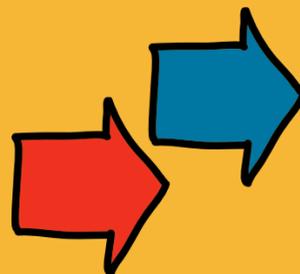
- **Wood and its by-products are used in a wide range of applications, including:**
- Construction and furniture: Beams, flooring, window frames, and various furnishings
- Engineered wood products: Plywood, chipboard, and laminated timber
- Industrial and domestic use: Lumber, firewood, and cellulose for paper production



- Wood is an **eco-friendly and sustainable material** because it is:
  - Renewable
  - Recyclable
  - Reusable
  - Low-energy processing
  - Abundant in nature
-  **Challenges:**
  - Threatened by deforestation and wildfires
  - Sustainability depends on responsible forest management

## 2. CREATE YOUR OWN TEST

a. Indicate whether  
the following  
statements are true  
(T) or false (F).



1 Wood remains a widely used material.

 T  F

2 Wood is primarily composed of cellulose and water.

 T  F

3 Paper can be produced from wood.

 T  F

4 Wood is an excellent insulator of heat and electricity.

 T  F

5 Wood is 100% recyclable.

 T  F

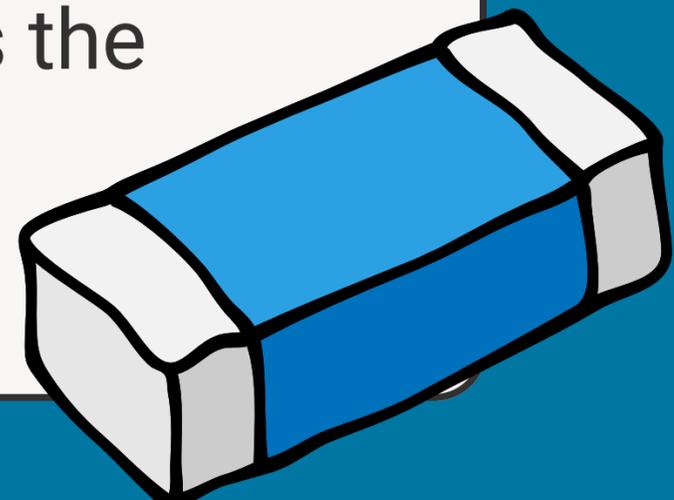


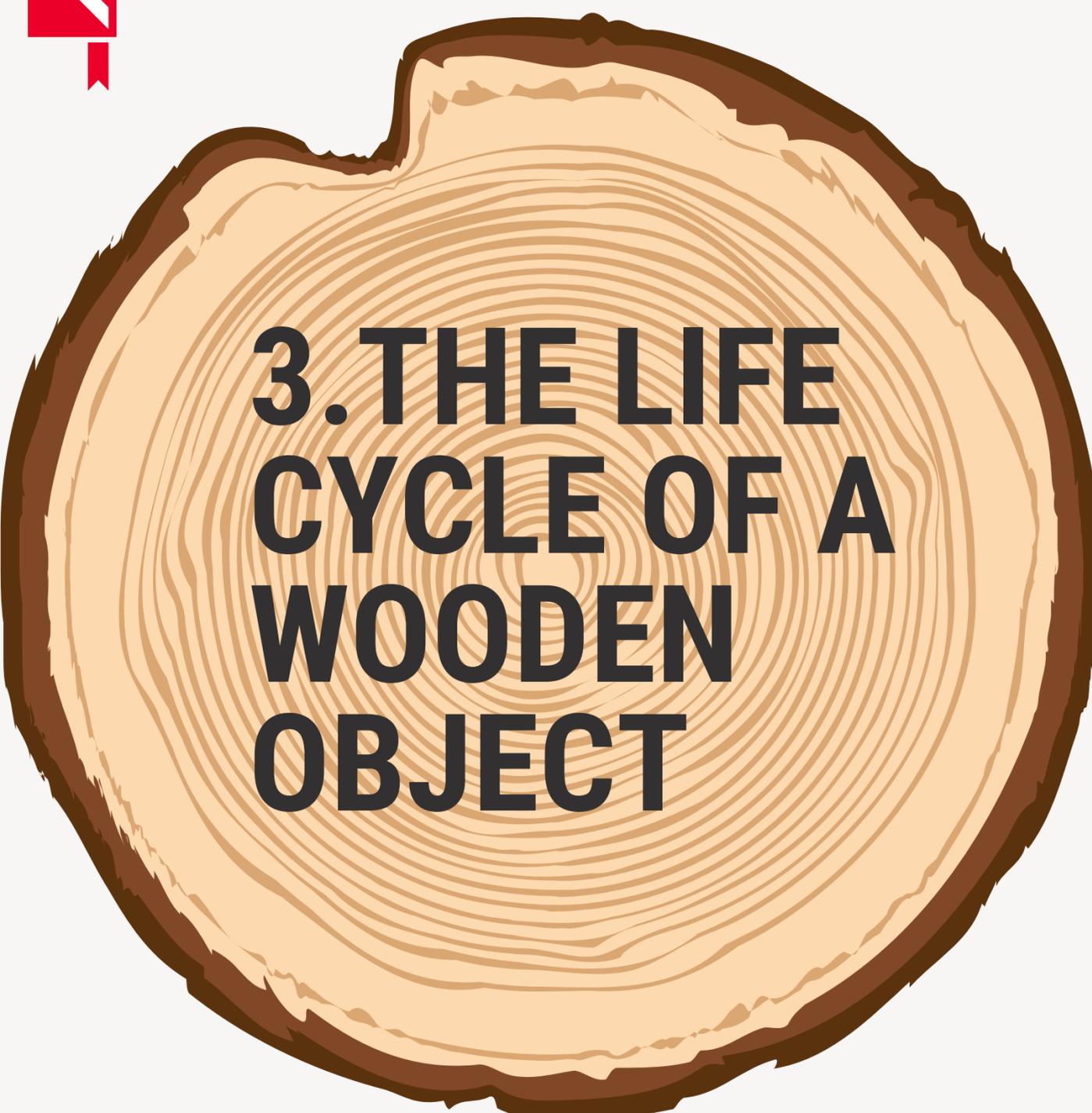
## 2. COMPLETE THE TEXT BY CHOOSING FROM THE LISTED TERMS:

- plywood
- derivatives
- strength
- perpendicular
- solid wood
- imperfections
- veneers



\_\_\_\_\_ may have \_\_\_\_\_ that limit its direct use; therefore, in many cases, it is preferable to use its \_\_\_\_\_. Among these, \_\_\_\_\_ panels are made by gluing together an odd number of \_\_\_\_\_. The layers must have their fibres arranged alternately \_\_\_\_\_ to each other, as this significantly increases the \_\_\_\_\_ of the panels.





# 3. THE LIFE CYCLE OF A WOODEN OBJECT

1. DOES THE MATERIAL COME FROM A CERTIFIED FOREST?

2. IS THE OBJECT MADE OF SOLID WOOD OR WOOD-BASED DERIVATIVES?

3. WHAT PROCESSING TECHNIQUES DO YOU THINK IT HAS UNDERGONE?

4. WHAT WILL YOU DO WITH IT WHEN IT BREAKS OR IS NO LONGER USEFUL?

5. COULD YOU REPURPOSE IT, EVEN PARTIALLY, FOR A DIFFERENT FUNCTION?

# 4. A DAY FOR THE FORESTS

In small groups, **create a leaflet to distribute on International Day of Forests**, celebrated on **21st March**, the first day of spring, to highlight the importance of protecting forests.

Take inspiration from this ancient saying of the Amazonian Indigenous peoples:

**"Trees are the arms that hold up the sky. When we have cut down the last tree, the sky will fall upon us."**

Reflect on the central message of this phrase and **create A4 illustrations to visually represent it.**



## 5. WOOD SPECIES



Divide a drawing sheet into eight equal sections. In each section, **place a small colour photograph of a wood species** found in your local area or from other regions, including those outside Europe. You may also visit a carpentry workshop to collect wood samples, which can be glued onto a plywood or chipboard panel. Below each photo or sample, **write the main characteristics of that type of wood** in capital letters, following the given example.

Alternatively, you can complete the task using a computer.



### **Oak**

**A hardwood species.**

Heartwood is yellowish-brown or reddish.

A heavy, hard, and highly durable wood, yet easy to work with.

Commonly used for furniture making.

you can complete the task using a computer.

# 6. THE SUSTAINABILITY OF WOOD PRODUCTS

Wood is an excellent material in terms of functionality, environmental impact, and aesthetics. To ensure the sustainability of a wood-based product, it is important to consider its life cycle stages:

- **Sourcing:** Whether the material is new or recycled
- **Processing and manufacturing**
- **Transport and distribution**
- **End-of-life:** Reuse, recycling, or waste management

Since tree felling has a significant environmental impact, **sustainable forestry is essential**. Several certification systems ensure responsible forest management. In Europe, the two most widely recognised certifications are:

- **Forest Stewardship Council (FSC)**
- **Programme for the Endorsement of Forest Certification (PEFC)**

Conduct a brief research project on this topic, create a presentation, and share your findings in a classroom discussion.

