

## ANALYSIS OF THE CONTRIBUTION OF THE PALM OIL COMMODITY PLANTATION SUB-SECTOR IN THE ECONOMY NORTH LABUHAN BATU REGENCY

Suleha Angrayana <sup>1\*</sup>, Tuty Ningsih <sup>2</sup>

Agribusiness Study Program , Faculty of Science and Technology, Indonesian Palm Oil Institute Field <sup>1,2</sup>.

E-mail: [anggrayanasoleha@gmail.com](mailto:anggrayanasoleha@gmail.com) <sup>2</sup>, [tuty\\_ningsih@itsi.ac.id](mailto:tuty_ningsih@itsi.ac.id) <sup>2</sup>

Received: 02/06/2026 | Revised : 11/06/2026 | Accepted: 23/06/2026 | Published :08/07/2026

### Abstract

This study aims to analyze the contribution of the smallholder oil palm plantation subsector to the economy of North Labuhanbatu Regency. The analysis was conducted on the development of smallholder oil palm area, production, and productivity, the magnitude of its contribution to the regional economy, and the status of commodity superiority using the Location Quotient (LQ) and Dynamic Location Quotient (DLQ) methods. The study used a quantitative descriptive method with secondary data for the 2014–2024 period obtained from the Central Statistics Agency, the Plantation Service, and other relevant sources. The results showed that the area of smallholder plantations increased from 64,916 ha to 79,080 ha, production increased from 768,888 tons to 1,381,330 tons, and productivity increased from 11.84 tons/ha to 17.47 tons/ha during the study period. The average contribution of smallholder oil palm plantations to the agriculture, forestry, and fisheries subsector reached 29.33%, while its contribution to the Gross Regional Domestic Product (GRDP) of North Labuhanbatu Regency was 12.00%. The results of the LQ and DLQ analyses indicate that smallholder oil palm plantations are a basic commodity with comparative advantages and good development prospects. These findings indicate that smallholder oil palm plantations have a strategic role in supporting the economic growth of North Labuhanbatu Regency.

**Keywords:** smallholder oil palm, economic contribution, GRDP, Location Quotient , Dynamic Location Quotient .

### INTRODUCTION

Oil palm is a plantation commodity that plays a vital role in regional economies, particularly in areas still reliant on agriculture. This commodity produces fresh fruit bunches (FFB), the primary raw material for the palm oil industry and various derivative products. In addition to being cultivated by companies, oil palm is also widely cultivated on smallholder plantations, contributing to increased incomes in rural communities (Hariyanti et al., 2023). Smallholder plantations play a strategic role because they directly impact farmers' income, employment, and local economic activities, such as fresh fruit bunches (FFB) trade and transportation services. Therefore, the development of smallholder plantations is a crucial factor in supporting regional economic development (Dharmawan et al., 2020).

North Labuhanbatu Regency is one of the centers of oil palm plantations in North Sumatra Province, dominated by smallholder plantations. The development of smallholder oil palm area, production, and productivity needs to be analyzed to determine its contribution to the regional economy. This measurement can be done through the Gross Regional Domestic Product (GRDP) indicator, contribution analysis, and the Location Quotient (LQ) and Dynamic Location Quotient (DLQ) approaches to assess commodity superiority. The results of this study are expected to provide information on the economic role and development potential of smallholder oil palm as a leading commodity in North Labuhanbatu Regency .

## **LITERATURE REVIEW**

### **Palm Oil Commodity**

Oil palm (*Elaeis guineensis*) is a tropical plantation crop that is one of Indonesia's leading commodities. This plant produces fresh fruit bunches (FFB) as the main raw material for crude palm oil (CPO) and palm kernel oil (PKO). Ningsih et al. (2020) explain that oil palm production is influenced by rainfall, climate, topography, temperature, fertilizer dosage and techniques, herbicide use, and other technical factors. Thus, the success of oil palm development is determined not only by the area, but also by the quality of plantation management and the environmental conditions where the plants are cultivated. Oil palms have a productive lifespan of around 25–30 years, a strong root system, and high productivity when managed with good cultivation techniques. These characteristics make oil palm a commodity with high economic value and a crucial role in supporting the development of the national and regional plantation sectors (Hariyanti et al., 2023).

### **Palm Oil Derivative Products and Benefits**

In addition to producing Crude Palm Oil (CPO) and Palm Oil Palm Oil (PKO), palm oil produces various derivative products used in the food, cosmetics, pharmaceuticals, oleochemicals, and renewable energy industries. Palm oil is used as a raw material for cooking oil, margarine, and various food products, while palm kernel oil is widely used in the soap, detergent, and cosmetics industries. Palm oil processing waste, such as empty fruit bunches, fiber, and shells, can also be used as organic fertilizer and biomass fuel, increasing resource efficiency and providing added economic value to the plantation industry (Ministry of Finance of the Republic of Indonesia, 2024).

### **The Role of Palm Oil in the Indonesian Economy**

Palm oil is a strategic commodity that significantly contributes to the Indonesian economy through increased non-oil and gas exports, job creation, and the provision of industrial raw materials. At the regional level, this commodity is a key driver of economic activity, particularly in plantation-based areas such as North Labuhanbatu Regency. High palm oil production drives the development of trade, processing industries, and transportation services, as well as increasing community incomes, thus strengthening regional economic growth (Ministry of Finance of the Republic of Indonesia, 2024; Statistics Indonesia (BPS) of North Labuhanbatu Regency, 2023).

### **People's Plantations**

Smallholder plantations are plantation businesses managed by communities or farming households on a relatively smaller scale than large-scale plantations. These businesses are managed independently, utilizing family and local labor, and supported by the farmers' ability to provide capital, production facilities, and marketing access. In this study, smallholder plantations are limited to oil palm cultivation businesses owned and managed by farmers in North Labuhanbatu Regency because they have different economic characteristics and productivity than large-scale plantations (Arwan et al., 2023).

### **Characteristics of Smallholder Oil Palm Plantations**

Smallholder oil palm plantations generally occupy relatively small land areas, with productivity levels influenced by seed quality, plant age, fertilization, maintenance, and the farmer's ability to apply cultivation technology. The harvest is typically marketed as fresh fruit bunches through collectors, cooperatives, or directly to palm oil mills. Despite facing limitations in capital and technology, smallholder plantations continue to make a significant contribution to national palm oil production and serve as a primary source of income for rural communities (Hendrawan, 2024).

### **The Role of Smallholder Plantations in the Regional Economy**

Smallholder plantations play a crucial role in driving regional economic development by increasing farmers' incomes, absorbing labor, and driving various supporting economic activities, such as crop trade, transportation, and the provision of production facilities. The existence of smallholder plantations also creates a multiplier effect that supports the development of micro-enterprises and increases economic turnover in rural areas. Therefore, strengthening the smallholder plantation sector is one strategy for improving community welfare and regional economic growth (Dharmawan et al., 2020).

**METHOD**

This research was conducted in North Labuhanbatu Regency, North Sumatra Province, from February to June 2026 using a quantitative descriptive approach. The study utilized secondary time series data for the period 2014–2024 obtained from the Central Statistics Agency (BPS) of North Labuhanbatu Regency, the BPS of North Sumatra Province, the Plantation Office, and various relevant scientific publications. The data analyzed included area, production, productivity, fresh fruit bunch (FFB) price, production value, Gross Regional Domestic Product (GRDP), and other supporting data related to the smallholder oil palm plantation subsector. The research variables consisted of area, production, productivity, FFB price, production value, contribution to GRDP, and Location Quotient (LQ) and Dynamic Location Quotient (DLQ) indicators to measure the advantages and development prospects of smallholder oil palm commodities (Sugiyono, 2022). Data analysis was conducted quantitatively and descriptively to illustrate the development of area, production, productivity, production value, and the contribution of smallholder oil palm to the regional economy in the form of tables, graphs, and descriptive descriptions. Productivity was calculated by comparing total production with the area of mature plants, while production value was obtained by multiplying the production quantity by the average price of fresh fruit bunches (FFB) (Harahap et al., 2023). Furthermore, the economic contribution was calculated based on the percentage of the GRDP value of the oil palm commodity to the total GRDP of the plantation subsector (Dewi et al., 2021). The determination of the status of basic commodities was carried out using the Location Quotient (LQ) analysis, while the development prospects of commodities were analyzed using the Dynamic Location Quotient (DLQ). An LQ value > 1 indicates that oil palm is a basic commodity, while a DLQ > 1 indicates that the commodity has better growth prospects than the reference region (Simanullang, 2023; Isah et al., 2023).

**RESULT AND DISCUSSION**

**Development of Area, Production, and Productivity of Smallholder Oil Palm Plantations**

The development of area, production, and productivity are the main indicators in assessing the performance of the smallholder oil palm plantation subsector. These three indicators reflect the ability of the smallholder plantation sector to increase production capacity and provide an overview of land use efficiency during the study period. Analysis of changes in area, production, and productivity is necessary to determine the development trends of smallholder oil palm plantations in North Labuhanbatu Regency as a basis for assessing their contribution to the regional economy. Data on the development of these three indicators during the period 2014–2024 are presented in Table 1.

**Table 1. Development of Area, Production, and Productivity of Smallholder Oil Palm Plantations in North Labuhanbatu Regency 2014–2024**

Year	Area (Ha)	Area Growth (%)	Production (Tons)	Production Growth (%)	Productivity (Ton/Ha)	Productivity Growth (%)
2014	64,916	–	768,888.00	–	11.84	–
2015	68,238	5.12	862,727.27	12.2	12.64	7
2016	64,983	0.1	860,045.45	11.86	13.23	12
2017	71,489	10.13	924,187.50	20.2	12.93	9
2018	73,355	13	1,080,038.20	40.47	14.72	24
2019	72,113	11.09	1,083,036.36	40.86	15.02	27
2020	72,137	11.12	1,117,481.82	45.34	15.49	31
2021	72,184	11.2	1,163,022.73	51.26	16.11	36
2022	77,020	18.65	1,220,150.00	58.69	15.84	34
2023	78,530	20.97	1,313,010.00	70.77	16.72	41
2024	79,080	21.82	1,381,330.00	79.65	17.47	47

Based on Table 1, the development of smallholder oil palm plantations in North Labuhanbatu Regency during the 2014–2024 period shows an upward trend. The area of smallholder plantations increased from 64,916 ha in 2014 to 79,080 ha in 2024, representing a 21.82% increase compared to the base year. Although there was a slight decrease in area in 2016 and 2019 compared to the previous year, overall, the development of land area shows a positive trend, indicating the expansion and optimization of land use for smallholder plantations. The increase in area is followed by an increase in smallholder oil palm production. Production increased from 768,888 tons in 2014 to 1,381,330 tons in 2024, representing a 79.65% increase over the study period. The relatively higher increase in production compared to the growth in area indicates that the increase in production is influenced not

**ANALYSIS OF THE CONTRIBUTION OF THE PALM OIL COMMODITY PLANTATION SUB-SECTOR IN THE ECONOMY NORTH LABUHAN BATU REGENCY**

Suleha Angrayana et al

only by the increase in land area but also by the increase in the land's ability to produce fresh fruit bunches (FFB). This trend indicates that the management of smallholder plantations is improving, thus enabling them to produce greater output. Smallholder oil palm productivity also increased from 11.84 tons/ha in 2014 to 17.47 tons/ha in 2024, representing an increase of approximately 47%. Although there was a slight decrease in productivity in 2017 and 2022 compared to the previous year, overall productivity showed an upward trend. This indicates improvements in cultivation management, the use of better seeds, and increasingly optimal plant maintenance, resulting in continued increases in yield per unit area. Overall, the increase in area, production, and productivity indicates that the smallholder oil palm plantation subsector in North Labuhanbatu Regency developed positively during the study period. This development indicates that smallholder oil palm plays an increasingly important role in supporting community economic activities and has the potential to make a greater contribution to the regional economy. This is supported by research (Ningsih et al., 2023), which states that palm oil production is influenced by rainfall, plant age, fertilizer, herbicides, and labor. The results of their study indicate that these factors simultaneously have a significant impact on palm oil production. Therefore, the decline in palm oil productivity is not solely due to farmer capacity but also to weather factors and cultivation techniques.

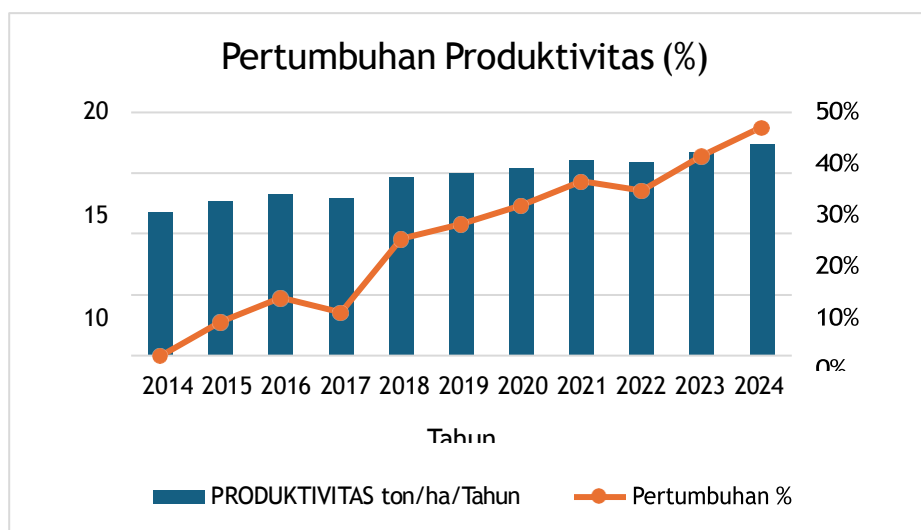
**Results of Calculation of Production Value of Smallholder Oil Palm Plantations in North Labuhanbatu Regency**

**Development of Fresh Fruit Bunch (FFB) Prices for Oil Palm**

The price of fresh fruit bunches (FFB) is a crucial factor in determining the value of smallholder oil palm production. Production value is determined not only by production volume but also by the selling price of FFB in the same year. When FFB prices rise, production value tends to increase. Conversely, when FFB prices decline, production value can decrease even if production volume increases.

**Table 2. Development of Palm Oil Fresh Fruit Bunches (FFB) Prices 2014–2024**

Year	Average Price of Fresh Fruit Bunches (Rp)	Growth against Base Year 2014 (%)
2014	2,050.00	0.00%
2015	1,500.00	-26.83%
2016	2,026.40	-1.15%
2017	2,142.53	4.51%
2018	1,786.18	-12.87%
2019	1,740.00	-15.12%
2020	1,452.50	-29.15%
2021	1,981.25	-3.35%
2022	2,150.42	4.90%
2023	1,919.86	-6.35%
2024	2,232.22	8.89%



The price of fresh fruit bunches (FFB) of smallholder oil palm in North Labuhanbatu Regency during the 2014–2024 period showed a fluctuating pattern. The highest price was recorded in 2024 at IDR 2,232.22/kg, while the lowest price occurred in 2020 at IDR 1,452.50/kg. These fluctuations indicate that FFB prices are influenced by domestic and international market dynamics, thus not experiencing linear changes. Economically, FFB price changes are influenced by supply and demand mechanisms. Increased demand or limited supply tends to drive up prices, while abundant supply not matched by increased demand will cause prices to decline (OpenStax, 2022). Furthermore, FFB prices at the farmer level are also influenced by price transmission from the crude palm oil (CPO) market, so changes in CPO prices are not always received proportionally by farmers due to marketing costs, FFB quality, and supply chain structure (FAO, 2012).

The price decline in 2015–2020 can be attributed to weakening global CPO prices, exacerbated by the impact of the COVID-19 pandemic on trade activity and market demand. Conversely, FFB prices recovered in 2021–2024 due to an improving global economy, increasing demand for vegetable oils, the implementation of mandatory biodiesel policies, and disruptions to global vegetable oil supplies due to geopolitical conflicts (World Bank, 2021; Glauber et al., 2022). Government policies, including regulations on FFB trade and CPO exports, also influence price formation at the farm level (Ministry of Agriculture, 2024; Reuters, 2022). Overall, FFB price fluctuations during the study period were influenced by a combination of external and internal factors, including global CPO price developments, market supply and demand, the rupiah exchange rate, government policies, and the condition of the marketing chain at the farmer level. However, this study did not statistically analyze the influence of these factors; therefore, the discussion is used to explain the dynamics of FFB prices that occurred during the study period.

### Calculation of the Production Value of Smallholder Palm Oil

Production value is calculated by multiplying smallholder oil palm production by the average price of fresh fruit bunches (FFB) for the same year. Based on this formula, production value is influenced by two main components: production volume and price. If production increases but prices fall significantly, production value may still decline. Conversely, if production and prices both increase, production value will increase even further. Production value is calculated by multiplying the total production by the average price of fresh fruit bunches (FFB) in the same year. This calculation is used to assess changes in the economic value of smallholder oil palm plantations from 2014 to 2024, as presented in Table 3.

**Table 3. Calculation of palm oil production value in 2014–2024 compared to the start of the research year (2014)**

NO	YEAR	LABURA PRODUCTION (Tons)	AVERAGE PRICE OF FFB / 1 Ton (Rp)	TOTAL PRODUCTION PRICE (Rp)	GROWTH AGAINST BASE YEAR 2014 (%)
1	2014	768,888.00	2,050,000.00	1,576,220,400,000.00	0.00%
2	2015	862,727.27	1,500,000.00	1,294,090,905,000.00	-17.90%
3	2016	860,045.45	2,026,400.00	1,742,796,099,880.00	10.57%
4	2017	924,187.50	2,142,530.00	1,980,099,444,375.00	25.62%
5	2018	1,080,038.20	1,786,180.00	1,929,142,632,076.00	22.39%
6	2019	1,083,036.36	1,740,000.00	1,884,483,266,400.00	19.56%
7	2020	1,117,481.82	1,452,500.00	1,623,142,343,550.00	2.98%
8	2021	1,163,022.73	1,981,250.00	2,304,238,783,812.50	46.19%
9	2022	1,220,150.00	2,150,420.00	2,623,834,963,000.00	66.46%
10	2023	1,313,010.00	1,919,860.00	2,520,795,378,600.00	59.93%
11	2024	1,381,330.00	2,232,220.00	3,083,432,452,600.00	95.62%

Based on Table 3, the value of smallholder oil palm production is the product of production volume and the price of fresh fruit bunches (FFB), and is therefore influenced by both components. Although production tended to increase during the study period, production value did not consistently increase due to fluctuations in FFB prices. This was evident in 2015 and 2023, when production increases were not accompanied by increases in production value due to declining FFB prices. Conversely, increases in FFB prices in 2021, 2022, and 2024 drove increases in production value. This indicates that FFB prices play a significant role in determining the economic

value of smallholder oil palm plantations. Furthermore, price dynamics are influenced by developments in global CPO prices, the rupiah exchange rate, and government policies related to palm oil trade (World Bank, 2024).

**Results of Calculation of the Economic Contribution of Smallholder Oil Palm Plantations to the Economy of North Labuhanbatu Regency**

**Contribution of Smallholder Oil Palm to the Agriculture, Forestry, and Fisheries Subsector**

The contribution to the agriculture, forestry and fisheries subsector is calculated by comparing the value of smallholder oil palm production with the value of the comparison subsector available in the data.

The contribution in this section is calculated by comparing the value of smallholder oil palm production to the value of the agriculture, forestry, and fisheries subsector. This calculation is used to assess the significant role of smallholder oil palm in these subsectors from 2014 to 2024, as presented in Table 4.

**Table 4. Contribution of Smallholder Oil Palm to the Agriculture, Forestry, and Fisheries Subsector 2014–2024**

YEAR	PRODUCTION VALUE (Rp)	TOTAL PRODUCTION PRICE (Rp)	CONTRIBUTION (%)
2014	5,418,750,000,000.00	1,576,220,400,000.00	29.09
2015	5,682,730,000,000.00	1,294,090,905,000.00	22.77
2016	5,952,050,000,000.00	1,742,796,099,880.00	29.28
2017	6,211,990,000,000.00	1,980,099,444,375.00	31.88
2018	6,530,850,000,000.00	1,929,142,632,076.00	29.54
2019	6,893,390,000,000.00	1,884,483,266,400.00	27.34
2020	7,070,940,000,000.00	1,623,142,343,550.00	22.96
2021	7,455,700,000,000.00	2,304,238,783,812.50	30.91
2022	7,949,210,000,000.00	2,623,834,963,000.00	33.01
2023	8,293,850,000,000.00	2,520,795,378,600.00	30.39
2024	8,680,610,000,000.00	3,083,432,452,600.00	35.52
	<b>Average</b>		<b>29.33%</b>

Based on Table 4, the contribution of smallholder oil palm to the Agriculture, Forestry, and Fisheries subsector fluctuated during the study period, with the lowest contribution of 22.77% in 2015 and the highest of 35.52% in 2024. The decrease in contribution in 2015 was influenced by the decline in FFB prices which caused a decrease in production value, while the increase in contribution in 2024 was driven by the increase in FFB prices and the increase in production value. In addition to price factors, changes in contribution are also influenced by the dynamics of the palm oil market, the rupiah exchange rate, and government policies in supporting trade and the development of the palm oil industry.

**Contribution of Smallholder Palm Oil to the Gross Regional Domestic Product of North Labuhanbatu Regency**

The contribution to the GRDP of North Labuhanbatu Regency is calculated by comparing the value of smallholder oil palm production and the regency's GRDP. The calculation results show that the contribution of smallholder oil palm to GRDP ranges from 9.17% to 15.02%.

**Table 6. Contribution of Smallholder Palm Oil to the GRDP of North Labuhanbatu Regency 2014–2024**

YEAR	DISTRICT GRDP (Rp)	TOTAL PRODUCTION PRICE (Rp)	CONTRIBUTION (%)
2014	13,414,530,000,000.00	1,576,220,400,000.00	11.75%
2015	14,109,350,000,000.00	1,294,090,905,000.00	9.17%
2016	14,843,990,000,000.00	1,742,796,099,880.00	11.74%
2017	15,602,050,000,000.00	1,980,099,444,375.00	12.69%
2018	16,413,330,000,000.00	1,929,142,632,076.00	11.75%
2019	17,259,190,000,000.00	1,884,483,266,400.00	10.92%
2020	17,306,590,000,000.00	1,623,142,343,550.00	9.38%
2021	17,969,260,000,000.00	2,304,238,783,812.50	12.82%
2022	18,799,030,000,000.00	2,623,834,963,000.00	13.96%
2023	19,693,280,000,000.00	2,520,795,378,600.00	12.80%
2024	20,527,760,000,000.00	3,083,432,452,600.00	15.02%
<b>Average</b>			<b>12%</b>

Table 6 shows that the contribution of smallholder oil palm to North Labuhanbatu Regency's GRDP ranges from 9.17% to 15.02%. The lowest contribution occurred in 2015, while the highest contribution occurred in 2024. Contributions declined in 2015 due to a decline in the value of smallholder palm oil production, while regional GRDP continued to increase. This decline also occurred in 2020 and 2023. In 2020, FFB prices reached their lowest point amid the COVID-19 pandemic. In 2023, FFB prices declined after the price surge in 2021–2022 began to reverse. The highest contribution in 2024 can be attributed to rising FFB prices, the weakening rupiah, biodiesel demand, and FFB purchasing policies. However, these contribution results should still be understood as an approximation .

#### **Development of Smallholder Palm Oil Contributions 2014–2024**

The development of smallholder oil palm's contribution to GRDP shows a fluctuating pattern. This change is influenced by the value of smallholder oil palm production as the numerator and GRDP growth as the comparator. The decline in contribution in 2015, 2020, and 2023 occurred when production value decreased, while the GRDP of North Labuhanbatu Regency continued to increase. This indicates that the contribution of smallholder oil palm is influenced not only by production volume, but also by fluctuations in FFB prices and overall regional economic development.

#### **Results of the Analysis of Location Quotient (LQ) and Dynamic Location Quotient (DLQ) of Oil Palm Smallholder Plantations on the Production Value of North Labuhanbatu Regency**

##### **Location Quotient (LQ) Value Calculation Results**

Location Quotient analysis was used to determine whether smallholder oil palm in North Labuhanbatu Regency plays a greater relative role than the reference region, North Sumatra Province. An LQ value above 1 indicates a basic commodity, while a value below 1 indicates a non-basic commodity (Dewi CP, 2021).

**Table 7. Results of Location Quotient (LQ) Value Calculation**

YEAR	LQ	INFORMATION
2014	0.982	NO BASIS
2015	0.988	NO BASIS
2016	0.984	NO BASIS
2017	0.995	NO BASIS
2018	1,003	BASE
2019	1,002	BASE
2020	1,002	BASE
2021	1,002	BASE
2022	1,002	BASE
2023	1,003	BASE
2024	1,004	BASE

Location Quotient (LQ) analysis was used to identify whether smallholder oil palm is a basic or non-basic commodity within the plantation subsector structure in North Labuhanbatu Regency. The LQ value reflects the relative superiority of the commodity compared to the reference region. The results of the LQ calculation for the 2014–2024 period are presented in Table 5 to illustrate the changing position and role of smallholder oil palm in the regional economy.

**The results of the calculation value of the Dynamic Location Quotation (DLQ ) analysis**

Dynamic Location Quotient (DLQ) analysis according to Yuwono in (Isah et al., 2023) is a development of LQ analysis which is used to cover the limitations of the LQ method.

**Table 8. DLQ Score Results for 2014-2024**

YEAR	DLQ	INFORMATION
2014		
2015	0.992	Relatively slower growth
2016	1,005	Stay the base
2017	0.987	Relatively slower growth
2018	0.989	Relatively slower growth
2019	1,000	Stay the base
2020	1,000	Stay the base
2021	1,000	Stay the base
2022	1,000	Stay the base
2023	0.999	Relatively slower growth
2024	1,000	Stay the base

Dynamic Location Quotient (DLQ) analysis is used to assess the dynamics of smallholder oil palm development over time. A DLQ value > 1 indicates better development prospects compared to the reference area, while a DLQ < 1 indicates weaker prospects. The analysis results show that the DLQ value fluctuates with the highest value in 2016 (1.005) and the lowest in 2017 (0.987). In general, the average DLQ for the 2015–2024 period is 0.997, approaching 1. Thus, it can be concluded that the development of smallholder oil palm is relatively stable, but has not yet demonstrated strong dynamic advantages and still requires increased productivity and production stability.

**Results of the Analysis of Location Quotient and Dynamic Location Quotient of Oil Palm Smallholder Plantations on the GRDP of North Labuhanbatu Regency**

**Location Quotient (LQ) Calculation Results**

The Location Quotient (LQ) value in this section is used to assess the position of smallholder oil palm plantations in relation to the Gross Domestic Product (GRDP) of North Labuhanbatu Regency. This analysis compares the role of smallholder oil palm plantations in the regional economy with that of comparison regions, thus determining whether the commodity is a basic or non-basic sector. The results of the LQ calculation are the basis for assessing the level of relative superiority of smallholder oil palm during 2014 to 2024. If the LQ value is more than 1, then smallholder oil palm has a greater role than the reference area.

**Table 9. LQ Value of Smallholder Oil Palm in Labuhanbatu Regency North 2014–2024**

Year	LQ	Information
2014	1,209	BASE
2015	1,319	BASE
2016	1,162	BASE
2017	1,188	BASE
2018	1,252	BASE
2019	1,207	BASE
2020	1,196	BASE
2021	1,188	BASE
2022	1,183	BASE
2023	1,249	BASE
2024	1.29	BASE

Based on Table 9, the Location Quotient (LQ) value for the oil palm smallholder plantation subsector in North Labuhanbatu Regency during the 2014–2024 period was consistently above one, ranging from 1.162–1.319. This indicates that this subsector is consistently a basic sector with a comparative advantage and plays a significant role in the regional economy. The highest LQ value occurred in 2015 (1.319) and the lowest in 2016 (1.162), but all values remained in the basic sector category. After remaining relatively stable until 2022, the LQ value increased again in 2023 (1.249) and 2024 (1.290), indicating the increasingly strong contribution of the oil palm smallholder plantation subsector to the regional economy. In line with the opinion of Mudrajad Kuncoro (2021), an LQ value > 1 indicates that a sector is a basic sector capable of meeting regional needs while generating a surplus for marketing outside the region. Thus, the smallholder oil palm plantation subsector remains a leading sector that needs to be continuously supported through increased productivity, product quality, and downstream industry development to optimize its contribution to the regional economy.

**Dynamic Location Quotient (DLQ) Calculation Results**

**Table 10. DLQ Value Results for 2014-2024**

Year	DLQ	Information
2014		
2015	1,092	Stay the base
2016	0.88	Relatively slower growth
2017	1,023	Stay the base
2018	1,054	Stay the base
2019	0.964	Relatively slower growth
2020	0.991	Relatively slower growth
2021	0.994	Relatively slower growth
2022	0.996	Relatively slower growth
2023	1,056	Stay the base
2024	1,033	Stay the base

Based on Table 10, the Dynamic Location Quotient (DLQ) value of the oil palm smallholder plantation subsector in North Labuhanbatu Regency during the 2015–2024 period fluctuated in the range of 0.880–1.092. The DLQ value was above one in 2015, 2017, 2018, 2023, and 2024, indicating that this subsector has the prospect of remaining a base sector. Conversely, the DLQ value was below one in 2016 and the 2019–2022 period, indicating its growth rate was relatively slower than that of the comparison region. These fluctuations are influenced by changes in production, productivity, area, Fresh Fruit Bunch (FFB) prices, as well as external factors such as CPO prices, weather conditions, government policies, and market demand. According to Mudrajad Kuncoro (2021), a DLQ value > 1 indicates a sector has the potential to maintain its status as a basic sector, while a DLQ < 1 indicates a need for increased competitiveness. Despite fluctuations, the increase in the DLQ value in 2023 and

2024 indicates that the smallholder oil palm plantation subsector still has good prospects as a driver of the North Labuhanbatu Regency economy.

## CONCLUSION

Based on the research results, smallholder oil palm plantations in North Labuhanbatu Regency showed positive development during the 2014–2024 period, marked by an increase in area, production, and productivity despite fluctuations in several years. Smallholder oil palm also makes a significant contribution to the regional economy with an average contribution of **29.33%** to the agriculture, forestry, and fisheries subsector and **12.00%** to the GRDP of North Labuhanbatu Regency. In addition, the results of the Location Quotient (LQ) and Dynamic Location Quotient (DLQ) analysis indicate that smallholder oil palm is a basic commodity that has relative advantages and good development prospects in supporting the regional economy.

## REFERENCES

- Arwan, A., Tinaprilla, N., & B. B. (2023). Faktor-faktor yang memengaruhi pilihan saluran pemasaran tandan buah segar pada perkebunan rakyat.
- Badan Pengelola Dana Perkebunan Kelapa Sawit. (2024). Mandatori biodiesel untungkan rakyat Indonesia.
- Badan Pusat Statistik Kabupaten Labuhanbatu Utara. (2023). Kecamatan NA IX-X dalam angka 2023. BPS Kabupaten Labuhanbatu Utara.
- Badan Pusat Statistik Kabupaten Labuhanbatu Utara. (2026). Produk Domestik Regional Bruto Kabupaten Labuhanbatu Utara 2024. <https://labuhanbatuutarakab.bps.go.id/id/statistics-table/2/NDYjMg==/pdrb-kabupaten-labuhanbatu-utara-atas-harga-konstan--miliar-rupiah-.html>
- Badan Pusat Statistik Kota Surakarta. (2021). Produk Domestik Regional Bruto Kota Surakarta menurut pengeluaran 2016–2020. <https://surakartakota.bps.go.id/publication/2019/08/16/18c08be6770cc96c4497cbec/kota-surakarta-dalam-angka-2019.html>
- Catri Jintar. (2023). Ekonomi pembangunan. CV Azka Pustaka. <https://books.google.co.id/books?id=QirKEAAAQBAJ>
- Christina, B., & Azhar, D. (2024). Shrinking global palm oil supplies, strong biodiesel demand to boost prices. Reuters.
- Dewi, C. P., Antara, M., & Damayanti, L. (2021). Analisis kontribusi subsektor perkebunan komoditi. *Jurnal*, 9(1), 137–146.
- Dharmawan, A. H., Mardiyansih, D. I., Komarudin, H., Ghazoul, J., Pacheco, P., & Rahmadian, F. (2020). Dynamics of rural economy: A socio-economic understanding of oil palm expansion and landscape changes in East Kalimantan, Indonesia.
- Food and Agriculture Organization. (2012). Price transmission in agricultural markets. FAO.
- Glauber, J., Laborde, D., & Mamun, A. (2022). The impact of the Ukraine crisis on the global vegetable oil market. International Food Policy Research Institute.
- Harahap, P. F., Hadi, S., & R. (2023). Dampak kenaikan harga pupuk terhadap produktivitas kelapa sawit Kabupaten Pelalawan.
- Hariyanti, F., Syahza, A., & Zulkarnaen, N. (2023). Economic transformation based on leading commodities through sustainable development of the oil palm industry.
- Hendrawan, D., Chrisendo, D., & M. O. (2024). Strengthening oil palm smallholder farmers' resilience to future industrial challenges.
- Isah, S., Yamani, Z., Nopembereni, E. D., & Maleha, M. (2023). Analisis potensi dan kontribusi subsektor pertanian terhadap pertumbuhan ekonomi daerah di Provinsi Kalimantan Tengah. *Journal Socio Economics Agricultural*, 18(1), 15–29. <https://doi.org/10.52850/jsea.v18i1.10648>
- Kaswanto, R. L., Aurora, R. M., Yusri, D., Sjaf, S., & Barus, S. (2021). Kesesuaian lahan untuk komoditas unggulan pertanian di Kabupaten Labuhanbatu Utara. *Analisis Kebijakan Pertanian*.
- Kementerian Energi dan Sumber Daya Mineral Republik Indonesia. (2019). Pertama di dunia, Indonesia terapkan biodiesel 30 persen (B30).
- Kementerian Keuangan Republik Indonesia. (2024). Industri kelapa sawit berperan strategis bagi perekonomian Indonesia. <https://www.kemenkeu.go.id/informasi-publik/publikasi/berita-utama/Peran-Strategis-Industri-Kelapa-Sawit>

# ANALYSIS OF THE CONTRIBUTION OF THE PALM OIL COMMODITY PLANTATION SUB-SECTOR IN THE ECONOMY NORTH LABUHAN BATU REGENCY

Suleha Angrayana et al

---

- Kementerian Pertanian Republik Indonesia. (2022). Statistik perkebunan Indonesia: Kelapa sawit 2022. Direktorat Jenderal Perkebunan.
- Kementerian Pertanian Republik Indonesia. (2024). Peraturan Menteri Pertanian Nomor 13 Tahun 2024 tentang pembelian tandan buah segar kelapa sawit produksi pekebun mitra.
- Merangin. (2018). Dinas Perkebunan Lampung 2022. Galang Tanjung, 6(2504), 1–9.
- Ningsih, T., Sitompul, I. O. Y., & Siahaan, S. D. (2023). Analisa Faktor-Faktor yang Mempengaruhi Produksi Kelapa Sawit di Kebun Tanah Raja. *Jurnal Pertanian*.
- Ningsih, T., Maharany, R., & Fu'adh, S. K. (2020). Analisa produktivitas kelapa sawit di dataran tinggi Kebun Bah Birong Ulu - PT. Perkebunan Nusantara IV. *Jurnal Agrium*, 17(1), 45-50.
- OpenStax. (2022). Principles of economics 3e. OpenStax.
- PASPI. (2014). Mitos vs fakta industri minyak sawit Indonesia. Palm Oil Agribusiness Strategic Policy Institute.
- Pitriani, P., Edison, H., & Napitupulu, D. (2019). Analisis kontribusi perkebunan kelapa sawit terhadap pembangunan perekonomian di Kabupaten Bungo. *JAS (Jurnal Agri Sains)*, 3(2), 1–12. <https://doi.org/10.36355/jas.v3i2.298>
- Pemerintah Kabupaten Labuhanbatu Utara. (2026). Profil Kabupaten Labuhanbatu Utara. <http://labura.go.id/page/profil>
- Reuters. (2022). Indonesia president declares end of palm oil export ban. Reuters.
- Simanullang, B. (2023). Analisis Location Quotient (LQ) dan Dynamic Location Quotient (DLQ) dalam penentuan sektor unggulan (Skripsi).
- Sugiyono. (2022). Metode penelitian kuantitatif, kualitatif, dan R&D (Edisi terbaru). Alfabeta.
- Tumangkeng, S. (2018). Analisis potensi ekonomi di sektor dan subsektor pertanian, kehutanan dan perikanan Kota Tomohon. *Jurnal Berkala Ilmiah Efisiensi*, 18(1), 127–138.
- World Bank. (2021). Commodity markets outlook (April 2021). World Bank.
- World Bank. (2024). Official exchange rate (LCU per US\$, period average): Indonesia. World Bank Data.
- Yasa, I. K. O. A., & Arka, S. (2015). Pengaruh pertumbuhan ekonomi dan disparitas pendapatan antardaerah terhadap kesejahteraan masyarakat. *Jurnal Ekonomi Kuantitatif Terapan*. <https://www.neliti.com/id/publications/44328/pengaruh-pertumbuhan-ekonomi-dan-disparitas-pendapatan-antardaerah-terhadap-kese>