



# Forest products beyond wood: upscaling the forest-based bioeconomy

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## Overview

- The global basic facts
  - ✓ We can do better
- How?
  - ✓ Q1. Success stories
  - ✓ Q2. Challenges
  - ✓ Q3. Short-term targets
  - ✓ Q4. Priority actions and partnerships
  - ✓ Recommendations





## Five approaches to the forest-based bioeconomy (Piplani and Smith-Hall 2021)

Table 1. Five forest-based bioeconomy schools.

QUESTIONS	BIOTECHNOLOGY	BIORESOURCE		BIOECOLOGY	
		Techno-Bioresource	Socio-Bioresource	Eco-Efficiency	Eco-Society
What is the paradigmatic belief system?	Technocratic	Neo-industrialisation	Eco-modernist	Sustainable environmentalism	Degrowth
What are the public policy goals?	Economic growth, resource efficiency, food security	Fossil fuel substitution, climate change mitigation, competitiveness, resource efficiency	Poverty alleviation, employment, resource sustainability, territorial resilience	Biodiversity conservation, high quality of water, air, soil; recreational services	Food sovereignty, socio-economic sufficiency, sustainable consumption
What product or service is sold?	Molecular biology patents, GMOs, nanomaterials, allopathic medicine	Biorefinery products (e.g., bio-textiles), bio-composites	Timber and non-timber raw materials, secondary processed products	Quality air, water, soil experiences, spiritual recreation	Organic foods, produce from small scale farms
Who are the key stakeholders?	Large private companies, public research institutes	Governments, large private companies, public research institutes	Small and medium enterprises, local communities, NGOs	(I)NGOs, civil society organizations, landowners	Farmers, civil society organizations, NGOs, consumers
Is the informal economy included?	No	No	Yes	No	Yes
What are the likely transition pathways?	Novel products, low bulk and high value	Fossil fuel substitution, new and efficient biomass uses	Boosting primary sector productivity and secondary processing	Payments for ecosystem services	Decentralized governance and decision making
What is the strength of the link to environmental sustainability?	Weak	Weak-Medium	Medium	Strong	Strong



## 10 global facts about the forest-based bioeconomy

- 50,000+ species in use. They are everywhere. And many are traded internationally
- 5.8 billion users of products beyond wood
- Average of 28% of total rural household income
- This income lowers inequality
- Can be inclusive or exclusive
- Almost
- A huge

We can do better with what we have!

But

- For most species, we lack data (e.g. volumes and values). Little attention to processing and consumers
- The role in poverty reduction is unclear
- Stepping-out more common than stepping-up





## Q1. Success stories – what to look for

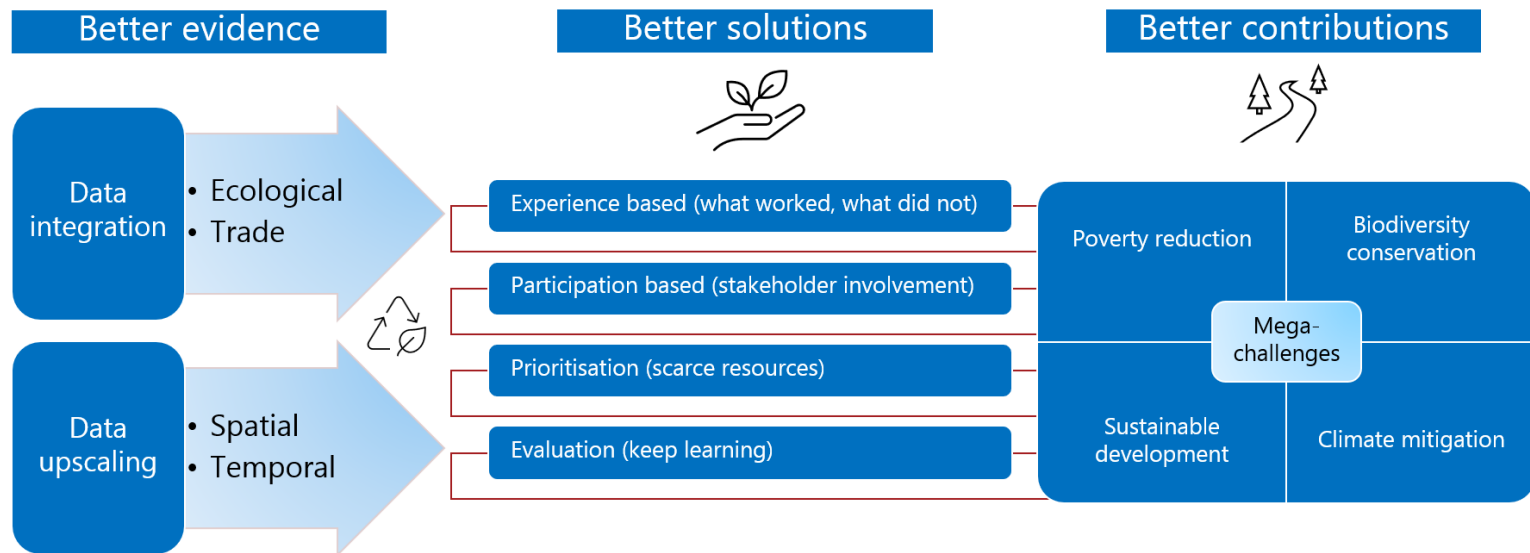


Fig. 1. A conceptual framework for approaching the forest-based bioeconomy: Main components to improve the evidence base and find better solutions that matter. Source: Smith-Hall, C. 2026. Green exits from poverty, in prep.



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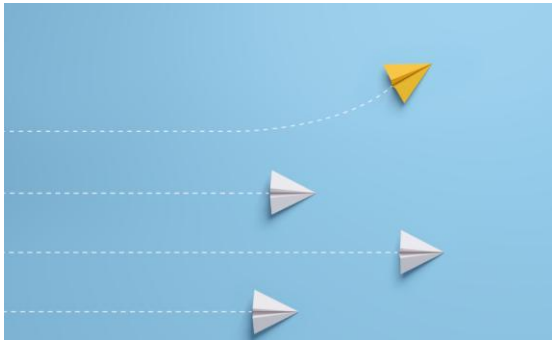
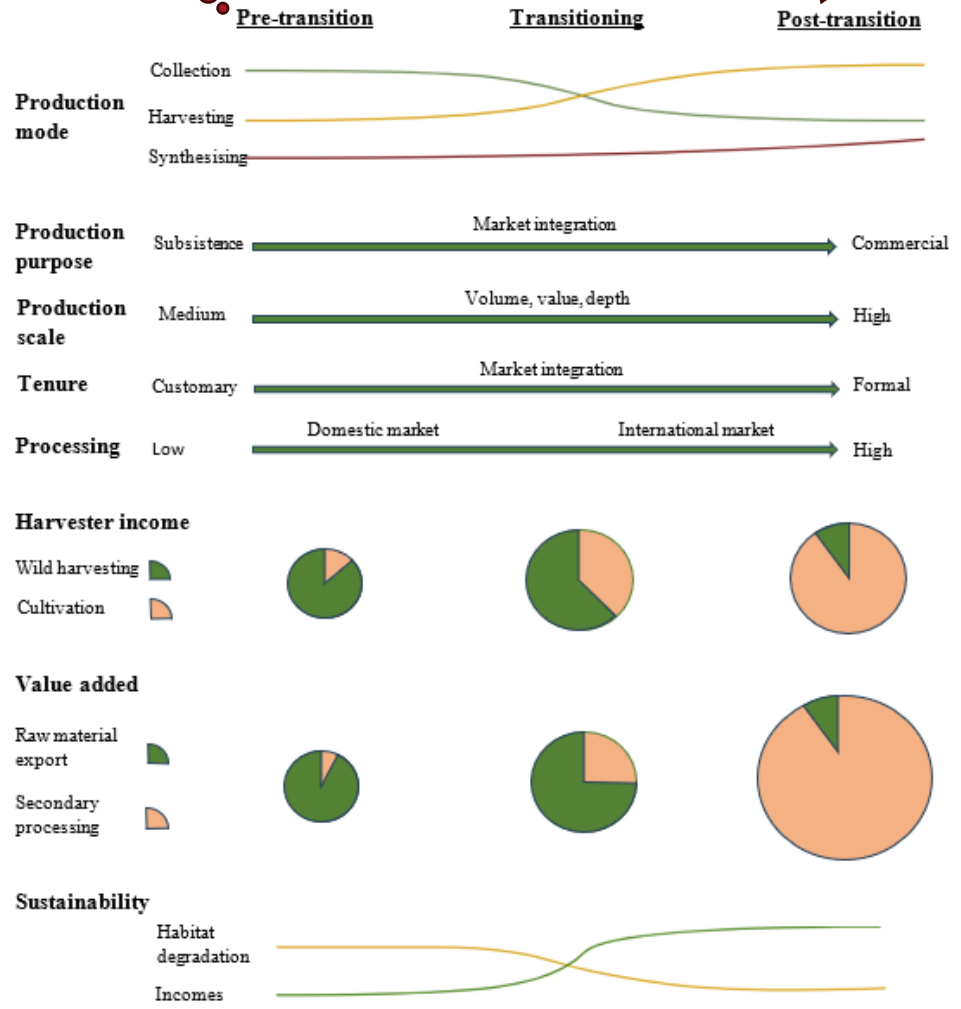


Where we are ...

Where we want to go ...

## Q2. Challenges

Typical expected changes as we transition



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Fig. 4.1. The standardised flow of a sustainable bioeconomy transition focused on renewable undomesticated environmental products. Smith-Hall, 2026. Green exits from poverty. In prep.



### Q3. Short-term targets – opportunities to accelerate upscaling

- Remove data gaps. Harmonise production and trade data.
- Share it. Make forest products beyond wood visible
- Facilitate local management and benefit sharing
- Facilitate business development and processing/value addition
- Invest in infrastructure (roads, telecoms, e-commerce)
- Invest in standards (grades, quality control, labs, traceability systems)
- Invest in developing and sharing technology (cultivation, processing)





## Q4. Priority actions, outputs, and partnerships to support upscaling

- Generate basic data for species with sustainability concerns
- Identify generic transition pathways, including specific actions
- Produce roadmaps
- Establish regional collaboration (harmonise, leakage)
- Focus on poverty elimination through production mode and secondary processing
- Know your industry. And remove business barriers and establish an enabling policy environment



### Example: Patl

#### Actions

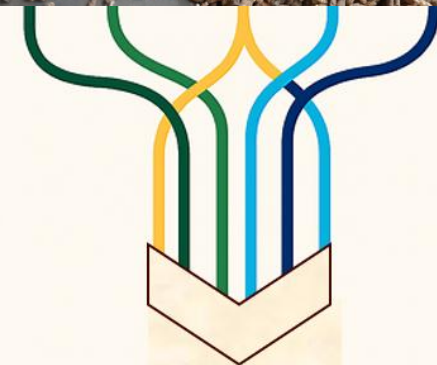
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## Recommendations - Take-home messages

- There is a lot we don't know. But we can do better with what we have. Now.
- Acknowledge trade. Particularly:
  - Markets, production networks
  - Firms, value-addition
  - Consumers
- Focus our efforts. Including:
  - Do data integration and upscaling
  - Describe transition pathways
  - Prepare roadmaps
- Don't get bugged down. When necessary, address:
  - Sustainability
  - Climate change





## Selected recent references/further readings

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