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MINISTRY OF AGRICULTURE  
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**DOCTORAL DISSERTATION**

**DEVELOPMENT OF SMALL-SCALE PLANTED TIMBER  
PROCESSING IN PHU THO PROVINCE**

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## **LIST OF PUBLISHED SCIENTIFIC ARTICLES AND WORKS**

1. Nguyen Huu Ha, Bui Thi Minh Nguyet (2023). The current situation of the small-scale planted timber processing industry in Phu Tho province and development solutions. Vietnam Trade and Industry Review, Issue 24, pp. 74-79.
2. Nguyen Huu Ha, Bui Thi Minh Nguyet (2023). Policies affecting the development of Vietnam's wood processing industry. Vietnam Trade and Industry Review, Issue 22, pp. 62-67.
3. Nguyen Huu Ha, Bui Thi Minh Nguyet (2025). Development of small-scale planted timber processing in Phu Tho province. Economy and Forecast Review, Special Issue January 2025, pp. 215-217.

## INTRODUCTION

### 1. Urgency of the Research Topic

The wood processing industry plays a crucial role in the country's industrialization and modernization, with strong export turnover growth that reached USD 13.37 billion in 2023. However, alongside these achievements, the industry still faces numerous limitations, such as inconsistent product quality, dependence on imported raw materials, a lack of chain linkage, outdated machinery, and a large proportion of untrained labor. Phu Tho is a province with great potential for wood processing development. Its forest area covers over 55% of its natural land, the annual timber harvesting output exceeds 300,000 m<sup>3</sup>, and it is home to more than 2,800 processing facilities. Nevertheless, the majority of these facilities operate on a small scale with low-level processing technology, producing mainly low-quality sawn timber.

Given this reality, researching the current situation, evaluating influencing factors, and proposing solutions for the development of small-scale planted timber processing in Phu Tho is essential. The goal is to enhance competitiveness, create jobs, increase income, and promote the sustainable development of the province's wood processing industry.

### 2. Research Questions

- What is the current situation of production, processing, and linkage within the small-scale wood industry in Phu Tho?

- How can product value be increased, exports of raw materials be reduced, and the processing industry be developed sustainably?

### 3. Research Objectives

- To assess the current situation, analyze influencing factors, and propose solutions for the development of small-scale planted timber processing in Phu Tho.

#### **4. Research Subjects**

- Small-scale wood processing facilities and their linkage activities with forest growers in Phu Tho during the 2020–2024 period.

#### **5. Scope of Research**

- Content: The current situation, linkage, and solutions
- Space: Phu Tho province.
- Timeframe: 2020–2024.

#### **6. Research Content**

- Theoretical and practical basis.
- The current situation of small-scale planted timber processing in Phu Tho
- Influencing factors and development solutions

#### **7. New Contributions of the Dissertation**

- Supplements the theoretical framework for the development of the small-scale wood processing industry.
- Analyzes the linkage between production and processing and proposes solutions suitable for the practical context of Phu Tho

#### **8. Structure of the Dissertation's Chapters**

- Chapter 1: Theoretical and Practical Basis
- Chapter 2: Characteristics of the Study Area and Research Methods
- Chapter 3: Research Results and Discussion.

**CHAPTER 1**  
**LITERATURE REVIEW, THEORETICAL AND PRACTICAL**  
**BASIS FOR THE DEVELOPMENT OF SMALL-SCALE**  
**PLANTED TIMBER PROCESSING AT THE PROVINCIAL**  
**LEVEL**

**1.1. Theoretical Basis for the Development of the Wood Processing Industry**

**1.1.1 Some Basic Concepts**

This section presents concepts of industry, industry development, economic development, and the wood processing industry. Industry development is understood as a process of increasing scale, quality, efficiency, and sustainability.

**1.1.2. Entities and Products of the Wood Processing Industry**

Entities include enterprises, craft villages, and individual households. The products are diverse, including outdoor and indoor furniture, fine art products, and wood chips – serving both domestic consumption and export markets.

**1.1.3. Characteristics of the Small-Scale Wood Processing Industry**

This sector is associated with traditional craft villages, utilizes a large amount of unskilled labor, employs low technology, produces a variety of products, and has flexible production models, but faces challenges in competition and lacks value chain linkage.

**1.1.4. The Role of the Small-Scale Wood Processing Industry**

It meets consumer demand, contributes to exports, creates jobs, increases income, and promotes rural and local economic development.

**1.1.5. Content of Research on the Development of Small-Scale Planted Timber Processing at the Provincial Level**

This focuses on exploiting natural advantages, the coordinating role of the government, developing both in breadth and depth, increasing scale and efficiency, and enhancing product quality and competitiveness.

#### **1.1.6. Factors Affecting the Development of Small-Scale Wood Processing**

These include: raw material sources, markets, technology, labor, enterprise capacity, support policies, and the linkage between production and consumption.

### **1.2. Practical Basis for the Development of Small-Scale Planted Timber Processing**

#### **1.2.1. International Experience**

Several countries, such as China, Thailand, and India, have effectively developed their small-scale wood processing industries through preferential policies, production-consumption linkage, and the application of modern technology.

#### **1.2.2. Experience in Vietnam**

Provinces like Binh Dinh, Dong Nai, and Thua Thien Hue have successfully implemented small-scale wood processing models linked to raw material zones and end-to-end value chain integration. However, shortcomings related to technology, markets, capital, and management still exist.

### **1.3. Overview of Related Research**

#### **1.3.1. Globally**

Many studies have addressed the development of the wood processing industry, value chain models, production linkage, and policies for rural industry development.

#### **1.3.2. In Vietnam**

Research has primarily focused on the large-scale, export-oriented wood industry, with few in-depth studies on small-scale

wood processing at the provincial level. This dissertation builds upon and expands previous research by conducting an in-depth analysis of the case of Phu Tho.

## **CHAPTER 2**

### **CHARACTERISTICS OF THE STUDY AREA AND RESEARCH METHODS**

#### **2.1. Characteristics of the Study Area**

##### **2.1.1. Overview of Phu Tho Province**

Phu Tho is a northern midland and mountainous province with a favorable transportation location and natural conditions suitable for forestry development. Forests cover over 55% of the province's natural area, with a large timber reserve, primarily consisting of planted forests with species such as acacia, manglietia, and eucalyptus.

##### **2.1.2. Natural and Social Conditions**

The province has a topography of low hills and mountains, with land suitable for afforestation. The tropical monsoon climate is favorable for plant growth. The population is large, providing an abundant labor force, but skill levels remain limited.

##### **2.1.3. Situation of Wood Processing Development:**

The entire province has over 2,800 wood processing facilities, the majority of which are small-scale. The main products include sawn timber, household woodwork, paper, and packaging. The industry is growing but remains fragmented, inefficient, lacking in linkage, and reliant on outdated processing technology.

##### **2.1.4. Social Characteristics**

#### **2.2. Research Methods**

##### **2.2.1. Research Approaches**

###### *2.2.1.1. Value Chain Approach:*

This approach examines the entire linkage between actors in the planted timber production-processing-consumption chain. It is used to evaluate the chain's efficiency and propose holistic development solutions.

### *2.2.1.2. Participatory Approach:*

Information is collected from actors in the supply chain (forest-growing households, traders, processing facilities, local officials) through surveys, group discussions, and other methods. This ensures the practicality and consensus of the proposed solutions.

### *2.2.1.3. Systems Approach:*

Each processing facility is viewed as a system comprising internal factors (capacity, technology, production results) and external factors (markets, policies, infrastructure, etc.). This allows for a comprehensive assessment of the interactions affecting development.

### *2.2.1.4. Institutional Approach:*

This approach analyzes the legal regulations, commitments, and agreements within the timber supply chain to propose solutions for adjusting and improving the institutional framework and promoting the efficient and sustainable organization of small-scale timber production and processing.

## **2.2.2. Analytical Framework**

The dissertation analyzes the natural, socio-economic, and institutional factors that affect the planted timber supply chain, with small-scale processing facilities as the central focus. The relationships between actors in the chain are assessed through practical indicators, clarifying the two-way interaction between input factors and development outcomes. Based on this analysis, the dissertation proposes suitable solutions to promote the sustainable development of the small-scale wood processing industry in Phu Tho.

## **2.2.3. Data Collection Methods**

- **Secondary Data:** Collected from statistical reports, yearbooks, forestry sector documents, socio-economic development

planning documents of Phu Tho province, and related legal documents.

- **Primary Data:** A sociological survey was conducted in 6 districts with representative wood processing activities in the province. A total of 198 processing facilities and 202 forest-growing households were surveyed. The questionnaires collected information on production scale, equipment, labor, markets, linkage, and economic efficiency.

#### **2.2.4. Data Analysis Methods**

##### *2.2.4.1. Descriptive Statistics:*

Used to analyze the current characteristics of processing facilities and forest-growing households, the level of linkage, and their production and business operations.

##### *2.2.4.2. Comparative Statistics:*

Used to compare with domestic and international experiences in order to collate, evaluate, and select feasible solutions.

##### *2.2.4.3. Synthesis and Analysis Method:*

The dissertation utilizes this method throughout the research process to objectively and comprehensively evaluate the development of Phu Tho province's wood processing industry during the 2010–2020 period. Based on survey data, the method is structured on the principles of dialectical materialism, combining statistical probability theory and analysis of the law of large numbers to clarify the nature and developmental trends of the industry. This method also employs a model of input factors and production outcomes to assess the impact of raw materials, technology, labor, capital, and policies on the industry's efficiency and development potential.

##### *2.2.4.4. SWOT Analysis:*

Used to conduct a comprehensive assessment of the strengths, weaknesses, opportunities, and threats of the small-scale planted timber processing industry in Phu Tho, thereby guiding the formulation of appropriate solutions.

*2.2.4.5. Exploratory Factor Analysis and Multiple Regression Analysis:*

Based on a model of input factors and production outcomes, these methods are used to assess the degree of impact that raw materials, technology, labor, capital, and policies have on the efficiency and development potential of the industry.

**2.2.5. Evaluation Criteria**

*2.2.5.1. Indicators of Growth in Scale*

Assessed through the increase in the number of facilities, capital size, labor, machinery, raw materials, market reach, and processing output of small-scale wood facilities.

*2.2.5.2. Indicators of Structural Shifts in Small-Scale Processing Facilities*

Reflected through the proportion of raw versus finished products and the structural composition of domestic versus export consumer markets.

*2.2.5.3. Indicators of Economic Efficiency, including*

- Outcomes: Revenue, profit.
- Efficiency Ratios: Revenue/cost, revenue/capital, profit/cost, profit/capital—reflecting the ability to use costs and capital to generate results.
- Social Efficiency Indicators: Job creation, income growth, labor productivity, value-added, and budget contributions.
- Environmental Protection Indicators: Assessing pollution levels, resource regeneration, compliance with environmental standards, and the ecological progress of processing facilities.



## CHAPTER 3

### RESEARCH RESULTS AND DISCUSSION

#### 3.1 The Current Situation of Small-Scale Planted Timber Processing Development in Phu Tho Province

##### 3.1.1. Exploiting Advantages for the Development of Small-Scale Planted Timber Processing in Phu Tho Province

###### 3.1.1.1. *Supply of Raw Timber for Small-Scale Processing in Phu Tho Province*

**Area:** Phu Tho has 293,456 ha of forestry land, of which production forest accounts for over 150,000 ha. This is primarily managed by households and individuals (making up over 40%). The area of planted forests grew steadily during the 2018–2024 period, reflecting sustainable development.

**Tree Species:** Acacia is the key species (accounting for >85% of the planted forest area), as it is well-adapted to local conditions and serves the production of paper, wood chips, sawn timber, and peeled veneer. Other species include Eucalyptus, Bodhi, Cinnamon, and Manglietia.

**Output:** Timber harvested from planted forests increased from 700,100 m<sup>3</sup> (2020) to 771,300 m<sup>3</sup> (2023), consisting mainly of Acacia wood (~85%).

**Entities Involved in Raw Timber Production:** The entities include households, forestry enterprises, and cooperatives. Among these, households and individuals account for the largest share (72.2%), demonstrating the central role of the community in raw material production.

###### 3.1.1.2. *Products from Planted Timber*

Phu Tho has the largest number of processing enterprises in the Northern mountainous region, with approximately 98 enterprises (mainly small and medium-sized). The products are diverse,

including: sawn timber, peeled veneer, paper, wood chips, wood pellets, MDF, plywood, and wood bars. Among these, Acacia wood is predominant in production.

### **3.1.2. The Involvement of Local Government in the Development of Small-Scale Planted Timber Processing in Phu Tho Province**

#### *3.1.2.1. Formulating Development Strategies for Small-Scale Planted Timber Processing*

The Phu Tho provincial government has implemented a development strategy for the small-scale wood processing industry through programs for human resource training, support for capital access, encouragement of green production, and the development of large-timber plantation forests. The processing facilities are primarily household-based and small enterprises, operating flexibly according to market demands. They contribute to preserving traditional crafts and providing competitively priced products. The demand for wood products in the province is quite stable, especially in the construction and furniture sectors, creating development opportunities for small-scale facilities.

#### *3.1.2.2. Issuance of Policies Related to Planted Timber Processing*

The province has issued numerous resolutions and policies to encourage investment in wood processing, such as:

- Resolution 15/2014/NQ-HDND: Provides a maximum support of VND 5 billion per facility for investing in a wood processing plant.

- Resolution 12/2015/NQ-HDND and Resolution 16/2011/NQ-HDND: Concern the development planning for raw material zones and the agro-forestry sector.

- Resolution 22/2021/NQ-HDND and investment decisions such as 2384/QD-UBND and 3354/QD-UBND: Approved wood factories in Tam Nong district.

- Plan 2501/KH-UBND (2024): Orients the development of the forest ecosystem linked with processing.

However, the implementation of some policies still faces difficulties, particularly in accessing capital support under Decree 210/2013/ND-CP.

### *3.1.2.3. Implementation Status of Policies Related to Small-Scale Planted Timber Processing Activities.*

- Timber Harvesting: Must comply with Decree 156/2018/ND-CP, Circular 27/2018/TT-BNNPTNT, and the regulations of the VPA/FLEGT Agreement. This covers all stages from formulating plans and creating forest product declarations to maintaining legal documentation of forest use rights.

- Timber Transportation: Facilities that purchase, sell, and transport timber must fully store forest product declarations and records of origin according to prescribed templates.

- Timber Processing: Processing households and organizations must comply with regulations on fire prevention and fighting, labor safety, timber origin documentation, business registration, labor, taxes, social insurance, and health insurance to ensure the production of legal timber.

### **3.1.3. The Current Situation of Small-Scale Planted Timber Processing Development in Phu Tho Province**

#### *3.1.3.1. Development of Small-Scale Planted Timber Processing Facilities*

- Types of Facilities: These include sawmills, veneer peeling facilities, carpentry and furniture workshops, and wood chip processing facilities. The majority of these facilities are small-scale, operate with outdated machinery, and are flexible based on orders. The main products are semi-finished goods or raw materials, with low competitiveness.

- Scale and Distribution: As of 2023, the province had 822 wood processing facilities, an increase from 742 facilities in 2021. The majority are individual business households (711 households), distributed across all districts. Product groups experiencing strong growth include: sawn timber/pallets, woodwork, peeled veneer, and multi-purpose products (toothpicks, chopsticks, etc.).

- Shortcomings: A lack of planning, low technology, untrained labor, difficulty accessing capital, an imbalance in raw material supply and demand, and unfair competition in the procurement of raw timber.

### *3.1.3.2. Development of Product Distribution Channels*

- Consumption Channels: Primarily through traders and intermediary distributors. Exports are dependent on foreign agents. The domestic channel remains fragmented and lacks chain linkage. Vietnam Paper Corporation is a typical model with FSC certification, distributing its products effectively.

- Raw Timber Channels: 75% of timber is consumed within the province, while 25% is transported to other provinces (Hanoi, Hung Yen, etc.). There are five common channels running from forest-growing households/forestry companies to processing plants or for domestic/export consumption.

- Forms of Distribution: Primarily through agents, stores, and trade fairs. There is a lack of effective marketing, brand building, and trade promotion.

### *3.1.3.3. Business Performance of Planted Timber Processing Facilities in Phu Tho Province*

- Sawn Timber/Pallets: The profit for households is VND 0.477 million/m<sup>3</sup>, while for processing facilities it is VND 0.269 million/m<sup>3</sup>. Although profitable, the value is not high due to the products being raw materials.

- Paper/Pulp Products: Forestry companies achieve a profit of VND 0.57 million/m<sup>3</sup> of raw timber; paper companies achieve VND 0.84 million/ton of paper. However, raw material consumption is high (3.6 tons of wood per ton of paper), requiring a stable supply.

- Wood Chip Products: Households have the highest profit (VND 0.51 million/ton), thanks to low costs. Wood chip processing enterprises achieve a large total profit due to their scale, although the value-added is low.

## **3.2. Factors Affecting the Development of Small-Scale Planted Timber Processing in Phu Tho Province**

### **3.2.1. Raw Material Supply**

The supply of raw timber in Phu Tho comes from three sources: within the province, from other provinces, and imports. Within the province, there is a large area of planted forests, primarily consisting of Acacia, Eucalyptus, and Bodhi trees, which account for nearly 99% of the harvested timber output. Households are the main source of supply, but their average land area is small, production is manual, and they lack market information. Other provinces supply about 30% of the demand, mainly from Yen Bai, Tuyen Quang, and Nghe An. Imported wood, primarily precious and softwoods like Ash and Oak used for high-end and mid-range processing, accounts for 8–10% of the demand.

### **3.2.2. Market Demand for Processed Planted Timber Products**

The global demand for wood products has increased sharply, creating a driving force for the industry's development. However, the quality of Vietnamese wood products is still limited, and few enterprises meet international standards. Monotonous designs, outdated technology, and a lack of skilled labor and design personnel result in weak competitiveness.

### **3.2.3. Technological Level of Processing Facilities in the Province**

Processing enterprises in the province are divided into four groups, the majority of which are small-scale, using old technology and operating at low capacity. Some modern technologies, such as those for producing artificial board and treating planted timber, are beginning to emerge. However, high investment costs and limitations in production organization capacity pose significant challenges.

### **3.2.4. Quality of Human Resources at Processing Facilities in the Province**

The province has an abundant labor force, with a trained labor rate of 70%. Nevertheless, the wood processing industry still lacks skilled labor and management personnel. Training remains fragmented, and the efficiency of labor utilization is not yet high.

### **3.2.5. Competitiveness of Wood Processing Facilities in the Province**

The province's wood processing industry is developing strongly, yet this growth remains spontaneous and lacks planning. It is characterized by low technology, and the products are mainly raw materials. There are few exporting enterprises, competitiveness is weak, value-added is low, and labor productivity remains low compared to international standards.

### **3.2.6. The Development of Large-Scale Enterprises**

Some large enterprises, such as the Bai Bang and Viet Tri Paper Mills, operate effectively but still face a severe shortage of raw materials. The development of this group of enterprises contributes to increasing the value of industrial production, creating jobs, and attracting investment.

## **3.3. General Assessment of the Current Situation of Small-Scale Planted Timber Processing Development in Phu Tho Province**

### **3.3.1. Advantages, Difficulties, Opportunities, and Threats for the Development of Small-Scale Planted Timber Processing in Phu Tho Province**

#### *3.3.1.1. Advantages*

- A large area of planted forests, creating a stable source of raw materials for processing.
- Suitable natural conditions, with many tree species of high economic value such as Acacia, Eucalyptus, and Pine.
- Favorable transportation infrastructure, which helps reduce transport costs.
- Proactive support policies, creating conditions for access to capital, technology, and markets.
- A broad consumer market, with opportunities to capitalize on free trade agreements.

#### *3.3.1.2. Difficulties*

- Small-scale and fragmented production, with scattered land holdings, making it difficult to create large raw material zones.
- A lack of linkage, a fragmented production mindset, and a lack of forestry planning.

#### *3.3.1.3. Opportunities and Threats*

<b>Opportunities</b>	<b>Threats</b>
Strong growth in demand for wood products (10–15%/year), especially furniture	Intense competition from low-cost imported products
The trend towards green consumption and a preference for sustainable wood products	Lack of capital, technology, and modern processing equipment

Support policies for finance, training, and markets	Manual production processes and inconsistent product quality
The flexibility of small-scale facilities in adapting to the market	Pressure to comply with environmental and sustainable development regulations

### **3.3.2. Successes, Shortcomings, and Their Causes**

#### *3.3.2.1. Successes*

- The wood processing industry has developed strongly, promoting afforestation, environmental protection, and the creation of sustainable livelihoods.
- Wood products are diverse: ranging from raw materials to finished goods (paper, MDF, sawn timber, woodwork, etc.).
- The industry has attracted 38 investment projects.

#### *3.3.2.2. Shortcomings*

- There is a lack of linkage between enterprises and forest-growing households, and the area of large-timber forests remains limited.
- The workforce in wood processing does not yet meet requirements, and there is a lack of supporting industries and application of science and technology.

#### *3.3.2.3. Causes of the Shortcomings*

- Processing facilities are mainly small-scale, operating spontaneously with outdated technology.
- There is a lack of investment capital for both afforestation and processing.

- Forest productivity is low, timber is small-sized, and the quality does not meet the requirements for advanced processing.

### **3.4. Solutions for the Development of Small-Scale Planted Timber Processing in Phu Tho Province**

#### **3.4.1. The Province's Development Orientation for Planted Timber Processing**

Phu Tho does not yet have a separate plan for the wood processing industry; instead, it is integrated into its socio-economic and forestry development plans. The goal is to stabilize a raw material zone of 60,000 ha, harvest 950,000 m<sup>3</sup> of timber per year, and increase the area of FSC-certified forests. The province is focusing on limiting new investments in wood chip production while encouraging investment in high technology and value-added products.

#### **3.4.2. Some Solutions for the Development of Small-Scale Planted Timber Processing in Phu Tho Province**

##### *3.4.2.1. Improve Mechanisms and Policies to Create a Legal Corridor that Supports Small-Scale Wood Processing Facilities in Organizing Efficient Production and Business*

- Simplify administrative procedures and specify the implementation of international commitments such as VPA/FLEGT.

- Issue policies for the development of sustainably certified raw material zones, support the production of auxiliary materials, control the export of raw timber, and stabilize tax policies.

##### *3.4.2.2. Develop and Expand Export Markets for Wood and Forest Products for Small-Scale Wood Processing Facilities*

- Encourage brand building and support participation in domestic and international trade fairs and exhibitions.

- Strengthen trade promotion, expand into potential markets, and build distribution systems and e-commerce platforms.

#### *3.4.2.3. Develop Human Resources to Supply the Small-Scale Planted Timber Processing Industry*

- Build training programs for technical skills, management, and skill enhancement.

- Support the establishment of specialized training majors that align with production requirements and new technologies.

#### *3.4.2.4. Enhance the Competitiveness of Small-Scale Planted Timber Processing Enterprises.*

- Promote awareness of the wood industry's role; focus investment on technological innovation and streamlined production organization.

- Build supply chains and specialized linkages to reduce production costs.

- Support the formation of leading enterprises and encourage entrepreneurship in remote and distant areas

#### *3.4.2.5. Use Raw Timber Materials Efficiently and Sustainably*

- Apply advanced, material-saving technologies.

- Develop centralized processing clusters near raw material zones.

- Apply information technology in the procurement and supply of raw materials.

#### *3.4.2.6. Foster Linkage in the Wood Processing Industry with Small-Scale Planted Timber Processing Enterprises*

- Encourage enterprises to form linkages along the value chain, from raw materials to product consumption.
- Limit scattered investments, and enhance specialization and production efficiency.
- Promote linkage between processing enterprises and forest owners, and between craft villages and timber importers, creating conditions to capitalize on large orders and reduce raw material inventory costs.

## CONCLUSION

In recent years, Vietnam's processing and export industry for wood and forest products has made significant progress in terms of scale, quantity, and quality. Enterprises have not only improved their production and business efficiency but have also significantly expanded their export markets. Whereas Vietnamese wood products were once primarily routed through intermediary countries like Taiwan, South Korea, or Singapore, they now directly reach and are present in over 140 countries and territories worldwide. In Phu Tho province, the value chain for the planted timber industry is gradually being formed and expanded, covering all stages from raw material production to processing and consumption. With over 700 wood processing facilities in operation, the industry has been playing a crucial role in local economic development, particularly in the forestry sector.

However, this development still faces many challenges. In the context of deep integration, the wood processing industry of the country in general, and Phu Tho province in particular, still has several limitations, such as: product quality and design that do not yet meet international competitive standards, low production efficiency, and a reliance on a few major countries for export markets, while the domestic market remains underexploited. Furthermore, the system of support policies for the wood processing industry has not yet been implemented in a coordinated and effective manner.

To enhance competitiveness and promote sustainable development for the wood processing industry, it is necessary to synchronously implement the following groups of solutions:

- **Perfect the legal framework and policies** to create favorable conditions for wood processing facilities and enterprises to operate stably and effectively.
- **Expand export markets** while simultaneously promoting the development of a national brand for Vietnamese wood products.
- **Invest in human resource development** to meet the increasing demands for production skills, machinery and equipment operation, and quality management.
- **Strengthen the competitiveness of enterprises** through technological innovation, cost optimization, and increasing the value-added of products.
- **Use raw timber materials efficiently and sustainably**, reduce waste, and optimize the value chain from raw materials to final products.
- **Develop linkage models within the wood processing industry**, including:
  - + Connecting raw material supply enterprises with processing units.
  - + Strengthening coordination between timber importing companies and craft villages.
  - + Building linkages between processing enterprises and forest owners who have sustainable forest management certification.

+ Establish cooperative relationships between forestry companies and wood processing enterprises to ensure a stable, transparent source of raw materials that meets international standards.

The implementation of the above solutions will not only contribute to the sustainable development of Phu Tho's wood processing industry but also actively contribute to national forestry development goals and enhance the position of Vietnamese wood products on the global market.