

I. INTRODUCTION

1.1. Background

Indonesia's forestry industry contributes to non-oil and gas export performance through various forest-based commodities. The activities of this sector include a series of processes from resource utilization, processing, to marketing forest products to various countries. These products contribute to national revenue through foreign exchange earnings. The country's foreign exchange revenue from forestry product exports is one of the main sources of income for the Indonesian economy (Nurprabowo and Rahayu, 2023).

According to data Statistics Forestry (2025), forest products are generally grouped into timber forest products (HHK) and non-timber forest products (NTFPs). HHK is a forest product in the form of wood derived from natural forests and plantation forests in production forests, for example logs and processed wood. Meanwhile, NTFPs are biological forest products other than wood (vegetable and animal) along with their derivative products and cultivation derived from forests, for example bamboo, rattan, forest rubber sap, palm sugar, candlenuts, areca nuts, nests, and swallows (Central Agency Statistics, 2025).

The classification of forest products indicates that the forestry sector covers a wide range of commodities; therefore, its performance needs to be assessed using measurable indicators. One of the indicators that can be used is the export value, as it reflects the contribution of Indonesian forest products in international trade as well as the achievement of the set export targets (Karlina et al., 2022). Therefore, the following graph is presented to illustrate the development of the export value of Indonesia's forest products during 2020-2024 as an initial picture of the export performance of the forestry sector:

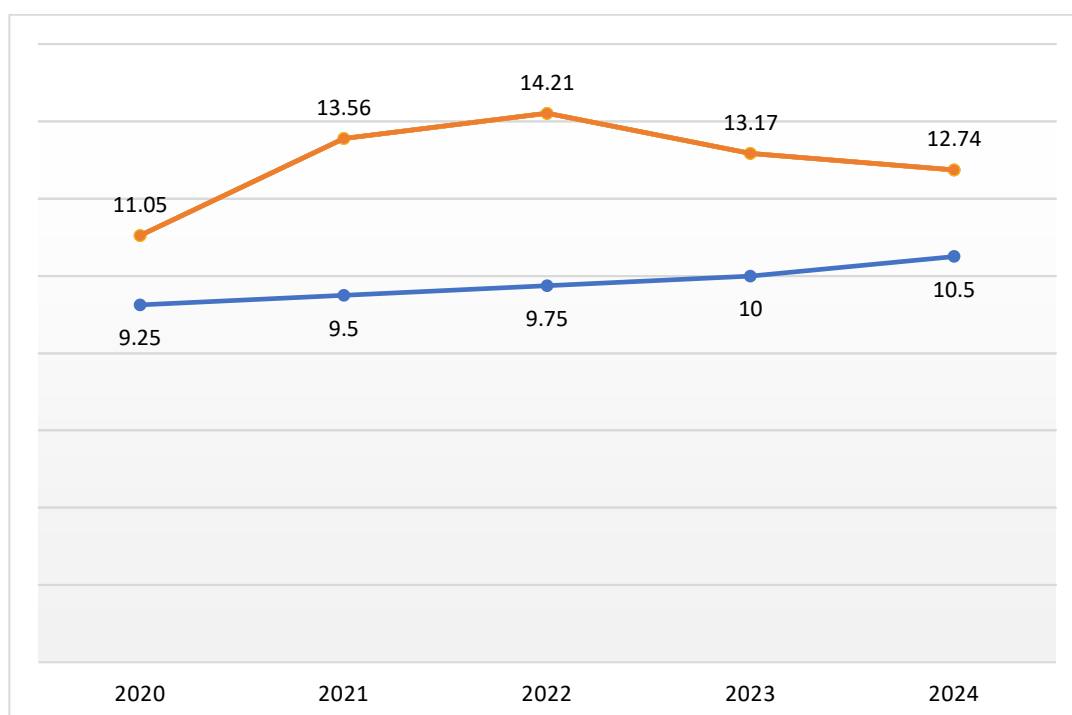


Figure 1.1 Export Value of Forest Products (USD Billion)

Sources: (Directorate General of Sustainable Forest Management, 2024)

The data in Figure 1.1 shows that Indonesia's exports of forest products exceeded the target set for both 2023 and 2024. In 2024, when the export target rose to US\$10.5 billion, the realization dropped slightly to US\$12.74 billion, down US\$0.43 billion compared to the 2023 achievement. Although the export value in 2024 has decreased slightly, the figure still shows good performance in the export of forest products because the export volume of processed wood will increase in 2024 (Directorate General of Sustainable Forest Management, 2024)

The difference between the decrease in export value and the increase in the volume of processed wood experiences different dynamics. To provide a more detailed picture of the movement of export value per type of product over the past five years, following the presentation of data based on the main product categories recorded in the official statistics of the Ministry of Environment and Forestry, this presentation is expected to clarify the pattern of changes in the contribution of each product to the total export value of processed timber from year to year:

Table 1.1 Comparison of Export Value of Processed Wood Products (x Billion USD)

Products	2020	2021	2022	2023	2024
Paper	3,528	3,698	4,314	4,38	4,057
Panel	2,163	3,066	2,095	2,22	2,286
Pulp	2,530	3,243	3,725	3,754	3,569
Wooden Furniture	1,534	2,046	1,980	1,515	1,580
Woodworking	1,075	1,185	0,964	0,905	0,850
Chipwood	0,050	0,099	0,098	0,165	0,179
Crafts	0,086	0,110	0,110	0,094	0,089
Veneer	0,081	0,115	0,115	0,133	0,120
Prefabricated Buildings	0,002	0,002	0,003	0,003	0,004

Sources: (Directorate General of Sustainable Forest Management, 2024)

Based on Table 1.1, the export value of Indonesia's processed wood products in 2024 is still dominated by wood panels and wooden furniture, with a value of around 2,286 billion USD and 1,58 billion USD, respectively. Woodworking products accounted for about 0,85 billion USD, followed by other products such as chipwood, wood crafts, veneers, and prefabricated buildings whose export value was relatively smaller. Although the export value of woodworking is not as large as wooden panels or furniture, this group still has an economic contribution in the export of Indonesian forest products. In 2024, the export value of woodworking will reach around 0,850 billion USD or around 6,67% of the total export value of forest products recorded in Table 1.1, in addition to this contribution, woodworking also represents high value-added downstream processed wood products because it includes various building components and wood joinery made of ready to install wood. One of its derivative products is wood decking which is used for outdoor construction needs (Bashori et al., 2023). Based on Trade Regulation No. 23 of 2023, the derivative of woodworking products with the HS code 4418 is decking. The decking has a thickness of no more than 45 mm and a cross-sectional area of no more than 9000 mm². Decking comes from types of merbau, keruing, and bangkirai wood that function as construction

materials for outdoor applications such as terraces, balconies, gardens, and pedestrian areas (Ministry Trade, 2023).

The European Union is one of the markets with high demand for woodworking products, particularly wood decking (Chemy and Rindayati, 2025). This region not only absorbs value-added processed wood products but also applies strict legality and sustainability standards, thus becoming a promising and challenging market for the export of Indonesian woodworking products (Hanung and Puspajanati, 2022). The importance of the EU market for Indonesia's forestry products is reflected in the development of export value to the region over the past few years, as shown in the figure below:

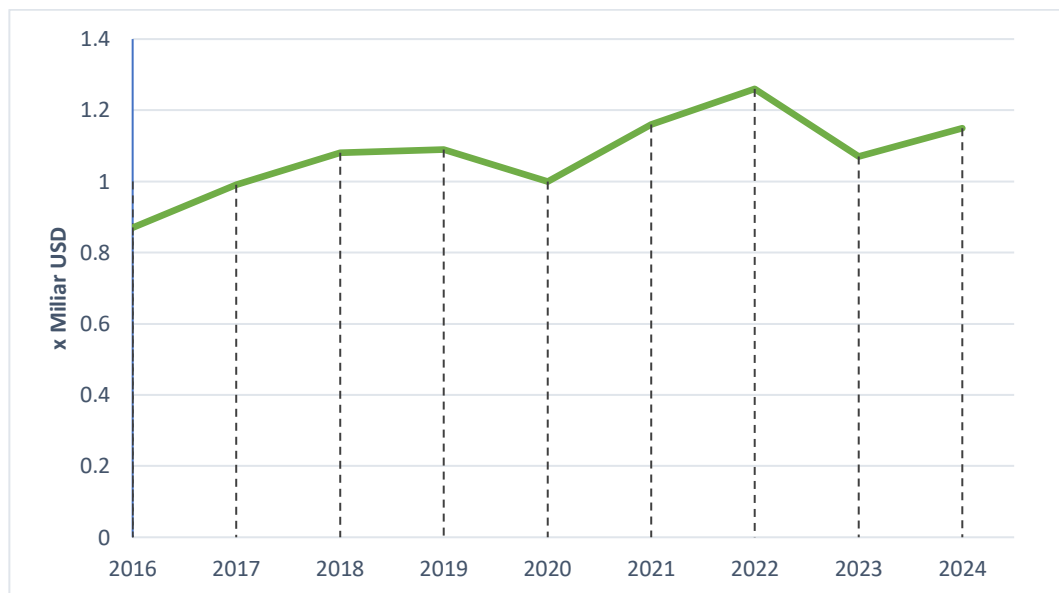


Figure 1.2 Export of Indonesian Forestry Products to the European Union
Sources: (Directorate General of Sustainable Forest Management, 2024)

Based on Figure 1.2, the export value of Indonesian forestry products to the European Union is in the range of 0,87-1,26 billion USD per year throughout 2016-2024. The trend is relatively stable and had reached a peak of around 1,26 billion USD in 2022. This pattern shows that the European Union is a fixed and significant market for Indonesian forestry products. In addition to seeing the European Union as an

export destination region, analysis at the destination country level is needed to show the market concentration of Indonesian processed wood products. This is important because exports of Indonesian HS 4418 products to the European Union are not evenly distributed across all member countries, but tend to be concentrated in several specific destination countries. Therefore, the value and volume of exports of HS 4418 Indonesia to five EU destination countries during the period 2016-2024 are presented in the following table:

Table 1. 2 Export Value and Volume of Wood Decking

Destination Country	Export Value (million USD)	Export Volume (tons)
Netherlands	996,64	564,12
Germany	292,82	343,81
France	258,21	146,57
Italy	194,74	83,19
Belgium	153,47	110,15
Total	1.895,88	1.247,84

Source: (UN Comtrade, 2026)

Based on Table 1.2, Indonesia's wood decking exports under HS code 4418 to the five main European Union destination countries reached a total value of USD 1,895.88 million and a volume of 1,247.84 thousand tons during the 2005–2024 period. The five countries were chosen because they have relatively prominent export values and volumes and show relevant trade linkages with the object of research. The selection of the five countries is based on Indonesia's HS 4418 trade data which shows that the Netherlands, Germany, France, Italy, and Belgium are the main markets for timber decking Indonesia in the European Union region.

The position of the European Union as a destination market for Indonesian processed wood products is inseparable from the market entry policy that applies in the region. One of the main regulations that affect the trade of wood products to the European Union is European Union Timber Regulation (EUTR). Since 2013, the European Union has implemented the European Union Timber Regulation (EUTR),

which prohibits the placing of illegally harvested timber on the EU market. Since 2013, the European Union has implemented the European Union Timber Regulation (EUTR), which prohibits the placing of illegally harvested timber on the EU market (European Parliament, 2010). Illegal logging is regarded as a global problem because it contributes to deforestation, forest degradation, climate change, and weakens sustainable forest governance. The regulation is written in Regulation (EU) No. 995/2010 Of The European Parliament and of the Council. The implementation of the EUTR has direct implications for tropical timber-exporting countries, including Indonesia, as it requires exporters to ensure the legality of timber origin, product traceability, and supply chain compliance from upstream to downstream (Jose, 2021).

The EUTR aims to promote legal and sustainable timber trade. However, its implementation may increase compliance burdens for exporters, particularly through due diligence requirements, documentation, and supply chain traceability. Requirements due diligence and strict compliance standards demand administrative readiness, additional costs, and uneven adjustment capabilities among business actors (Hanung and Puspajanati, 2022). This condition is reflected in the export performance of Indonesian wood products to the European Union. Based on the report Independent Market Monitor (2022), import volume decking the European Union from Indonesia experienced a decrease of about 12% in 2018 compared to the previous year, from about 70,000 tons to 62,000 tons. In line with that, Indonesia's share of total imports decking The European Union's tropical region also fell significantly, from 45% to 36%. In fact, the value of Indonesian wood products by the European Union and the United Kingdom decreased by 24% in 2020 compared to 2019, including decking which has shown a downward trend since before the pandemic. The data indicates that adjustments to the EUTR regulation are one of the important factors affecting the

export dynamics of Indonesian wood products in the EU market. According to Jose (2021) research in that year, the value of gross regional domestic product fell by -2.77%. The decline in Indonesia's economic productivity in 2020 was recorded at 20-25%, affecting Indonesia's export performance. This is in line with the slowdown in global trade activity due to the COVID-19 pandemic (Susilawati et al., 2020).

Regulations such as the EUTR do play a role in suppressing the illegal timber trade, but at the same time they can reduce the volume of tropical timber imports and increase compliance costs for exporters in developing countries (Chemy and Rindayati, 2025). In the context of Indonesia's timber trade to the EU, the EUTR cannot be separated from the framework Forest Law Enforcement, Governance and Trade (FLEGT). Forest Law Enforcement, Governance and Trade (FLEGT) is a European Union policy framework designed to address illegal logging and illegal timber trade by strengthening forest governance, law enforcement, and legal timber trade (Lesniewska and McDermott, 2020). One form of FLEGT implementation is Voluntary Partnership Agreement (VPA), which is a cooperation agreement between the European Union and timber-exporting countries to ensure that timber products entering the EU market come from legal sources (Elistania and Permadi, 2023).

The implementation of VPA as a form of trade relations between Indonesia and the European Union is related to the Legality and Sustainability Verification System (SVLK). SVLK is Indonesia's national timber legality assurance system, which ensures that timber and timber products are sourced legally and can be traced throughout the supply chain (Suryandari et al., 2020). Within the framework of FLEGT-VPA, SVLK is the basis for issuing FLEGT licenses for Indonesian wood products exported to the European Union. Since November 15, 2016, Indonesia has started issuing FLEGT licenses, so Indonesian wood products that have such licenses

are in principle considered to have met the legality provisions in the EUTR (Aziz and Adrisson, 2021). The relationship between SVLK, VPA, and FLEGT licenses shows the existence of an integrated legality mechanism in Indonesia's timber exports to the European Union. The SVLK functions as a domestic legality system, the VPA is a framework for recognizing cooperation between Indonesia and the European Union, while the FLEGT license is a legality document that facilitates access for Indonesian timber products to the EU market. In line with this, Jose (2021) it found that the implementation of EUTR can be addressed by the application of FLEGT licenses in the trade of tropical timber and sawn timber to the European Union.

Although the existence of SVLK and FLEGT licenses provides a strengthening of legality for Indonesian wood decking exports, business actors still face considerable administrative needs, especially in the provision of documents, supply chain tracing, and fulfil men of export procedures (Malau et al., 2022). This condition shows that regulatory compliance alone is not enough and it is also necessary to improve the efficiency of export procedures so that transaction costs and administrative burdens can be reduced. One of the important instruments in facilitating the efficiency of the export process and the management of decking product documents to the European Union is digital trade facilitation (DTF).

Digital Trade Facilitation (DTF) refers to the use of digital technology to simplify, harmonize, and integrate export–import procedures (Ouyang and Park, 2024). DTF covers various steps such as the use of an automated customs system, the implementation of an electronic single window, online licensing and issuance, to the electronic exchange of cross-border paperless trade documents (Duval and Mengjing, 2017). Duval et al., (2018) suggests that the full implementation of digital trade facilitation measures beyond the WTO Trade Facilitation Agreement's basic

commitments has the potential to reduce global trade costs by nearly 14%, while other simulations estimate that a 10% increase in trade digitalization could drive an increase in international trade flows by around 8-13%.

These findings indicate that DTF is not merely an administrative innovation, but also an instrument that can improve export performance by reducing transaction costs and facilitating trade procedures. Therefore, the readiness of DTF implementation is important to observe because it reflects the extent to which a country's trade system is able to support smooth exports, especially on products that require the fulfil men of legality and traceability documents such as wood decking. The increasing demand for compliance and efficiency in international trade makes digital trade facilitation an important factor in supporting export processes.

Indonesia itself is one of the countries with a relatively high level of implementation of digital trade facilitation. The results noted that Indonesia obtained an implementation composite index score of around 88.18% which shows a relatively high implementation achievement. The composite index is used to describe the development of Indonesia's DTF implementation over time, as well as to serve as a descriptive basis for seeing the strengthening of digital trade facilitation in the period after 2015.

Based on Figure 1.3 implementation digital trade facilitation (DTF) Indonesia shows an increasing tendency during the 2015-2024 period. The score increased from 61.29% (2015) and continues to improve until it reaches 88.18% (2024) which is in line with the assessment UN Global Survey on Digital and Sustainable Trade Facilitation (2025). This increase shows the strengthening of the digitization of trade procedures ranging from simplifying processes, accelerating services, to the use of electronic documents which have the potential to reduce transaction costs and increase

the certainty of the export process. The increase in the DTF composite index shows that there is a strengthening of Indonesia's digital trade facilitation from time to time. In this study, these developments are used as a basis to distinguish the phases before and after the strengthening of DTF, so that it can be seen that it is related to the performance of timber exports Decking Indonesia to the European Union market.

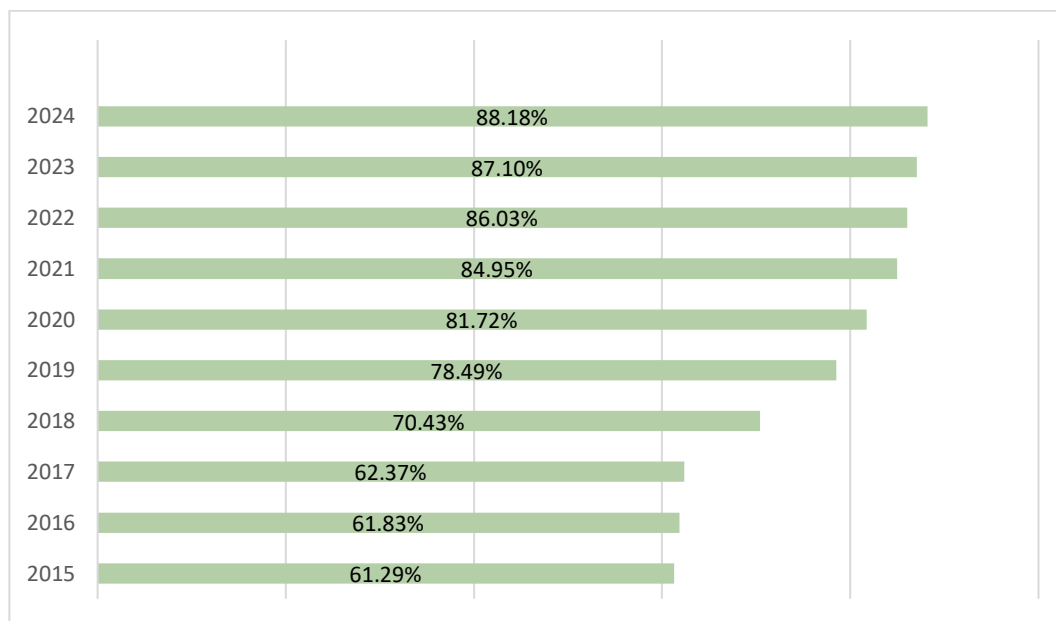


Figure 1.3 DTF Composite Index in Indonesia

Sources: (UN Global Survey on Digital and Sustainable Trade Facilitation, 2025)

In the practice of timber trade to the European Union, strengthening the DTF phase is an important prerequisite so that business actors are better prepared to meet the needs of export administration efficiently. This condition is even more important considering that the woodworking group, which is the parent of decking processed wood products, has shown a slowdown trend in recent years. Based on the data Directorate General of Sustainable Forest Management (2024) that has been the Performance Report, the value of woodworking exports decreased from 0,905 billion USD in 2023 to 0,850 billion USD in 2024, or a decrease of about 6,08%. The decline shows that the woodworking group still faces challenges in maintaining its export performance. This condition is relevant to be studied further considering that wood

decking is one of the important derivatives of the woodworking group and is marketed to the European Union which has strict market access requirements. It is necessary to conduct an analysis to find out whether the implementation of the EUTR regulation has an effect on reducing the export performance of Indonesian wood decking in the European Union (measured through export value), as well as examining the influence of the digital trade facilitation (DTF) phase on the performance of Indonesian wood decking exports in the European Union market.

Based on the conditions described above, the research entitled “The Effect of European Union Timber Regulation and Digital Trade Facilitation on Indonesia’s Wood Decking Exports in the European Union Market” is relevant to be conducted in order to examine the export dynamics of value-added processed wood products amid timber legality requirements and the development of trade digitalization. From an academic perspective, this study is expected to contribute to the existing literature by providing a specific empirical analysis of wood decking commodities in the European Union market, which is characterized by strict legality and traceability standards. From a practical perspective, the findings of this study are expected to serve as consideration for the government, related institutions, and business actors in strengthening export facilitation policies, improving the efficiency of trade administration, and supporting readiness in fulfilling document and supply chain requirements. Therefore, this study is expected to support efforts to improve the competitiveness of Indonesia’s wood decking exports in the European Union market.

1.2. Problem Formulation

Based on the explanation of Indonesia’s wood decking export conditions, the implementation of EUTR regulations, and the role of digital trade facilitation

described in the previous section, the research problems in this study are formulated as follows:

1. How does the European Union Timber Regulation (EUTR) affect Indonesia's wood decking exports to the European Union market?
2. How does the Digital Trade Facilitation (DTF) phase affect Indonesia's wood decking exports to the European Union market?

1.3. Research Objectives

In accordance with the research problems and the background explanation regarding the influence of EUTR regulations and the role of digital trade facilitation, the objectives of this study are formulated as follows:

1. To analyze the effect of the European Union Timber Regulation (EUTR) on Indonesia's wood decking exports to the European Union market.
2. To analyze the effect of the Digital Trade Facilitation (DTF) phase on Indonesia's wood decking exports to the European Union market.

1.4. Research Benefits

Based on the research problems and objectives, this study is expected to provide several benefits as follows:

1. For the researcher, this study is expected to broaden knowledge and understanding of international trade in processed wood products, especially regarding the influence of EUTR and Digital Trade Facilitation on Indonesia's wood decking exports in the European Union market.
2. For government institutions and related agencies, this study is expected to provide useful information as a consideration in formulating policies, particularly those related to strengthening timber legality compliance, export facilitation, and digital trade procedures for Indonesia's wood decking exports.

3. For business actors, this study is expected to provide additional insight into the importance of fulfilling legality requirements, improving export administration, and utilizing digital trade facilitation to support wood decking exports to the European Union market.
4. For future researchers, this study may be used as a reference for further research related to timber legality regulations, digital trade facilitation, and the export performance of processed wood products.