

Nusantara Sawit Sejahtera

(NSSS IJ)

Not Rated

Uncovering the growth potential of a young palm plantation company

Mirae Asset Sekuritas Indonesia

Rizkia Darmawan rizkia.darmawan@miraeasset.co.id

Palm oil industry at a glance

Tight supply to persist in the future; CPO prices to remain volatile

- Global CPO prices have decreased by 10% to MYR3,788/tonne since NSSS's IPO on March 10, 2023, and are 9% lower year-to-date.
- Competition from substitute products and a global economic slowdown are contributing factors. Despite possible prolonged volatility, CPO prices are expected to recover due to a possible tighter supply.
- We note that palm oil production growth has been showing signs of decline in recent years, mainly driven by 1) the aging tree profile in Indonesia and Malaysia; 2) moratorium policies on newly planted areas; and 3) the Black Sea War.

What we like about the company

Young age plantation profile and massive expansion projects in the following years

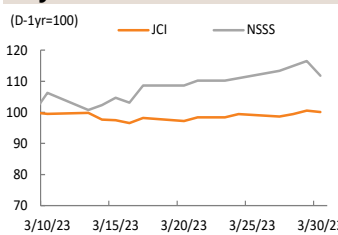
- We believe that due to its young plantation profile, NSSS will be able to monetize the current situation by achieving optimum yield amidst favorable CPO prices. In this matter, NSSS has a comparative advantage over its peers with a plantation profile of 7.2 years (vs. industry average age of 14).
- In terms of productivity, NSSS recorded a lower FFB yield of 16.3 tonnes/ha compared to the industry level of 16.8 tonnes/ha in 2021. As for oil extraction rate (OER), the company managed to achieve a 21.9% of OER, which is at the same level as the industry. A lower FFB yield is understandable, in our view, given the fact that NSSS' plantation age profile has yet to reach the prime age level.
- NSSS has massive expansion projects in its pipeline for the next few years. In terms of planted areas, NSSS plans to develop ready-to-use areas of 20k ha with an average planting of 5k ha per year. Thus, we expect to see the nucleus area to increase to 46k ha by 2025.
- In addition, NSSS plans to increase its mill capacity to maximize its robust production growth. The company is expected to have an additional of three new mills by 2030, translating into a CPO production capacity of 270 tonnes per hour (2021: 60 tonnes per hour).

Valuation

Robust growth potential to translate into better valuation

- Currently, NSSS is trading at USD8,561 EV/HA, which is 9.1% lower than its domestic peers. While the current valuation of NSSS may seem to have limited upside, we believe that the company's continuous expansion plan and young plantation age profile provide ample potential for long-term earnings growth.

Key data



Share Price (3/30/23, IDR)	142	Market Cap (IDRbn)	3,378
Consensus NP (23F, USDmn)	N/A	Shares Outstanding (mn)	23,788
NP Mirae Asset vs. consensus (23F, %)	N/A	Free Float (%)	15.0
EPS Growth (23F, %)	N/A	Beta (Adjusted, 24M)	N/A
P/E (23F, x)	N/A	52-Week Low (IDR)	126
Industry P/E (23F, x)	12.8	52-Week High (IDR)	155
Benchmark P/E (23F, x)	13.5		

Share performance

(%)	1M	6M	12M
Absolute	N/A	N/A	N/A
Relative	N/A	N/A	N/A

Earnings and valuation metrics

(FY Dec. 31)	2019	2020	2021	9M22
Revenue (IDRbn)	523	747	1,147	864
Operating profit (IDRbn)	14	176	538	256
Net Profit (IDRbn)	-240	19	245	65
EPS (IDR)	-12	1	12	3
BPS (IDR)	14	15	28	31
P/E (x)	N/A	208.1	16.5	47.0*
P/B (x)	14.1	12.9	7.2	6.5
ROE (%)	-83.8	6.2	43.9	10.3*
ROA (%)	-8.7	0.7	8.2	2.2
Current ratio (x)	0.4	0.4	1.1	1.1
Net gearing (x)	8.6	7.8	4.3	3.7

Note: Net profit refers to net profit attributable to controlling interests, * refers to annualized figures

Source: Company data, Mirae Asset Sekuritas Indonesia Research

Analysts who prepared this report are registered as research analysts in Indonesia but not in any other jurisdiction, including the US. PLEASE SEE ANALYST CERTIFICATIONS AND IMPORTANT DISCLOSURES AND DISCLAIMERS IN APPENDIX 1 AT THE END OF REPORT.

C O N T E N T S

Plantation industry outlook	3
Tight supply to persist in the future; CPO prices to remain volatile	3
NSS' plantation profile favors current condition	6
Young plantation profile	6
Expecting high FFB production growth entering the prime age era	7
Massive expansion in the long run	9
Higher earnings in 2021, backed by higher volume and ASP	10
Latest operational data	12
Valuation	15
Currently trading at USD8,561 EV/HA	15
Company at a glance	16

Plantation industry outlook

Latest update on palm oil price movement

Since NSSS's IPO on March 10, 2023, global CPO prices have slumped by 10% to MYR3,788/tonne, which is also 9% lower year-to-date. Besides the global economic slowdown, we believe that more intense competition from substitute products (such as rapeseed oil and sunflower oil) are some of the contributing factors to this relatively weak price movement. However, going forward, despite the possible prolonged volatility due to the factors mentioned, we expect the CPO price to recover due to a possible tighter supply following the recent decline in production growth rate. Therefore, paired with NSSS's relatively younger age of trees (compared to the industry average), which are expected to see higher productivity in the future, we are positive on the company's long-term outlook.

Tight supply to persist in the future; CPO prices to remain volatile

We anticipate that CPO prices will remain volatile in 2023, with an expected range of MYR3,750-4,500/tonne, tilted towards the higher end.

Looking back at 2022, the prices of vegetable oils surged due to the disruption of sunflower oil delivery caused by Russia's invasion of Ukraine. This has put additional pressure on global sunflower oil supplies, as the Baltic Sea supplies 76% of the world's sunflower oil. As a note, Baltic Sea is surrounded by nine countries include Russia. The higher sunflower oil prices are favorable for soybean oil and CPO prices, which were already facing tight supply issues due to a poor harvest in South America, low crushing volume for soybean, and Indonesia's DMO for CPO even before the outbreak of the conflict.

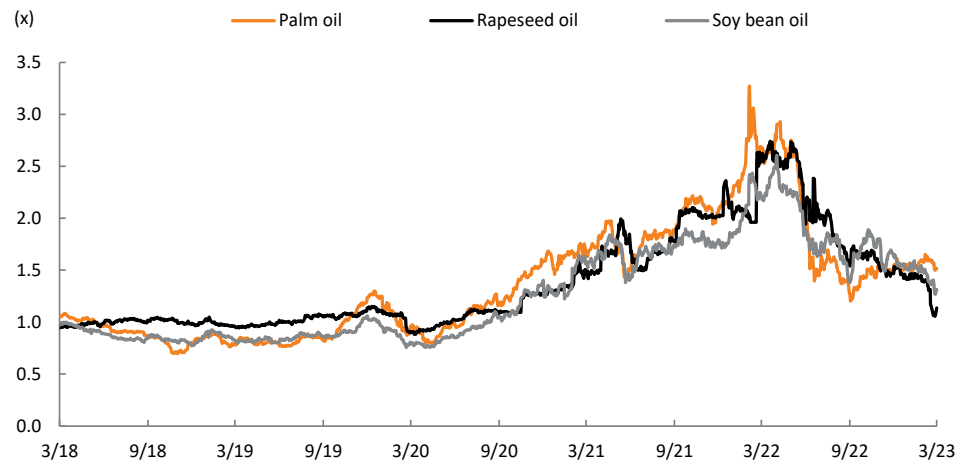
It is worth noting that between April and May 2022, Indonesia imposed a three-week export ban to secure domestic stocks, causing CPO prices to surge further.

Figure 1. CPO prices in 2022 soared, affected by tight supply of edible vegetable oil



Source: Bloomberg, Mirae Asset Sekuritas Indonesia Research

Figure 2. Price movement of selected edible vegetable oil



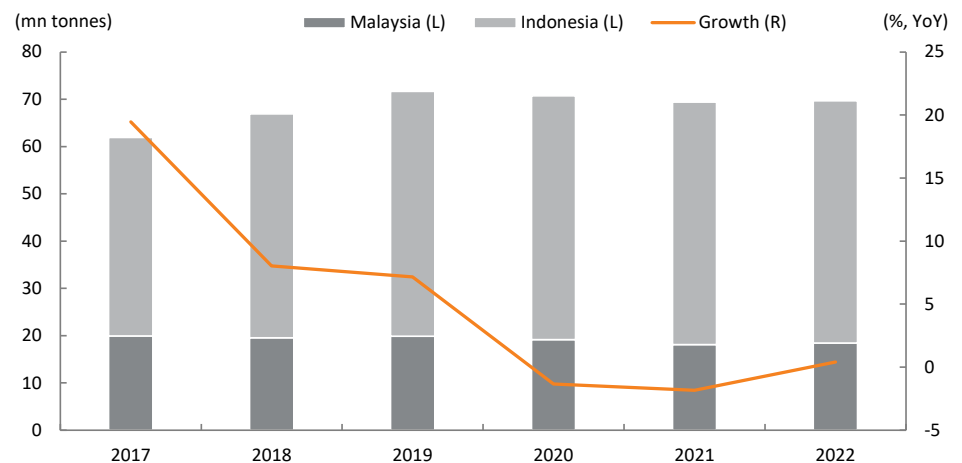
Note: January 2018 = 1
 Source: Bloomberg, Mirae Asset Sekuritas Indonesia Research

On the supply side, particularly for CPO, we note that palm oil production growth has shown signs of decline in recent years, mainly driven by 1) the ageing tree profile in Indonesia and Malaysia; 2) the moratorium policy on newly planted areas; and 3) the Black Sea War.

In recent years, the ageing plantation profile has become a significant concern for palm oil yield. To counter the potential tight supply, the Indonesian government initiated the People’s Palm Oil Rejuvenation (*Peremajaan Sawit Rakyat/PSR*) program. However, the scheme fell severely short of the annual targets, reaching only about 30% of the 2016-2022 summed target. Along with poor weather and lack of fertilizer application due to high fertilizer prices, we expect these factors to have a negative impact on the 2023 palm oil yield, which may, in turn, cause global supply constraints and affect CPO prices.

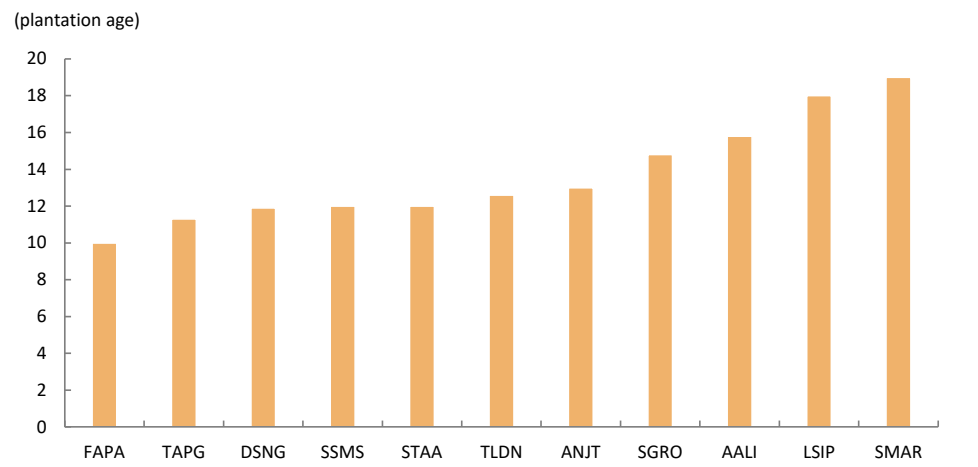
Therefore, we anticipate CPO prices to remain volatile this year. While growing domestic and international demands, especially from China and India, may support the prices, the tight global vegetable oil supply could also provide a favorable catalyst for CPO prices, especially if the Black Sea War continues.

Figure 3. Malaysia’s and Indonesia’s production growth shows a declining trend



Source: GAPKI, Malaysia Palm Oil Board (MPOB), Mirae Asset Sekuritas Indonesia Research

Figure 4. Average plantation age of several listed CPO players in Indonesia



Source: Company data, Mirae Asset Sekuritas Indonesia Research

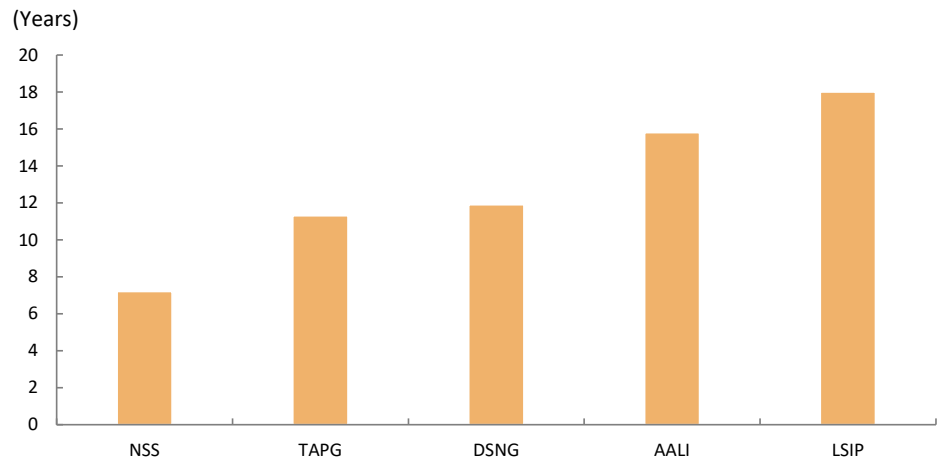
NSSS' plantation profile favors current condition

Young plantation profile

We believe that companies with a younger plantation profile will be able to take advantage of the current situation and obtain optimal yields amidst favorable CPO prices. In this regard, NSSS has a comparative advantage over its peers as it has a relatively young plantation profile of 7.2 years, which is lower than the industry average age plantation profile of 14 years.

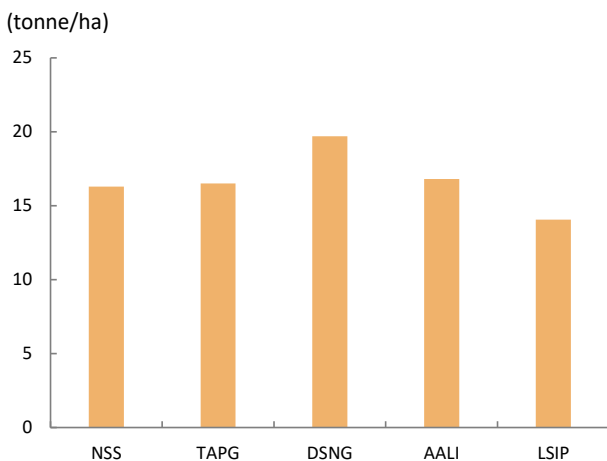
In terms of productivity, NSSS recorded a lower FFB yield of 16.3 tonnes/ha compared to the industry level of 16.8 tonnes/ha in 2021. However, as for the oil extraction rate (OER), NSSS managed to achieve a 21.9% OER, in line with the industry average. We understand that the lower FFB yield is reasonable since NSSS' plantation profile has yet to reach the prime age level.

Figure 5. NSSS' age plantation profile vs. peers



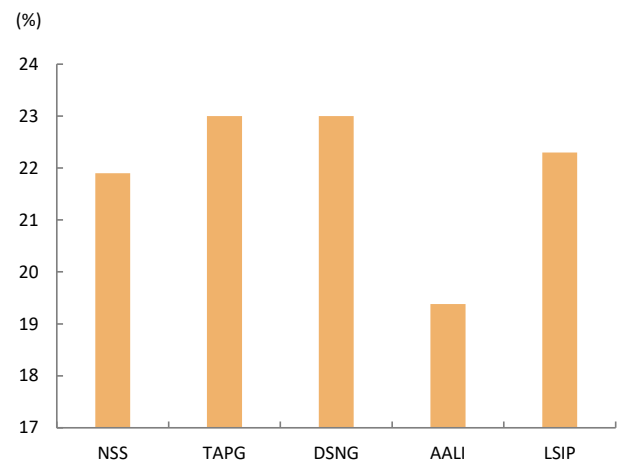
Source: Company data, Mirae Asset Sekuritas Indonesia Research

Figure 6. NSSS' FFB yield vs. peers



Source: Company data, Mirae Asset Sekuritas Indonesia Research

Figure 7. NSSS' oil extraction rate vs. peers



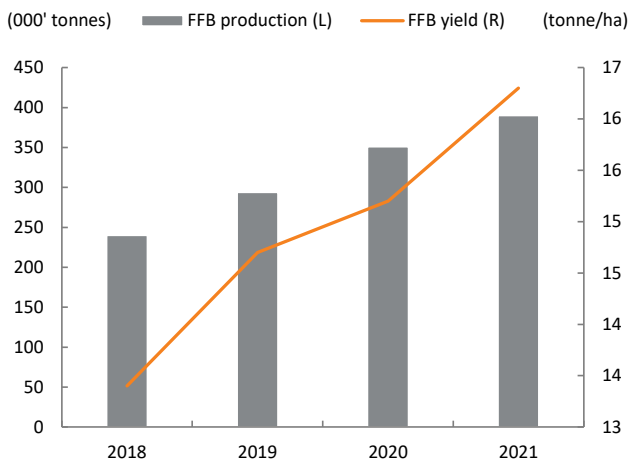
Source: Company data, Mirae Asset Sekuritas Indonesia Research

Expecting high FFB production growth entering the prime age era

NSSS has experienced rapid growth in FFB production in recent years, mainly due to the increasing number of mature plantations. As of 2021, NSSS had a total planted area of 26,221 ha, with a mature area of 23,982 ha (vs. 25,218 ha and 17,389 ha in 2018, respectively). Additionally, NSSS completed its first CPO mill in 2016. As FFB production continues to rise, NSSS' utilization rate increased to 112% in 2021, up from 89% in 2018. Consequently, NSSS has gradually decreased its FFB purchased from third-party suppliers.

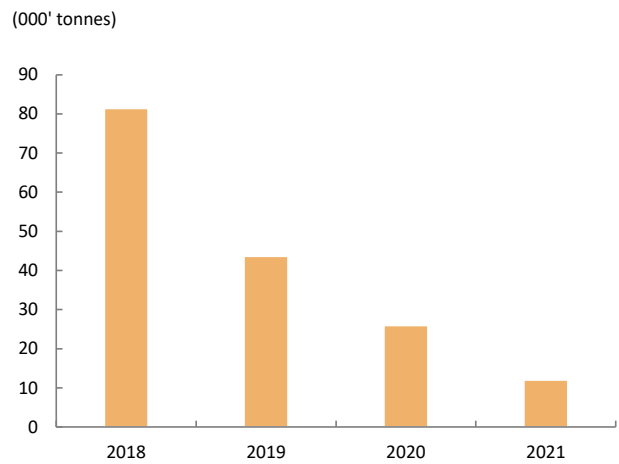
To prepare for future FFB production growth, NSSS has begun construction on its second CPO mill with a capacity of 60 tph, with the groundbreaking ceremony held in August 2021. The mill will be located in BSP on approximately 40 ha of land and equipped with an installed direct-piping system to a specific terminal. The estimated capex for the mill is approximately IDR280bn, which is expected to be completed in 3Q23.

Figure 8. NSSS' FFB production trend



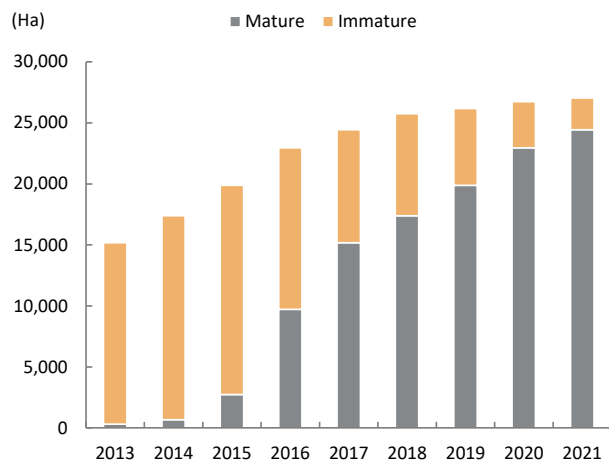
Source: Company, Mirae Asset Sekuritas Indonesia Research

Figure 9. NSSS' FFB purchased from 3rd party trend



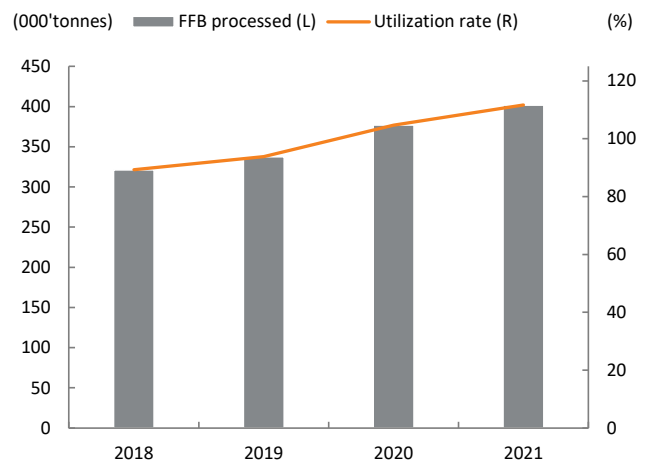
Source: Company, Mirae Asset Sekuritas Indonesia Research

Figure 10. NSSS' plantation profile



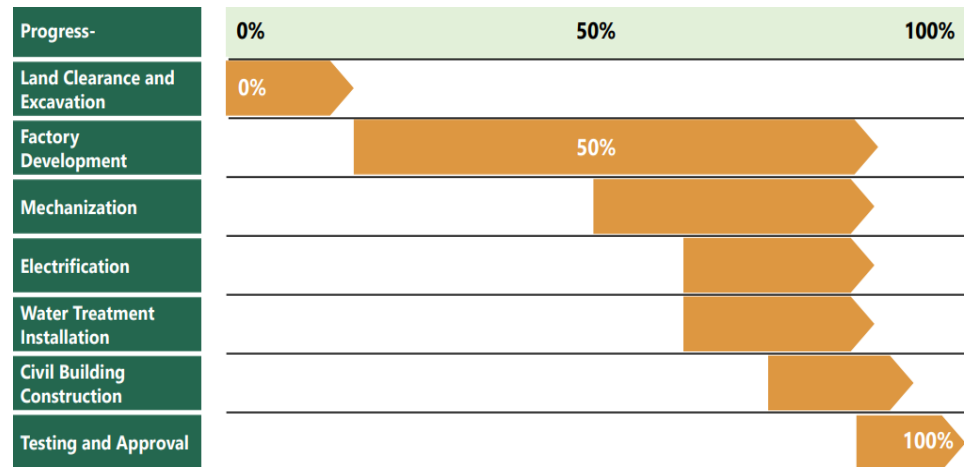
Source: Company, Mirae Asset Sekuritas Indonesia Research

Figure 11. NSSS' utilization rate trend



Source: Company, Mirae Asset Sekuritas Indonesia Research

Figure 12. NSSS' 2nd CPO mill progression completion



Source: Company data, Mirae Asset Sekuritas Indonesia Research

Figure 13. Development progress of NSSS' 2nd mill

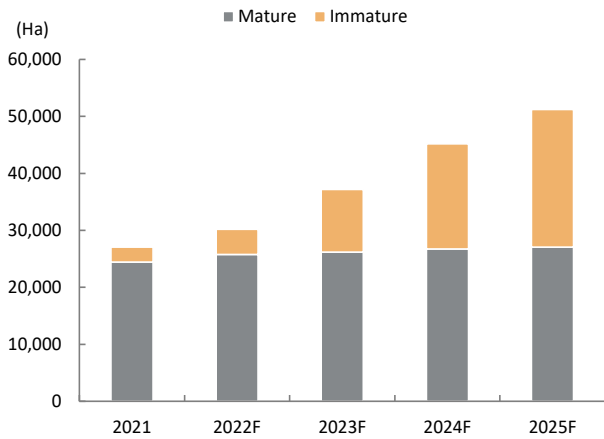


Source: Company data, Mirae Asset Sekuritas Indonesia Research

Massive expansion in the long run

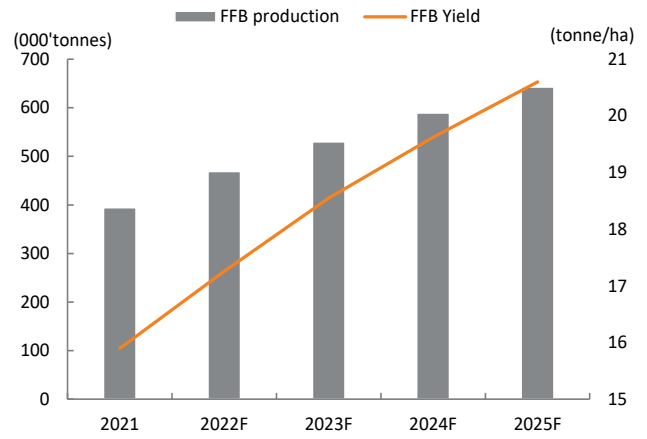
NSSS has a large expansion project in its pipeline for the coming years. In terms of planted areas, NSSS plans to develop 20,000 ha of ready-to-use land with an average planting of 5,000 ha per year. As a result, we expect to see the nucleus area increase to 46,000 ha by 2025. Additionally, the company plans to increase its mill capacity to maximize its production growth. NSSS is expected to add three new mills by 2030. With the development of these new mills, NSSS' CPO production capacity will increase by 2.3 times, translating into a CPO production capacity of 270 tonnes per hour (compared to 60 tonnes per hour in 2021).

Figure 14. NSSS' planted area profile



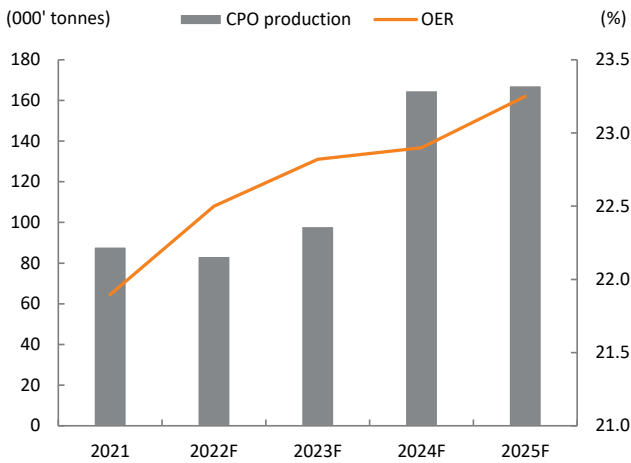
Source: Company data, Mirae Asset Sekuritas Indonesia Research

Figure 15. NSSS' FFB production trend



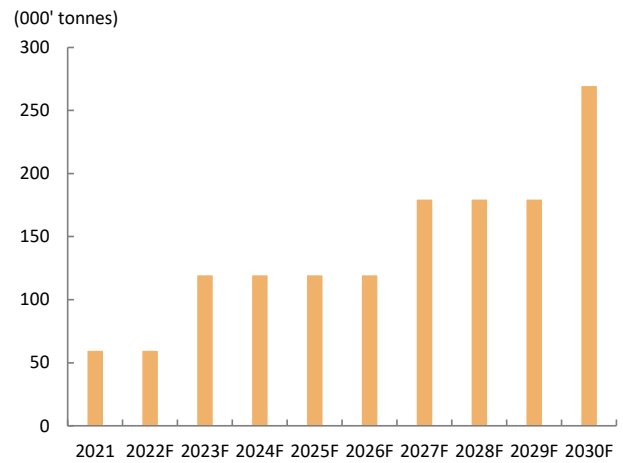
Source: Company data, Mirae Asset Sekuritas Indonesia Research

Figure 16. NSSS' CPO production trend



Source: Company data, Mirae Asset Sekuritas Indonesia Research

Figure 17. NSSS' CPO mill capacity trend

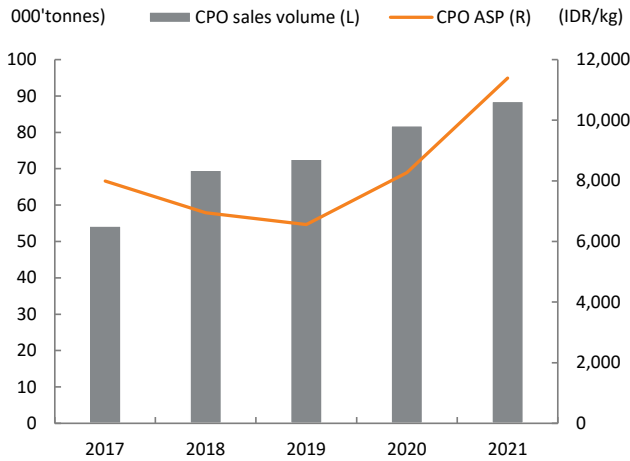


Source: Company data, Mirae Asset Sekuritas Indonesia Research

Higher earnings in 2021 due to higher volume and ASP

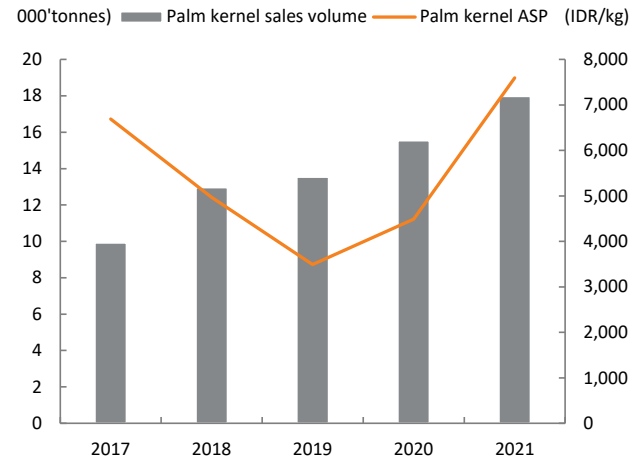
As of 2021, NSSS managed to achieve a significantly higher net income of IDR245bn, reflecting a YoY increase of 1,162.5%. This achievement was mainly driven by the higher revenue of IDR1.1tr in 2021, which represented a YoY growth of 53.8%. The higher revenue in 2021 was supported by the 35.3% increase in ASP to IDR11,390/kg, along with a higher CPO sales volume of 88.5k tonnes (+8.2% YoY). NSSS' significant revenue growth also resulted in a substantial margin expansion in 2021 (vs. 2020). In 2021, the gross profit margin (GPM), operating profit margin (OPM), and net profit margin (NPM) were 49.8%, 44.1%, and 21.4%, respectively, compared to 29.4%, 21.4%, and 2.6%, respectively, in 2020.

Figure 18. CPO sales volume and ASP trend



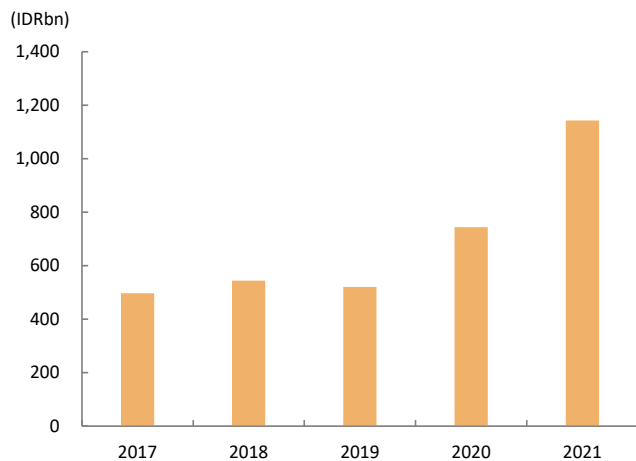
Source: Company data, Mirae Asset Sekuritas Indonesia Research

Figure 19. Palm kernel sales volume and ASP trend



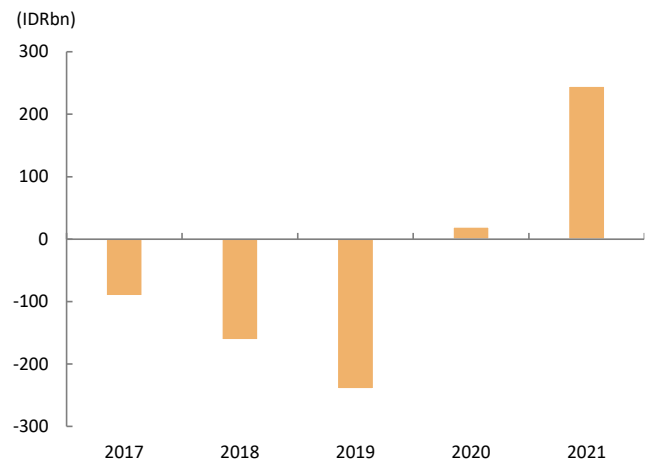
Source: Company data, Mirae Asset Sekuritas Indonesia Research

Figure 20. NSSS' revenue trend



Source: Company data, Mirae Asset Sekuritas Indonesia Research

Figure 21. NSSS' net income trend



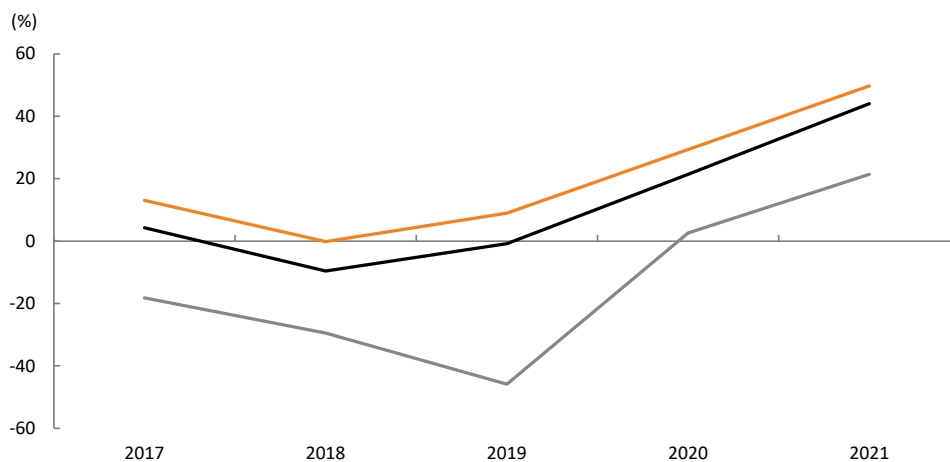
Source: Company data, Mirae Asset Sekuritas Indonesia Research

Table 1. Key financial highlights

	(IDRbn)									
	2019	2020	2021	Chg. YoY (%)	7M21	7M22	Chg. YoY (%)	9M21	9M22	Chg. YoY (%)
Revenue	523	747	1,147	53.5	574	682	18.8	763	864	13.2
Gross profit	47	223	571	155.3	284	294	3.5	374	345	-7.7
Operating expenses	33	47	32	-30.9	24	72	198.6	25	89	261.8
EBITDA	107	287	655	127.8	328	295	-10.0	437	349	-20.1
Operating income (loss)	14	176	538	205.0	260	222	-14.5	349	256	-26.8
Pretax Income	-175	-24	334	NM	140	97	-31.0	194	104	-46.3
Net profit (loss)	-240	19	245	1,162.5	111	64	-42.5	147	65	-56.1
Ratios										
Gross margin (%)	9.0	29.9	49.8	19.8	49.4	43.1	-6.4	49.0	40.0	-9.1
Operating margin (%)	2.8	23.6	46.9	23.3	45.3	32.6	-12.7	45.8	29.6	-16.2
Net margin (%)	-45.9	2.6	21.4	18.8	19.3	9.3	-10.0	19.3	7.5	-11.8
EBITDA margin (%)	20.4	38.5	57.1	18.6	57.1	43.3	-13.9	57.2	40.4	-16.8
ROA (%)	-8.7	0.7	8.2	7.5	3.9	2.1	-1.8	5.1	2.2	-2.9
ROE (%)	-83.8	6.2	43.9	37.7	26.1	10.2	-15.9	31.9	10.3	-21.6
Debt to equity (%)	864	779.1	432	-347.1	565.4	375.7	-189.7	525.1	369	-156.1
Debt to asset (%)	89.6	88.6	81.2	-7.4	85	79	-6.0	84	78.7	-5.3
Current ratio (%)	38.2	40.5	109.5	69.0	136.7	115.7	-21.0	86.2	113.6	27.4

Source: Company data, Mirae Asset Sekuritas Indonesia Research

Figure 22. NSSS' margin trend

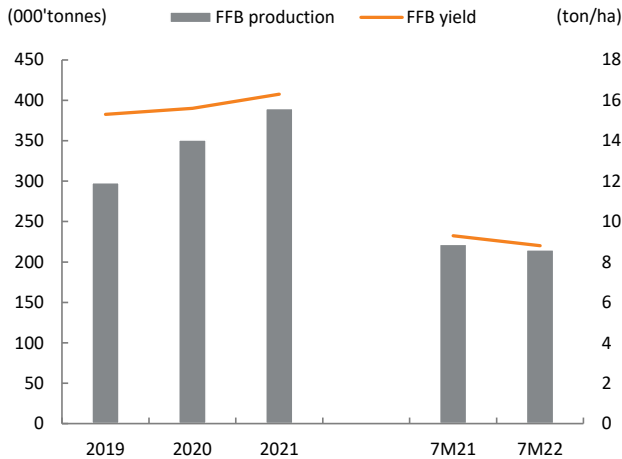


Source: Company data, Mirae Asset Sekuritas Indonesia Research

Latest operational data

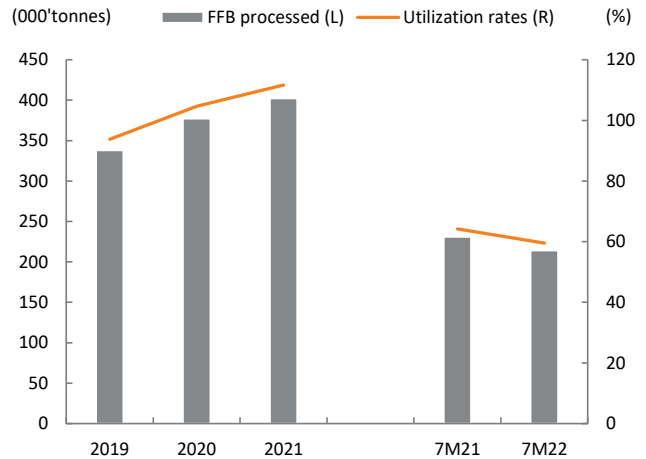
Due to unfavorable weather conditions, NSSS' FFB production decreased slightly by 3.2% YoY from 222.2k tonnes in 7M21 to 215.4k tonnes in 7M22. The FFB yield as of 7M22 was also down by 50 ppt, resulting in a decrease in FFB processed (-7.4% YoY). This ultimately led to lower CPO and Palm Kernel Oil production by around 10% YoY. On a positive note, both oil extraction rate (OER) and kernel extraction rate (KER) remained relatively stable compared to last year's figure at 21.5% (vs. 22.1% in 7M21) and 4.0% (vs. 4.2% in 7M21), respectively.

Figure 23. NSSS' FFB production and yields



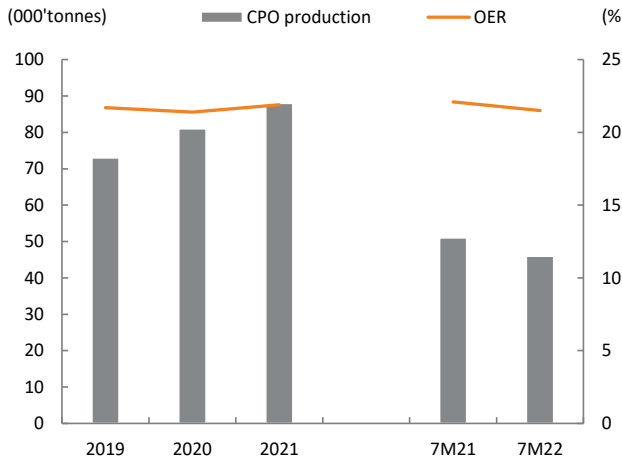
Source: Company data, Mirae Asset Sekuritas Indonesia Research

Figure 24. NSSS' FFB processed & utilization rates



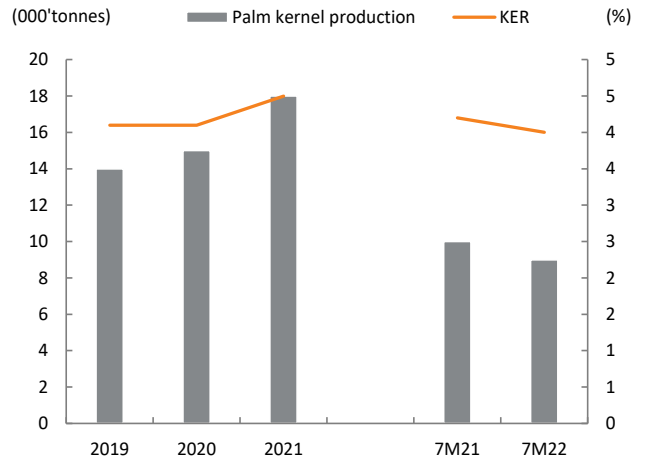
Source: Company data, Mirae Asset Sekuritas Indonesia Research

Figure 25. NSSS' CPO production and OERs



Source: Company data, Mirae Asset Sekuritas Indonesia Research

Figure 26. NSSS' palm kernel production and KERs



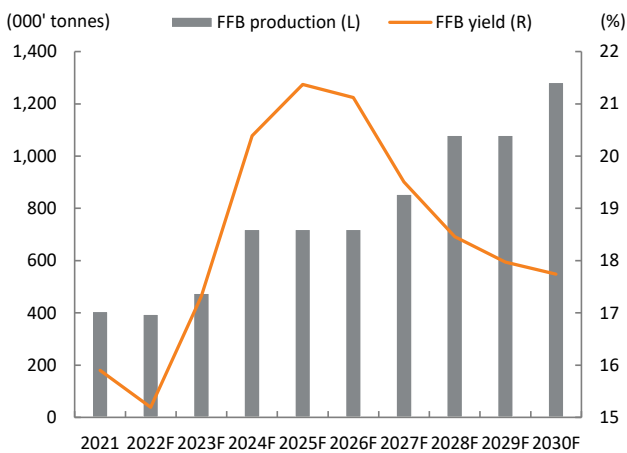
Source: Company data, Mirae Asset Sekuritas Indonesia Research

Expecting high teens revenue growth to continue over a period of time

We estimate that NSSS' revenue will grow at a CAGR of 14.4% from 2021-2030, reaching IDR3.8tn by two factors. Firstly, the expansion of the nucleus area by 5,000ha annually, coupled with higher CPO production capacity from the addition of three new mills by 2030, will lead to higher FFB production. Secondly, we expect higher CPO and FFB yield as NSSS' plantation profile enters the prime age level. We assume that ASP will remain around IDR11,000-12,000/kg going forward, considering the tight global CPO supply, which may not lead to prices returning to pre-pandemic levels.

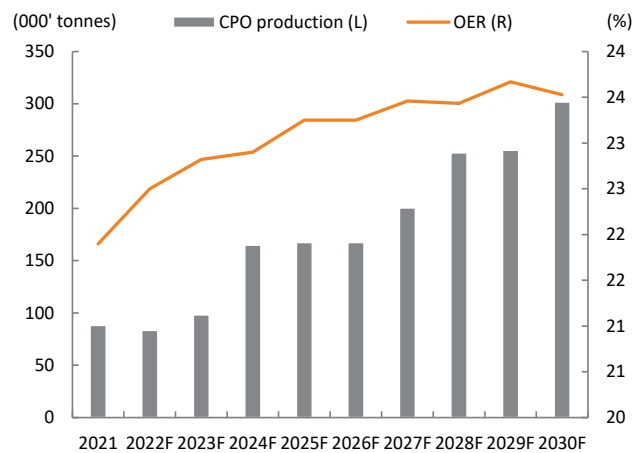
With the expected growth in volume and ASP, we anticipate significant revenue growth for NSSS from 2021-2030F, with margins expected to expand in going forward and remain relatively stable thereafter. We estimate that NSSS' net profit will grow at a CAGR of 17.4% from 2021 to 2030F, with an average GPM, OPM, and NPM of around 45%, 40%, and 27% respectively for the period.

Figure 27. NSSS' CPO production trend



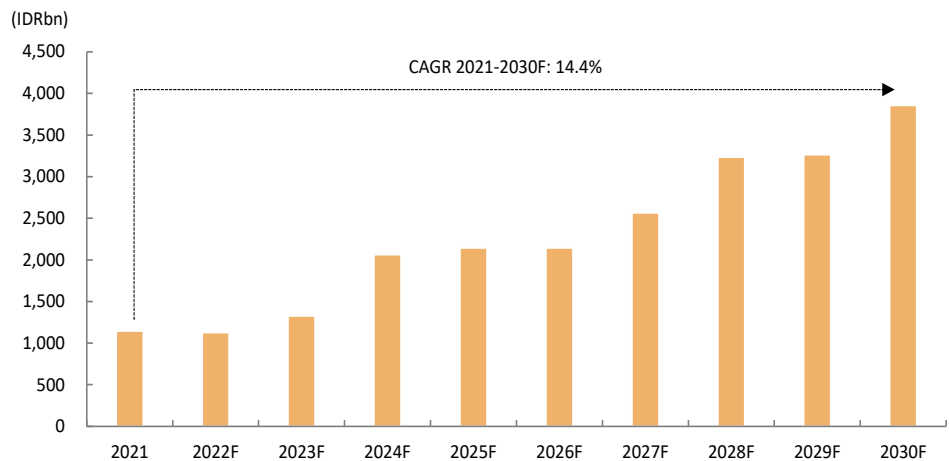
Source: Company data, Mirae Asset Sekuritas Indonesia Research

Figure 28. NSSS' CPO production trend



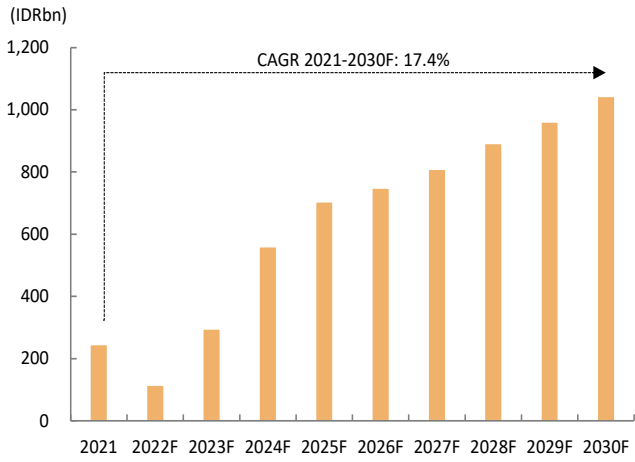
Source: Company, Mirae Asset Sekuritas Indonesia Research

Figure 29. Expected revenue trend



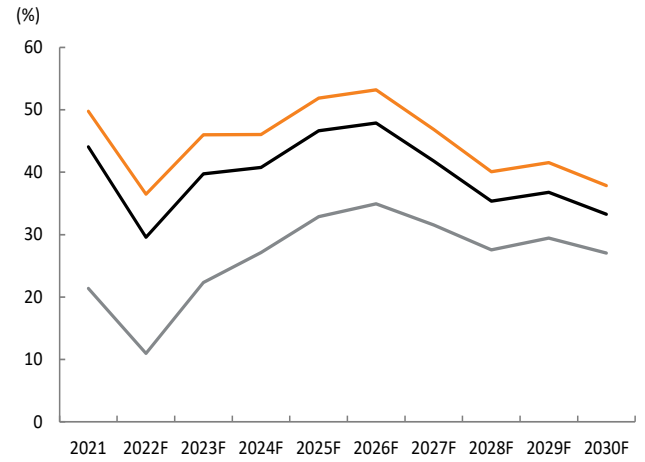
Source: Company data, Mirae Asset Sekuritas Indonesia Research

Figure 30. Expected net income trend



Source: Company data, Mirae Asset Sekuritas Indonesia Research

Figure 31. Expected GPM, OPM, and NPM trend



Source: Company data, Mirae Asset Sekuritas Indonesia Research

Valuation

Currently trading at USD8,561 EV/HA

Currently, NSSS is trading at a USD8,561 EV/HA, which is 9.1% lower than its domestic peers. At its current valuation, NSSS may seem to have limited upside. However, given the continuous expansion plan and young plantation age profile, we believe the company has ample long-term earnings growth potential, worthy to be on our watchlist.

Risks to consider include: 1) changes in global and domestic regulations; 2) weather anomalies which may affect global edible supply and prices; and 3) continuous disruptions from the Black Sea war.

Table 2. Peer's comparison

Company name	Ticker	Market cap (USDmn)	Planted area (ha)	EVha (USD)
Astra Agro Lestari	AALI	1,035	214,499	4,826
Sawit Sumbermas Sarana	SSMS	1,056	68,880	15,334
Triputra Agro Persada	TAPG	837	138,000	6,066
Sumber Tani Agung Resources	STAA	735	37,747	19,468
Perusahaan Perkebunan London Sumatra Indonesia	LSIP	464	92,649	5,012
Dharma Satya Nusantara	DSNG	489	84,500	5,789
Average				9,416
Nusantara Sawit Sejahtera	NSSS	232	27,123	8,561
NSSS valuation to the average of its peers (%)				-9.1

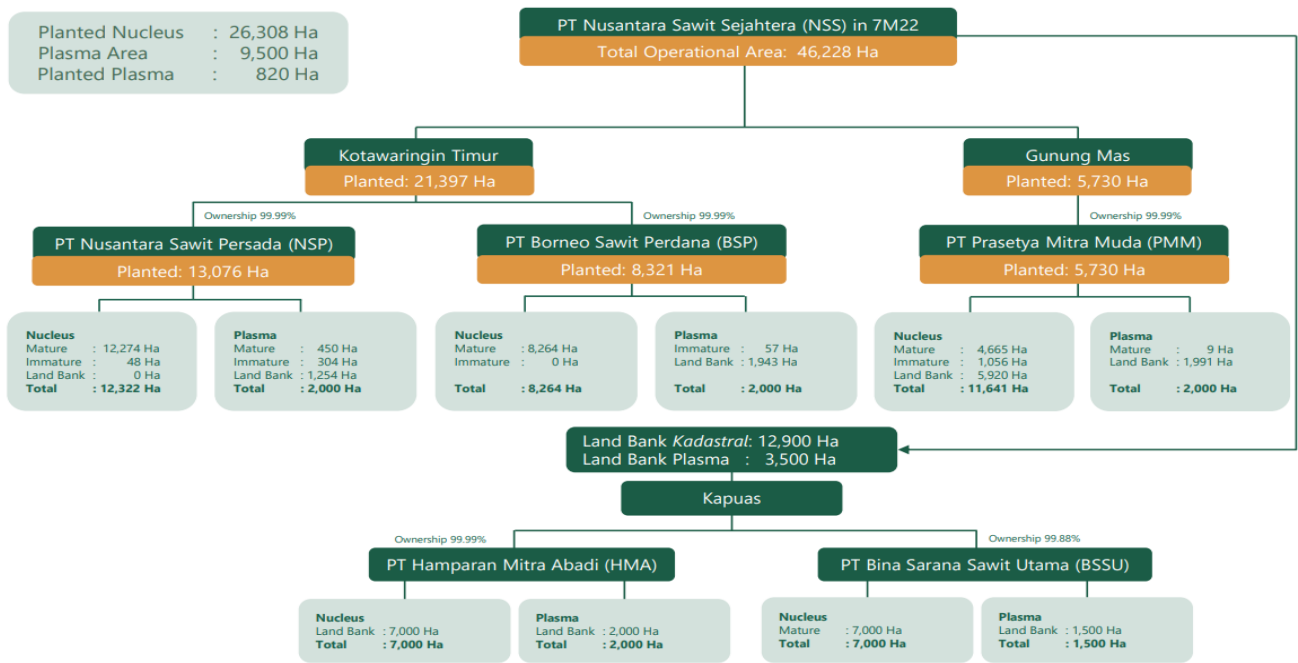
Company data, Mirae Asset Sekuritas Indonesia Research

Company at a glance

Established in 2008, NSSS is an integrated upstream plantation company located in Central Kalimantan, specifically in the East Kotawaringin Regency, Gunung Mas Regency, and Kapuas Regency. As of 2021, NSSS owns oil palm plantations with a total planted area of 27,043 ha, consisting of 26,231 ha of nucleus planted area and 812 ha of plasma area.

In addition, the company operates a palm oil processing plant that converts fresh fruit bunches (FFB) harvested from its plantations and purchased from third parties into crude palm oil (CPO) and palm kernel (PK).

Figure 32. NSSS' group structure



Source: Mirae Asset Sekuritas Indonesia Research, Company

Table 3. NSSS' planted areas

No	Company	Location	Planted areas
1	PT Nusantara Sawit Persada (NSP)	East Kotawaringin, Central Kalimantan	13,076 Ha
2	PT Borneo Sawit Perdana (BSP)	East Kotawaringin, Central Kalimantan	8,321 Ha
3	PT Prasetya Mitra Muda (PMM)	Gunung Mas	5,730 Ha

Source: Company data, Mirae Asset Sekuritas Indonesia Research

Products

Fresh Fruit Bunch (FFB)

FFB can be harvested from the oil palm trees four years after planting, with a mature bunch weighing more than 3.5 kg and gradually increasing in weight as the tree ages, reaching an average of 30 kg. The harvested FFB is transported by truck to the palm oil mill to be processed into CPO and PK.

Figure 33. NSSS' FFB harvesting activity and samples



Source: Company data, Mirae Asset Sekuritas Indonesia Research

Crude Palm Oil (CPO) & Palm Kernel

Milling of FFB occurs within 24 hours of harvesting, starting with sterilization using high-pressure steam. The palm fruits are then enzyme-deactivated and separated from the palm bunches. After steaming, the palm fruits are crushed in a pressing machine to extract the CPO and PK. The waste and water are then purified and separated from the CPO through a centrifuge. The filtered CPO is sent for refining, while the palm kernel nut is sent for crushing. The empty fruit bunches and liquid waste from the processing are recycled as fertilizer in the plantations.

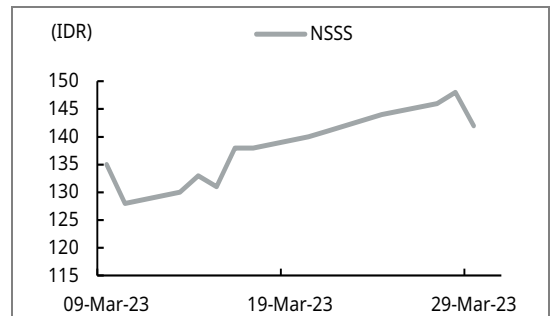
The CPO and PK produced by the company are then stored and delivered. The CPO is stored in two tanks with a combined capacity of 6,000 tons and is then sent to ships that dock at the company's terminal via a pipeline system. On the other hand, PK is loaded on trucks and transported to the buyer's warehouse.

APPENDIX 1

Important Disclosures & Disclaimers

2-Year Rating and Target Price History

Company (Code)	Date	Rating	Target Price
Nusantara Sawit Sejahtera (NSSS J)		Not rated	



Stock Ratings

Buy	: Relative performance of 20% or greater
Trading Buy	: Relative performance of 10% or greater, but with volatility
Hold	: Relative performance of -10% and 10%
Sell	: Relative performance of -10%

Industry Ratings

Overweight	: Fundamentals are favorable or improving
Neutral	: Fundamentals are steady without any material changes
Underweight	: Fundamentals are unfavorable or worsening

Ratings and Target Price History (Share price (—), Target price (▬), Not covered (▭), Buy (▲), Trading Buy (■), Hold (●), Sell (◆))

* Our investment rating is a guide to the relative return of the stock versus the market over the next 12 months.

* Although it is not part of the official ratings at PT Mirae Asset Sekuritas Indonesia, we may call a trading opportunity in case there is a technical or short-term material development.

* The target price was determined by the research analyst through valuation methods discussed in this report, in part based on the analyst's estimate of future earnings.

* The achievement of the target price may be impeded by risks related to the subject securities and companies, as well as general market and economic conditions.

Disclosures

As of the publication date, PT Mirae Asset Sekuritas Indonesia and/or its affiliates do not have any special interest with the subject company and do not own 1% or more of the subject company's shares outstanding.

Analyst Certification

Opinions expressed in this publication about the subject securities and companies accurately reflect the personal views of the Analysts primarily responsible for this report. Except as otherwise specified herein, the Analysts have not received any compensation or any other benefits from the subject companies in the past 12 months and have not been promised the same in connection with this report. No part of the compensation of the Analysts was, is, or will be directly or indirectly related to the specific recommendations or views contained in this report but, like all employees of PT Mirae Asset Sekuritas Indonesia, the Analysts receive compensation that is impacted by overall firm profitability, which includes revenues from, among other business units, the institutional equities, investment banking, proprietary trading and private client division. At the time of publication of this report, the Analysts do not know or have reason to know of any actual, material conflict of interest of the Analyst or PT Mirae Asset Sekuritas Indonesia except as otherwise stated herein.

Disclaimers

This report is published by PT Mirae Asset Sekuritas Indonesia ("Mirae Asset"), a broker-dealer registered in the Republic of Indonesia and a member of the Indonesia Exchange. Information and opinions contained herein have been compiled from sources believed to be reliable and in good faith, but such information has not been independently verified and Mirae Asset makes no guarantee, representation or warranty, express or implied, as to the fairness, accuracy, completeness or correctness of the information and opinions contained herein or of any translation into English from the Bahasa Indonesia. If this report is an English translation of a report prepared in the Indonesian language, the original Indonesian language report may have been made available to investors in advance of this report. Mirae Asset, its affiliates and their directors, officers, employees and agents do not accept any liability for any loss arising from the use hereof. This report is for general information purposes only and it is not and should not be construed as an offer or a solicitation of an offer to effect transactions in any securities or other financial instruments. The intended recipients of this report are sophisticated institutional investors who have substantial knowledge of the local business environment, its common practices, laws and accounting principles and no person whose receipt or use of this report would violate any laws and regulations or subject Mirae Asset and its affiliates to registration or licensing requirements in any jurisdiction should receive or make any use hereof. Information and opinions contained herein are subject to change without notice and no part of this document may be copied or reproduced in any manner or form or redistributed or published, in whole or in part, without the prior written consent of Mirae Asset. Mirae Asset, its affiliates and their directors, officers, employees and agents may have long or short positions in any of the subject securities at any time and may make a purchase or sale, or offer to make a purchase or sale, of any such securities or other financial instruments from time to time in the open market or otherwise, in each case either as principals or agents. Mirae Asset and its affiliates may have had, or may be expecting to enter into, business relationships with the subject companies to provide investment banking, market-making or other financial services as are permitted under applicable laws and regulations. The price and value of the investments referred to in this report and the income from them may go down as well as up, and investors may realize losses on any investments. Past performance is not a guide to future performance. Future returns are not guaranteed, and a loss of original capital may occur.

Distribution

United Kingdom: This report is being distributed by Mirae Asset Securities (Europe) Ltd. in the United Kingdom only to (i) investment professionals falling within Article 19(5) of the Financial Services and Markets Act 2000 (Financial Promotion) Order 2005 (the "Order"), and (ii) high net worth companies and other persons to whom it may lawfully be communicated, falling within Article 49(2)(A) to (E) of the Order (all such persons together being referred to as "Relevant Persons"). This report is directed only at Relevant Persons. Any person who is not a Relevant Person should not act or rely on this report or any of its contents.

United States: This report is distributed in the U.S. by Mirae Asset Securities (America) Inc., a member of FINRA/SIPC, and is only intended for major institutional investors as defined in Rule 15a-6(b)(4) under the U.S. Securities Exchange Act of 1934. All U.S. persons that receive this document by their acceptance thereof represent and warrant that they are a major institutional investor and have not received this report under any express or implied understanding that they will direct commission income to Mirae Asset or its affiliates. Any U.S. recipient of this document wishing to effect a transaction in any securities discussed herein should contact and place orders with Mirae Asset Securities (America) Inc., which accepts responsibility for the contents of this report in the U.S. The securities described in this report may not have been registered under the U.S. Securities Act of 1933, as amended, and, in such case, may not be offered or sold in the U.S. or to U.S. persons absent registration or an applicable exemption from the registration requirements.

Hong Kong: This document has been approved for distribution in Hong Kong by Mirae Asset Securities (Hong Kong) Ltd., which is regulated by the Hong Kong Securities and Futures Commission. The contents of this report have not been reviewed by any regulatory authority in Hong Kong. This report is for distribution only to professional investors within the meaning of Part I of Schedule 1 to the Securities and Futures Ordinance of Hong Kong (Cap. 571, Laws of Hong Kong) and any rules made thereunder and may not be redistributed in whole or in part in Hong Kong to any person.

All Other Jurisdictions: Customers in all other countries who wish to effect a transaction in any securities referenced in this report should contact Mirae Asset or its affiliates only if distribution to or use by such customer of this report would not violate applicable laws and regulations and not subject Mirae Asset and its affiliates to any registration or licensing requirement within such jurisdiction.

Mirae Asset Securities International Network

Mirae Asset Securities Co., Ltd. (Seoul)

One-Asia Equity Sales Team
Mirae Asset Center 1 Building
26 Eulji-ro 5-gil, Jung-gu, Seoul 04539
Korea

Tel: 82-2-3774-2124

Mirae Asset Securities (USA) Inc.

810 Seventh Avenue, 37th Floor
New York, NY 10019
USA

Tel: 1-212-407-1000

PT. Mirae Asset Sekuritas Indonesia

District 8, Treasury Tower Building Lt. 50
Sudirman Central Business District
Jl. Jend. Sudirman, Kav. 52-54 Jakarta Selatan
12190
Indonesia

Tel: 62-21-5088-7000

Mirae Asset Securities Mongolia UTsK LLC

#406, Blue Sky Tower, Peace Avenue 17
1 Khoroo, Sukhbaatar District
Ulaanbaatar 14240
Mongolia

Tel: 976-7011-0806

Shanghai Representative Office

38T31, 38F, Shanghai World Financial Center
100 Century Avenue, Pudong New Area
Shanghai 200120
China

Tel: 86-21-5013-6392

Mirae Asset Securities (HK) Ltd.

Units 8501, 8507-8508, 85/F
International Commerce Centre
1 Austin Road West
Kowloon
Hong Kong

Tel: 852-2845-6332

Mirae Asset Wealth Management (USA) Inc.

555 S. Flower Street, Suite 4410,
Los Angeles, California 90071
USA

Tel: 1-213-262-3807

Mirae Asset Securities (Singapore) Pte. Ltd.

6 Battery Road, #11-01
Singapore 049909
Republic of Singapore

Tel: 65-6671-9845

Mirae Asset Investment Advisory (Beijing) Co., Ltd

2401B, 24th Floor, East Tower, Twin Towers
B12 Jianguomenwai Avenue, Chaoyang District
Beijing 100022
China

Tel: 86-10-6567-9699

Ho Chi Minh Representative Office

7F, Saigon Royal Building
91 Pasteur St.
District 1, Ben Nghe Ward, Ho Chi Minh City
Vietnam

Tel: 84-8-3910-7715

Mirae Asset Securities (UK) Ltd.

41st Floor, Tower 42
25 Old Broad Street,
London EC2N 1HQ
United Kingdom

Tel: 44-20-7982-8000

Mirae Asset Wealth Management (Brazil) CCTVM

Rua Funchal, 418, 18th Floor, E-Tower Building
Vila Olimpia
Sao Paulo - SP
04551-060
Brazil

Tel: 55-11-2789-2100

Mirae Asset Securities (Vietnam) LLC

7F, Saigon Royal Building
91 Pasteur St.
District 1, Ben Nghe Ward, Ho Chi Minh City
Vietnam

Tel: 84-8-3911-0633 (ext.110)

Beijing Representative Office

2401A, 24th Floor, East Tower, Twin Towers
B12 Jianguomenwai Avenue, Chaoyang District
Beijing 100022
China

Tel: 86-10-6567-9699 (ext. 3300)

Mirae Asset Capital Markets (India) Private Limited

Unit No. 506, 5th Floor, Windsor Bldg., Off CST Road,
Kalina, Santacruz (East), Mumbai - 400098
India

Tel: 91-22-62661336
