

## Introduction

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**Relevance of the research.** Currently, much of the international debate deals with suggestions about the need to supplement market-determined actions with processes to attain equilibrium among interests advocating environmental protection, employment that contributes to economic prosperity, public access, and social justice (Andersson et al., 2004). In January 2021, the new Lithuanian national FSC (Forest Stewardship Council) forest management standard entered into force. With growing public interest and concern for proper farming in forests and resource conservation, FSC certificates confirm that economic activities in forests meet the world's highest social and environmental standards, which is a hallmark of responsibly managed forests. Sometimes uncertified forests in developed countries are better managed than certified forests in developing countries. The sustainability of the production of wood products in Lithuania, as in many other countries, is a complex issue that includes various environmental, social and economic aspects.

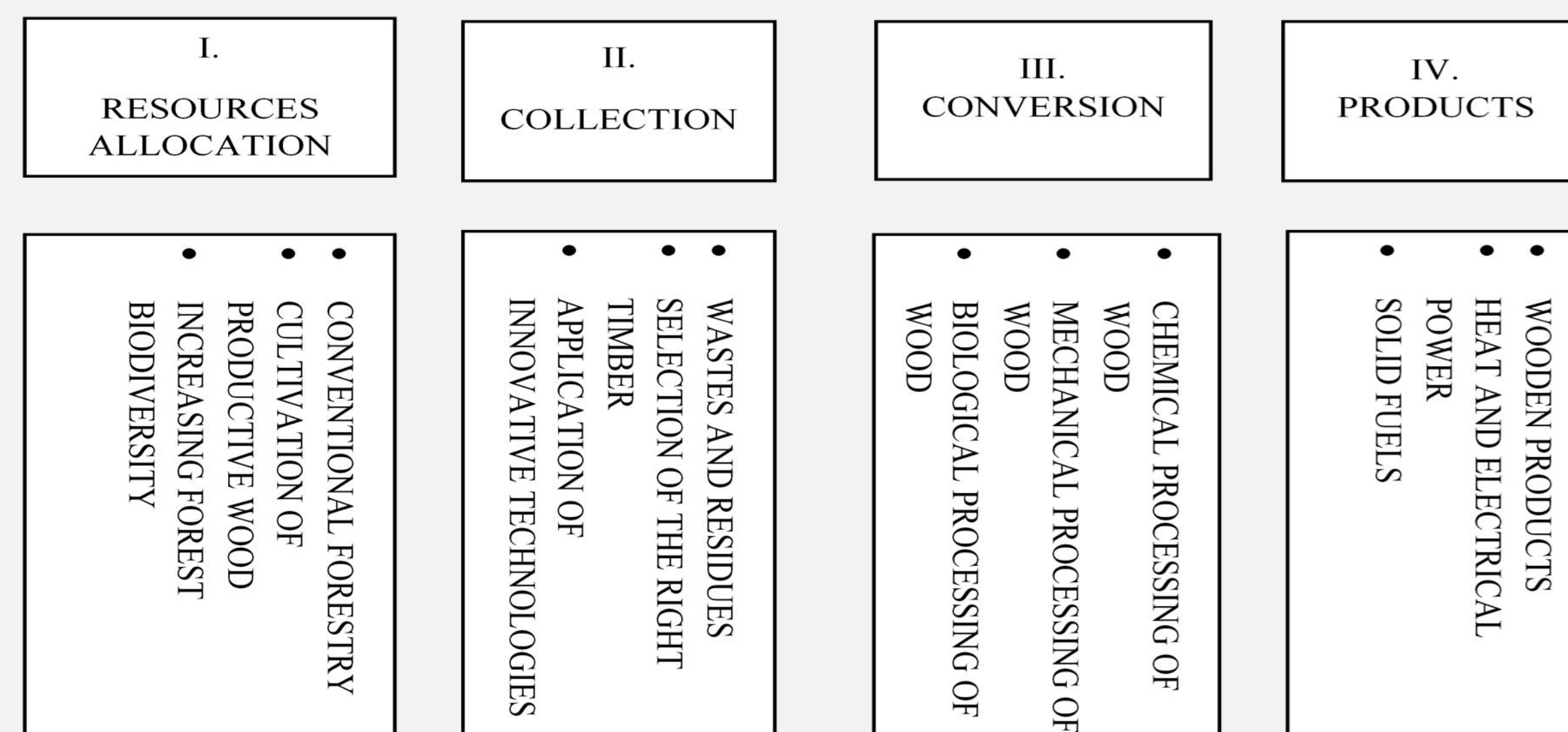
**Aims.** After assessing the sustainability in the production cycle of wood products, provide recommendations to solve the problems.

### Theoretical background.

Forest area in public and private ownership is roughly balanced in Europe about 53% of forests in Europe are in public ownership and 47% in private ownership. According to the data of the State Forest Service, about half of all forests in Lithuania are private forests, which occupy 923.8 thousand hectares. There are 255.4 thousand private forest owners in Lithuania.

Lithuania, like many other countries, has been striving to promote sustainable forestry practices to balance the economic benefits of wood production with the need to conserve biodiversity and protect the environment. The sustainability of the production of wood products in Lithuania, as in many other countries, is a complex issue that includes various environmental, social and economic aspects. Efforts to increase sustainability must benefit all elements involved: environmental, economic and societal levels (Jayal et al., 2010). For Diemer (2013), thinking about ecological development means "starting by setting clear goals for food, housing, access to care and education, linking them to social groups and ensuring that the necessary production is carried out in harmony with the environment". This requires ensuring sustainable management of forest resources.

After examining the scientific literature on the production and marketing of wood products, a 4-stage model (from forest cultivation to product realization) can be presented to sustainable production of woods products.



## Methodology

Quantitative research - questionnaire survey.

The research instrument is a questionnaire. The questionnaire consists of 4 blocks of statements.

Each statement should be rated from 1 (strongly disagree) to 5 (strongly agree).

Respondents: 64 managers of business enterprises and 26 owners of private forests.

The selection method chosen for the research is Purposive sampling.

It involves the identification and selection of individuals or groups of individuals who have particular knowledge or experience of the phenomenon of interest (Cresswell & Plano Clark, 2011). Purposive sampling is effective when you want to select participants with specific knowledge or experience related to sustainable wood production in Lithuania.

The research was conducted in April and May 2023.

## Results

MAIN FACTORS	I. RESOURCES ALLOCATION		
	CONVENTIONAL FORESTRY	CULTIVATION OF PRODUCTIVE WOOD	INCREASING FOREST BIODIVERSITY
1. Market Demand and Price Fluctuations	3.68	3.09	4.33
2. Resource Management and Sustainability	2.66	3.26	4.31
3. Cost Efficiency and Technology Adoption	3.56	4.39	4.39
4. Value Addition and Product Diversification	3.82	3.28	3.22
5. Environmental Regulations and Certification	4.22	4.12	4.05
6. Workforce Development	4.25	4.05	3.88
7. Infrastructure and Transportation	4.30	4.33	4.11
8. Trade Barriers	4.85	4.66	4.35

MAIN FACTORS	II. COLLECTION		
	WASTES AND RESIDUES	SELECTION OF THE RIGHT TIMBER	APPLICATION OF INNOVATIVE TECHNOLOGIES
1. Soil Erosion	2.22	4.05	3.55
2. Water Quality	2.85	4.11	3.28
3. Climate Change Mitigation and Adaptation	3.55	4.55	3.55
4. Pest and Disease Management	3.92	4.81	4.38
5. Forest Fragmentation	3.54	4.33	3.77
6. Invasive Species	2.99	4.00	3.63
7. Wildfire Risk	2.57	3.88	4.24
8. Biodiversity Conservation	3.37	3.42	3.54

## Results

MAIN FACTORS	III. CONVERSION		
	CHEMICAL PROCESSING OF WOOD	MECHANICAL PROCESSING OF WOOD	BIOLOGICAL PROCESSING OF WOOD
1. Community Livelihoods	3.22	4.55	4.55
2. Community Rights	2.99	4.67	4.68
3. Worker Safety and Welfare	2.53	4.33	4.57
4. Access to Forest Resources	2.43	4.88	4.24
5. Cultural Heritage and Traditional Uses	2.27	4.77	4.68
6. Education and Training	2.88	4.55	4.58
7. Stakeholder Engagement	2.67	4.64	4.55
8. Differences in interests	3.67	4.22	4.61

MAIN FACTORS	IV. PRODUCTS		
	WOODEN PRODUCTS	HEAT AND ELECTRICAL POWER	APPLICATION OF INNOVATIVE TECHNOLOGIES
1. Waste and Residues Management	4.66	4.57	4.67
1. Selection of the Right Timber	4.85	4.66	4.00
1. Market Demand and Price Fluctuations	4.68	4.81	4.66
1. Resource Availability and Sustainability	4.33	4.67	4.73
1. Energy Costs and Efficiency	4.82	4.36	4.88
1. Supply Chain Optimization	4.32	4.57	4.24
1. Global Trade and Tariffs	4.02	4.66	4.15
1. Application of Innovative Technologies	4.58	4.72	4.83

## Main conclusions

- Overexploitation or inadequate reforestation can threaten the long-term supply of wood.
- Exploration of new markets and the development of value-added products can help buffer the industry against market volatility.
- Implementing sustainable forestry practices, monitoring and enforcing harvesting quotas, and promoting responsible land use planning can help ensure a steady supply of timber.
- Addressing environmental challenges is crucial for the long-term viability of the wood products industry while ensuring the health of ecosystems.
- Striking a balance between wood production and environmental conservation is essential for the long-term sustainability of wood product production in Lithuania.
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- To invest in processing facilities to produce value-added products such as furniture, flooring, and engineered wood products.
- To embrace sustainability certifications to access premium markets and implement environmentally responsible practices that reduce long-term environmental risks
- Engage in trade negotiations and advocacy efforts to reduce trade barriers and expand market access and costs.
- The sustainable and competitive wood products industry in Lithuania should strive to balance economic growth with environmental conservation and social well-being.