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Green Industry Strategy in Palm Oil Agribusiness: Integration of the Involution Index and Life Cycle Assessment

Pryo Adi Lukito*, Yudha Hermawan Asnawi, Popong Nurhayati
IPB University, Indonesia
Email: akh.pryoadilukito@gmail.com*

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Abstract
Indonesia's palm oil industry contributes substantially to employment generation, export earnings, and the national economy; however, its operations remain associated with greenhouse gas emissions, resource inefficiency, biodiversity loss, and increasing sustainability challenges. This study aims to identify internal and external factors influencing green industry practices at PT Teladan Prima Agro and formulate strategies to enhance environmental performance, operational efficiency, and cost efficiency. A case study approach was employed using primary data collected through questionnaires, in-depth interviews with purposively selected internal and external experts, and field observations, complemented by secondary data. The data were analyzed using the Internal Factor Evaluation (IFE) matrix, External Factor Evaluation (EFE) matrix, Internal–External (IE) matrix, TOWS analysis, and the four-action framework of the Blue Ocean Strategy. The company achieved an IFE score of 2.36 and an EFE score of 2.67, positioning it in quadrant V, which represents a hold-and-maintain strategic position. Six strategic alternatives were developed, consisting of two market penetration strategies and four product development strategies. The key strategic priorities include expanding circular economy practices and renewable energy initiatives, strengthening digital traceability and carbon Measurement, Reporting, and Verification (MRV) systems, enhancing climate risk identification and monitoring, adopting human rights-based labor standards, and implementing precision agriculture technologies. The study concludes that green industry initiatives require deeper integration into the business model to transform environmental improvements into tangible, measurable, sustainable, long-term operational and financial value.

INTRODUCTION

Palm oil is the leading commodity in Indonesia's national plantation sector. This sector contributed 12.53% to the national Gross Domestic Product (GDP) in 2023, with 31% of this contribution originating from the plantation sector. Palm oil commodities are considered strategic commodities and industries because they contribute USD 22.69 billion in foreign exchange earnings and provide employment for 7.5 million workers (BPS 2024; Ministry of Agriculture 2024). The scale and strategic importance of the palm oil industry warrant serious attention from all stakeholders to ensure its long-term sustainability (Azanto, 2023).

On the other hand, the palm oil agribusiness industry is frequently associated with various environmental impacts arising from its production processes. These environmental challenges include carbon emissions from deforestation and peatland conversion, methane emissions from

POME (palm oil mill effluent), and the consumption of fossil fuels in agricultural and processing activities. Other frequently reported environmental concerns include reduced water availability and biodiversity loss (Bainta et al., 2020; Zhao Qiang et al., 2024). These pressures require fundamental changes in the palm oil production system through a green industry approach oriented toward long-term sustainability.

The palm oil agribusiness sector operates primarily as a price taker, meaning that the sustainability of this sector is largely determined by plantation productivity, product quality, and cost efficiency. Crop productivity is increasingly threatened by the impacts of climate change (IPCC 2023), including prolonged drought conditions that contributed to significant declines in oil palm productivity in several regions of Indonesia in 2016 (Darlan & Pradiko, 2015). Furthermore, the Indonesian government's ambitious target of reducing greenhouse gas emissions by 32% by 2030 (RI, 2022) has implications for the implementation of carbon pricing mechanisms, including carbon taxation policies (Law, 2021), requiring industrial sectors to transform into environmentally responsible and low-emission industries.

A comprehensive approach is required to transform the palm oil agribusiness sector into a sustainable industry, one of which is the green industry approach. Zulkifli A., (2018) classifies industrial sectors as green industries when they demonstrate five key indicators: (1) utilization of renewable energy, (2) efficient use of resources and raw materials, (3) application of environmentally friendly principles, and (4) benefits for society. However, transformation into a green industrial sector is not straightforward. (Zachold et al., 2025) found that plantation efficiency declined both before and after the acquisition of sustainability certification. The implementation of Indonesian Sustainable Palm Oil (ISPO) certification policies was reported to negatively affect company financial performance by increasing compliance burdens and creating additional pressures for palm oil companies. This phenomenon indicates that the transition toward green industry practices may initially increase operational intensity and potentially reduce company profitability if not supported by effective strategic management.

Despite these advances, the existing literature remains fragmented. Environmental studies commonly quantify emissions, waste generation, energy consumption, or life-cycle impacts, whereas management studies generally evaluate sustainability governance, supply-chain practices, or certification systems separately. Limited research has integrated internal organizational conditions, external market pressures, strategic positioning, and value innovation within a single company-level framework. Furthermore, previous studies rarely explain how palm oil companies can transform environmental achievements into operational efficiency, cost reduction, market expansion, or product development opportunities. This research gap is particularly relevant for publicly listed Indonesian palm oil companies that must simultaneously address climate risks, traceability requirements, investor expectations, human rights standards, and market demands for sustained profitability.

Addressing this research gap is urgent because delayed strategic transformation may expose palm oil companies to declining productivity, increased production costs, restricted market access, environmental disputes, and reputational risks. Climate change may reduce yields through prolonged droughts and rainfall variability, while dependence on synthetic

fertilizers, pesticides, herbicides, and fossil fuels may increase both operational costs and environmental pressures. At the same time, the growing adoption of digital traceability and carbon measurement, reporting, and verification (MRV) systems provides opportunities to access premium markets, green financing, and carbon-related revenue streams. Therefore, a green industry strategy must not only minimize environmental impacts but also strengthen organizational adaptability and generate economic value capable of sustaining environmental initiatives over the long term.

The novelty of this research lies in its integrated strategic approach to green industry transformation within palm oil agribusiness. The study combines the 7S framework and external environmental analysis to identify strategic factors, Internal Factor Evaluation (IFE) and External Factor Evaluation (EFE) matrices to assess their relative importance, the Internal–External (IE) matrix to determine the company's strategic position, and TOWS analysis to formulate strategic alternatives. These alternatives are further developed using the four-action framework of the Blue Ocean Strategy—eliminate, reduce, raise, and create—to ensure that environmental initiatives also generate efficiency improvements and added value. Unlike studies that focus solely on technological assessments or sustainability compliance, this approach connects environmental performance with organizational alignment, competitive positioning, operational efficiency, and strategic value creation.

Accordingly, this research aims to identify and evaluate the internal and external factors influencing the successful implementation of green industry strategies at PT Teladan Prima Agro and to formulate appropriate strategic alternatives. Specifically, this study seeks to assess the company's strategic position, align its strengths and weaknesses with relevant opportunities and threats, and develop market penetration and product development strategies capable of improving sustainability performance. The analysis also aims to determine how circular economy initiatives, renewable energy adoption, digital traceability, carbon measurement and reporting systems, climate risk management, labor protection, and precision agriculture can be integrated into the company's business model.

This study is expected to contribute theoretically by extending discussions on green industry and strategic management within an integrated palm oil agribusiness context. Methodologically, it provides a structured framework that combines organizational diagnosis, environmental assessment, strategic alignment, and value innovation in corporate sustainability planning. Practically, the findings can support PT Teladan Prima Agro and comparable palm oil companies in prioritizing initiatives that deliver environmental improvements while enhancing operational and cost efficiencies. The results may also benefit policymakers, investors, certification bodies, and industry associations by demonstrating how sustainability requirements can be translated into feasible corporate strategies that strengthen competitiveness, climate resilience, traceability, responsible production, and long-term business continuity.

METHOD

Time and Place

This study employed a case study approach involving PT Teladan Prima Agro, a publicly listed company operating in the palm oil agribusiness sector in East Kalimantan Province. The company was selected as the research object due to its representativeness within the sector and the availability of relevant data through its public disclosures.

Data

The data used in this study includes primary and secondary data. Primary data was obtained through filling out questionnaires and in-depth interviews with experts as well as field observations. The experts selected as resource persons consisted of internal and external company experts, who were selected through purposive sampling, namely people who know information related to the palm oil industry, ESG, *sustainability*, corporate strategy, as well as plantation operations and processing plants. The in-house experts consist of the Director, manager, assistant manager, and assistant levels. External experts consist of the Director of ESG consultants and national palm oil associations.

Data analysis methods

The data analysis in this study uses the TOWS internal and external strategy matrix and the BOS four-step framework. Internal and external factors were collected using the guidance of the 7S framework (*internal factors*) and four forces (David 2004) based on a literature study so that a comprehensive collection of factors was obtained. Furthermore, each factor is evaluated by experts so that it is selected into several key factors. The weight of internal and external key factors is determined based on experts' assessments for each factor on a scale of 1 – 5, while the rating of each factor is on a scale of 1-2 (for threat and weakness factors) and a scale of 3-4 (for opportunity and strength factors). The combined results of internal and external factors are depicted using an external internal matrix (IE) which can be seen in Figure 1.

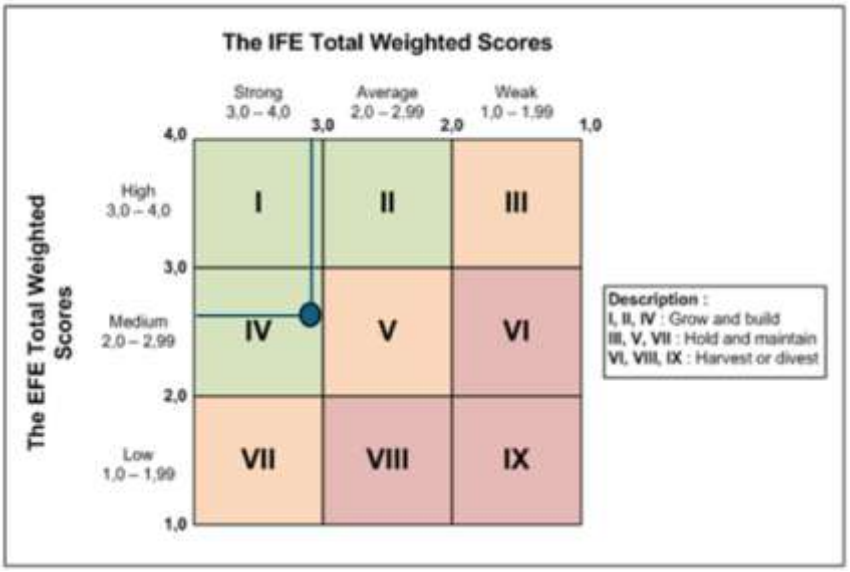

Figure 1. Matrix of internal and external factors (IE Matrix – David 2004)

The vertical axis (Y) indicates the score from the EFE matrix and the horizontal axis (X) indicates the score from the IFE matrix. The results of the IE matrix are divided into 9 strategy

quadrants for the implementation of green strategies which can be grouped into 3 strategy groups, namely (Maulida E *et al*., 2020):

1. Quadrant I, II, or IV means that the company is described in ***a grow and build*** condition. The right strategy in these conditions is an intensive strategy (*market penetration, market development, product development*) or an integrative strategy (*backward strategy, foreward staregy* and *horizontal strategy*).
2. Quadrant III, V or VII, meaning that the company is described in a ***hold and maintain*** condition. The right strategy is *market penetration* and *product development*.
3. Quadrant VI, VIII, or IX, meaning the Company is described in harvest ***or divest*** conditions or conditions that are difficult to survive. The right strategy is a *devastation strategy*.

RESULTS AND DISCUSSION

PT Teladan Prima Agro (TPA) is an integrated palm oil agribusiness company from upstream to downstream, which has an oil palm plantation sector as well as an oil palm crop processing plant (PKS). Landfill-managed mills can produce CPO, PK as well as CPKO and PKE for one of the mills that already has a KCP unit. This company is located in East Kalimantan Province and is spread across several districts including Berau, East Kutai, Kutai Kartanegara and Paser. In 2025, the landfill will have an planted land area of 64,430 hectares with a processing capacity of 1.6 million tons of fresh fruit bunches (FFB) per year. In 2025, TPA will record revenue of IDR 5.42 trillion with a net profit of 1.11 trillion. TPA has currently carried out several green industry initiatives and achievements with the following:

1. Energy efficiency and emission reduction by operating *a biogas power plant* (BPP) that utilizes POME as a renewable energy source. POME is used as an energy source while contributing to the reduction of greenhouse gas emissions due to the release of methane from POME, which is one of the largest sources of emissions in PKS. This practice also converts diesel needs as a source of power generation as an environmentally friendly operational cost efficiency measure.
2. Application of circular economy principles. In terms of PKS waste management, landfills utilize solid waste in the form of empty shelves as compost, use POME as liquid fertilizer, and the development of kernel crushing plants (KCP) to improve raw material efficiency.
3. Sustainability certifications such as ISPO (Indonesian Sustainability Palm Oil) and receiving the green and blue environmental PROPER program award, as a form of commitment to get environmental recognition as well as a stage towards carbon market penetration.
4. TPA has a sustainability strategy by setting the ESG Roadmap 2025 – 2030 as the direction of the company's strategy and commitment in integrating sustainability principles into its business model.

Internal Factor Analysis

Internal factors identified as key factors for a company's strengths and weaknesses are needed to evaluate the company's competitiveness in the market while also facing the

challenges and pressures that occur. Analysis of internal factors in TPA shows 5 strengths and 7 weaknesses of the company as seen in Table 1.

Table 1. Results of Analysis of Internal Key Factors of the Landfill

	Strength		**Disadvantages**
1	The company's commitment and strategic direction for sustainability are in place (Strategy)	1	Sustainability strategies that are not fully integrated into the business model (Strategy)
2	Organizational capabilities in the implementation of circular economy principles (Strategy)	2	Monitoring and digitization systems have not been integrated (System)
3	Utilization of renewable energy (System)	3	High dependence on chemical fertilizers, pesticides and synthetic herbicides
4	Data-based and sustainability agronomy systems and competencies (System & Skill)	4	Operational efficiency and suboptimal costs
5	Organizations that support the development of sustainability programs and cultures (Structure)	5	Increased organizational complexity
		6	Digitalization transformation and ESG integration competencies
		7	Competency converting environmental benefits into operational & cost efficiencies

The strength factors shown in Table 1 provide opportunities for landfills to optimize resources to increase environmental benefits, for example, success in applying circular economy principles and the use of renewable energy is one of the main strengths that can be replicated so that the benefits can increase. The above internal key factors are then evaluated using the IFE matrix to determine the company's internal condition score to face market competition. The results of the IFE matrix evaluation can be seen in Table 2.

Table 2. IFE TPA Matrix

	Weight												**Avg**	**Weight**	**Rating**	**Shoes**
	R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	R11	R12				
Strength																
1	5	4	4	4	5	5	5	5	4	5	5	5	4,67	0,093	4	0,37
2	5	5	3	4	4	5	4	3	4	4	4	4	4,08	0,081	4	0,32
3	4	4	3	4	5	5	5	4	4	5	4	4	4,25	0,084	4	0,34
4	5	4	4	3	4	4	5	4	4	5	4	4	4,17	0,083	3	0,25
5	4	5	4	4	4	5	5	5	4	5	4	4	4,42	0,088	3	0,26
Weakness																
1	4	4	4	3	4	5	5	5	4	5	4	4	4,25	0,084	2	0,17

2	5	4	4	3	4	4	5	4	3	5	3	5	4,08	0,081	1	0,08
3	3	4	5	3	4	4	5	5	4	3	5	3	4,00	0,079	2	0,16
4	5	4	4	4	3	5	5	4	4	5	3	5	4,25	0,084	1	0,08
5	3	4	4	4	3	4	5	3	4	5	3	5	3,92	0,078	2	0,16
6	4	4	4	3	4	4	5	4	4	5	4	4	4,08	0,081	1	0,08
7	4	4	4	4	4	4	5	4	4	4	5	4	4,17	0,083	1	0,08
Total														1,00		2,36

The result of the calculation of the IFE score is 2.36 (from a maximum score of 4.00), meaning that TPA currently still has internal aspects that must be improved to be able to improve the company's capabilities and competitiveness to become a sustainable company. Internal aspects that are the main weaknesses that need to be improved by the landfill are operational efficiency and costs that are not optimal (average 4.25 and score 0.08), it is hoped that by correcting these main weaknesses, the green industry programs and strategies to be executed can get improvements in operational efficiency and cost efficiency. The main strength aspect is the availability of a clear sustainability direction and strategy as well as the company's commitment in the form of an ESG roadmap 2025 – 2030 (average of 4.67 and score of 0.37), it is hoped that this main strength can be internalized in every upstream and downstream business activity so that the company's sustainability vision can be realized.

External Factor Analysis

External environmental factors that affect the success of landfills in implementing green industry strategies consist of 4 opportunities and 6 threats, which can be seen in Table 3.

Table 3. Analysis of Landfill External Key Factors

	Opportunities		**Threats**
1	Green financing & ESG investment (Economy)	1	Global Deforestation Regulation (EUDR) (Political & legal)
2	Increasing demand for biofuels (Economy)	2	Risk of environmental litigation (Political & legal)
3	Digital traceability claims (Technology)	3	ESG (Social) investor pressure
4	Carbon measurement, reporting, verification (MRV) system (Technology)	4	The influence of negative NGO (Social) campaigns
		5	Climate Change (Environment)
		6	Labour and Human Rights (Social) Issues

The four opportunities in Table 3 are the potential that landfill companies can use to increase the added value of each of their sustainability programs so that they can help increase revenue and profitability, while the identified threats outweigh the opportunities available. These threats should be avoided or mitigated so that the landfill is avoided from potential losses. The results of the evaluation of external factors with the EFE matrix can be seen in Table 4.

Table 4. EFE TPA Matrix

	Weight				Avg	Weight	Rating	Shoes
	R1	**R2**	**R3**	**R4**				
Peluang (Opportunity)								
1	5	5	5	4	4,75	0,107	4	0,43
2	4	4	4	3	3,75	0,085	4	0,34
3	5	5	5	5	5,00	0,113	4	0,45
4	4	4	4	3	3,75	0,085	4	0,34
Threats								
1	5	5	5	5	5,00	0,113	2	0,23
2	`3	4	4	5	4,33	0,098	2	0,20
3	4	5	4	5	4,50	0,102	2	0,20
4	4	4	4	4	4,00	0,090	2	0,18
5	5	5	5	4	4,75	0,107	1	0,11
6	5	4	5	4	4,50	0,102	2	0,20
Total						1,00		2,67

The EFE TPA matrix evaluation score of 2.67 (maximum score of 4.00) describes the condition of the landfill that is quite capable of responding well to the external environment even though the number of threats is much larger. The main threat to landfills is climate change (average 4.75 and score 0.11), climate change increases the chance of weather conditions that are not in accordance with the needs of oil palm plants which has the potential to reduce crop productivity, so that profitability as well as the main core of landfill comes from oil palm plants. The biggest opportunity is the demand for digital traceability which demands to be well documented as the landfill can be used because currently landfills have a digital platform called Teladan Green Matrix which can be integrated with traceability capabilities, if this can be done, the opportunity for landfills to penetrate the carbon market and get better price opportunities can be opened.

IE Matrix Analysis

The combined results of the calculation of the IFE matrix score (2.36) and the EFE matrix score (2.67) can be seen in the matrix of internal and external factor relationships which can be seen in Figure 2.

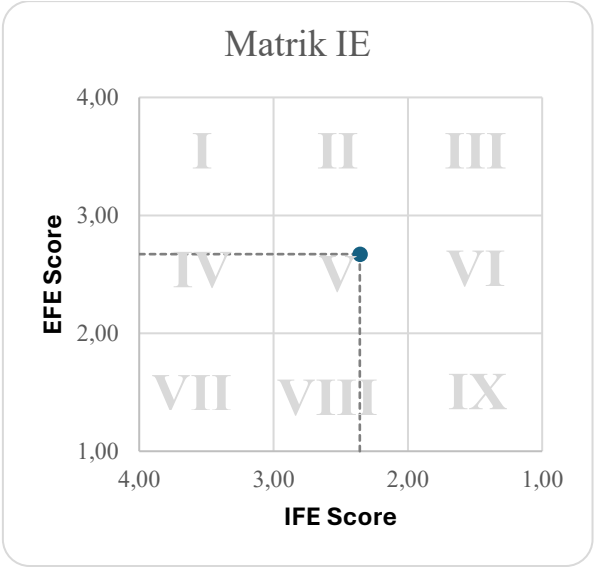

Figure 2. Matrix Analysis IE TPA

The IE matrix (Figure 2) shows that the landfill is in the V quadrant position or in a ***hold and maintain*** condition , so with the company's position, the most appropriate strategy is to conduct *market research* and *product development*. The *market penetration strategy* includes maximizing the main product market as best as possible by utilizing the strengths and opportunities available, currently the market explored by TPA is still struggling with the sale of plantation products in the form of crude oil and its derivatives.

The *product development* strategy that can be carried out is to optimize assets and capabilities that are strengths and improve internal aspects so that they can increase added value and have a positive impact on the company's profitability.

TOWS Analysis

TOWS analysis aims to match and formulate alternative strategies with a focus on strategies based on the IE matrix, namely *market penetration* and *product development*. Then the results of matching external and internal key factors are entered into the TOWS matrix to obtain a synthesis of several relevant alternative strategies. There are 6 (six) alternative green industry strategies resulting from the TOWS analysis, including the following:

1. SO Strategy
   An SO strategy is a strategy that leverages the company's strengths to seize green industry market opportunities. There is one SO strategy that has been produced, namely 'Expanding the implementation of the circular economy and the use of renewable energy by utilizing *green financing schemes* that are in accordance with the palm oil industry' (*Product Development*).
2. ST Strategy
   ST strategy is a combination of strategies that focus on the company's strengths to protect and prevent the company from major threats. There are two strategies produced, namely: (1) Developing a human rights-based sustainability program and international labor

standards to fortify the organization from the pressure of labor issues (*Product Development*); (2) Utilizing agronomic data systems to develop early detection capabilities and mitigate the impact of climate change on the decline in oil palm plant productivity (*Product Development*).

3. WO Strategy

   The WO strategy includes a type of *turnaround* strategy that requires the Company to improve internal conditions to obtain opportunities that benefit the company. There are two strategies produced, namely: (1) 'Restructuring the cross-division coordination flow by building *an* integrated data platform as the foundation for *traceability* and compliance of the carbon MRV (*Market Penetration*) system. (2) Strengthening the monitoring system and digitalization integration to take advantage *of traceability* trends and carbon market penetration (*Market Penetration*).

4. WT Strategy

   WT strategy is a defensive strategy or a way for the Company to immediately address major weaknesses to avoid major threats by maintaining operational stability and avoiding the severity of risks. There is one strategy that has been produced, namely 'Efficient the use of inorganic fertilizers, pesticides and synthetic herbicides through a precision farming approach to reduce costs while warding off negative campaigns and environmental risks' (*Product Development*).

Development of Alternative Strategies with BOS to Increase Added Value

The six alternative strategies can be developed again using the four steps of BOS work by identifying various behaviors and activities that need to be *eliminated*, that need to *be reduced*, that need to be increased (*raise*) and need to be created (*create*). The purpose of developing a strategy using BOS is to ensure the creation of added value as well as operational and cost efficiencies in each implementation of a green industry strategy. The results of the development of alternative strategies with BOS can be seen in Table 5.

Table 5. Strategy Development with four BOS work steps

Eliminate	Reduce	Raise	Stuart T
SO Strategy			
Expanding the implementation of *the circular economy* and renewable energy by utilizing *green financing schemes* that are in accordance with the palm oil industry. *(merge 4 columns)*			
1. Dispose of palm oil waste (POME, shell, empty casing) without utilization. 2. Dependence on fossil energy sources in plantation and factory operations. 3. Conventional financing approach with no added value.	1. Greenhouse gas (GHG) emissions from the production and processing process. 2. Paid external energy use. 3. Long-term energy consumption cost.	1. The use of palm oil waste as a source of biogas and biomass energy. 2. Transparency of environmental reporting and carbon footprint disclosure. 3. ESG document preparation capabilities.	1. Integrated *circular economy* model from gardens to zero-waste-based factories. 2. Green *financing scheme for the* palm oil industry sector with green financial institutions. 3. Palm oil-based renewable energy management unit.
ST Strategy (a)			
Develop a human rights-based sustainability program and international labor standards to fortify organizations from the pressures of labor issues. *(merge 4 columns)*			

1. Labor practices that are not in accordance with ILO standards and international human rights principles. 2. Employment policies that do not accommodate the principle of equality and are still discriminatory.	1. Reliance on labor without contracts and formal protections. 2. Wage and facility gaps between workers. 3. Incidents of work accidents in gardens and factories.	1. Labor protection and welfare standards according to the ILO. 2. Internal social and employment audit capabilities. 3. Transparency in reporting employment practices and K3 to stakeholders.	1. Integrated social sustainability programs based on human rights and the environment as a new industry standard. 2. Independent *grievance* and *whistleblowing* mechanism for workers.

Table 5. Strategy Development with four BOS work steps (advanced)

Eliminate	Reduce	Raise	Stuart T
ST Strategy (b) **Utilizing agronomic data systems to develop early detection capabilities and mitigate the impact of climate change on palm oil productivity.**			
1. Agronomic decision-making is based on intuition and experience alone. 2. The plantation condition reporting system is still manual and fragmented.	1. The use and procurement of agronomic inputs that are not timely and inappropriately dosed. 2. Loss of production and plant pest and disease (HPT) attacks due to extreme weather.	1. Integration of field sensor data, drones, and satellite imagery in garden monitoring. 2. The competence of the agronomy team in data interpretation and decision-making based on data and facts.	1. Climate change early warning system based on automation technology and *real-time agronomic data*. 2. Integrated precision agronomy platform.
WO Strategists (a) **Strengthen the monitoring system and digitalization integration to take advantage *of traceability* trends and carbon market penetration.**			
1. Duplication of inputs, data processing processes, and reporting. 2. Separate and non-standard reporting between units.	1. Administrative, operational and ESG workloads. 2. Environmental verification and audit costs and carbon footprint.	1. *Traceability* of the upstream to downstream supply chain of palm oil.	1. Access products to premium markets. 2. Integrated *traceability* and carbon platform.
WO Strategy (b) **Restructuring cross-division coordination flows by building an integrated data platform as the foundation of *traceability* and compliance of carbon MRV systems.**			
1. *Information silos* between divisions. 2. Inefficient repetitive reporting.	1. Complexity of cross-functional coordination.	1. Cross-division data integration. 2. Speed of decision-making.	1. Integrated *traceability* and carbon platform (*ESG Hub*).

Table 5. Strategy Development with four BOS work steps (advanced)

Eliminate	***Reduce***	***Raise***	***Stuart T***

WT Strategy			
Streamline the use of inorganic fertilizers, pesticides, and synthetic herbicides through precision farming approaches to reduce operational costs while counteracting negative campaigns and environmental risks.			
1. *Dead stock* due to lack of planning. 2. Excessive use of herbicides and pesticides. 3. Marginal land class and S3.	1. Dependence c chemical fertilizers 2. Chemical-based HPT control. 3. Loss of fertilizer in the field. 4. The application of fertilizer in the area is not feasible.	1. Efficiency of using inputs with technology. 2. Soil fertility with organic matter & microorganisms 3. Integrated control based on ecology.	1. *Precision Nutrient Management System*.

CONCLUSION

The integration of the green industry concept into PT Teladan Prima Agro's business strategy has been initiated; however, it has not been fully embedded into the company's business model. Consequently, the achievement of environmental performance improvements has not yet been effectively translated into operational and cost efficiencies. The green industry programs and strategies implemented by the company include circular economy initiatives, the utilization of renewable energy derived from waste, sustainability certification, and the development of a strategic document in the form of an ESG Roadmap 2025–2030.

The key factors influencing PT Teladan Prima Agro's success in implementing sustainability strategies were identified from both internal and external environments. The company's primary internal strength was its capability to implement circular economy practices and utilize renewable energy, which contributed to reducing greenhouse gas emissions and decreasing dependence on fossil fuels. The main internal weakness identified was the company's limited optimization of operational and cost efficiency management, which became a challenge in advancing sustainability strategies. External opportunities that could be optimized by PT Teladan Prima Agro included increasing demand for digital traceability systems, which could support business transformation and provide a pathway toward carbon market participation. The main external threat was climate change, which could negatively affect crop productivity, particularly during prolonged drought conditions.

Six alternative strategies were formulated, consisting of two market penetration strategies and four product development strategies. These strategic alternatives focused on expanding existing sustainability initiatives, enhancing operational efficiency through integration, and improving cost efficiency to strengthen the company's green industry transformation.

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