

Business Model Adaptation For Foreign Company To Navigate Local Content Requirements In Indonesia's Upstream Oil and Gas Industry In 2034 Using Inductive Scenario Planning Approach (Case Study Tas)

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ABSTRACT: Complying with local content regulations in the upstream oil and gas industry presents a significant challenge. These regulations aim to enhance local capability, and the industry's yearly transaction value greatly impacts the local industry, necessitating the use of local products. However, despite requiring high technology, this industry mostly relies on imported products. To address this challenge, our research employs a systematic approach that combines scenario planning with Analytic Hierarchy Process (AHP) analysis. Our primary goal is to develop a comprehensive framework that empowers organizations to optimize their business strategies within the context of localization projects. By integrating scenario planning, which allows for the exploration of diverse future scenarios, with AHP analysis, which offers a structured analytical foundation for evaluating and selecting strategies, our research equips decision-makers with a powerful toolset. Through extensive case studies and meticulous analysis, our research sheds light on the nuanced decision-making processes and strategic adaptations that can be achieved through the synergy of scenario planning and AHP analysis in the domain of localization projects. Our findings and insights provide practical guidance to decision-makers grappling with the complexities of local content compliance and the long-term sustainability of business strategies.

Keywords: local content requirements, scenario upstream oil and gas, foreign company, Tingkat Komponen Dalam Negeri TKDN, business model adaptation

INTRODUCTION

Local Content Requirements (LCRs)

The definition of "local" in LCRs is using and/or including domestic resources in economic activities. This involves procuring goods and services and creating national employment to positively impact the country. In general terms, the LCRs have been associated with (i) policy instruments employed by the government, (ii) in the form of non-tariff measures, and (iii) aiming to support and incentivize the use of local goods, services, and labor. The proponents of local content policy view that the LCRs promote development by increasing

local production and creating jobs, protecting undeveloped domestic infant industries, and encouraging technology transfer from foreign to local entities (Limenta & Ing, 2022). LCRs were generally adopted by developed and developing countries such as the US, Canada, China, India, Brazil, and several EU states to promote local industry development. They have been applied in various industry sectors, such as oil and gas, renewable energy, automotive, medical devices, and pharmaceuticals (Aswicahyono, Hill, & Narjoko, 2010).

In Indonesia, LCRs were introduced in the 1950s through various initiatives, such as the "Benteng Program." A more comprehensive application of LCRs began in 1974 with the "Deletion Program," particularly in the automotive sector.

During President Suharto's New Order era, particularly around the 1990s, the "Gerakan Cinta Produk Indonesia" campaign was introduced to encourage Indonesians to appreciate and prioritize local products over imported ones. The primary goal was to strengthen domestic industries and reduce dependency on foreign products. However, the use of LCRs was abandoned during the 1998 Asian Financial Crisis (AFC) (Azmy, Suryana, Solikin, & Anggraeti, 2024). They were reintroduced in 2009 when former President Susilo Bambang Yudhoyono's administration revisited the local content strategy by launching the "Increase Use of Domestic Production" (Peningkatan Penggunaan Produksi Dalam Negeri, or P3DN) program. This was formalized through Presidential Instruction No. 2 of 2009, which focused on using domestic products in government procurement of goods and services (Fiani, 2024).

Implementation of LCRs in Extractive Industries

Local content as a development strategy in the extractive industries represents a 21st-century manifestation of resource nationalism. The movement to adopt LCR gained prominence toward the end of the most recent commodity price boom, which concluded in 2014. This trend can also be viewed as part of a larger backlash against neoliberal globalization, characterized by a resurgence of protectionism advocated by governments across the political spectrum (Khairani, 2024). This shift is evident not only in developing countries but also in more recent political movements in the United States and the United Kingdom, such as Donald Trump's campaign for "Making America Great Again" and the successful "Brexit" campaign to withdraw the UK from Europe (Hilson & Ovadia, 2020).

Measurement of the local input usually depends on the industry. Extractive industries like oil, gas, and minerals tend to be more qualitative and wide-ranging. Examples include requiring foreign companies to join local businesses or institutions, hiring and training local workers, implementing corporate social responsibility (CSR) initiatives, and developing local content plans. These plans should outline how the company's operations will incorporate local businesses and promote the development of the local community (Mubarok, 2018).

LCRs are widely implemented in extractive industries to ensure that the host country shares the economic benefits of resource extraction. Today, over 49 countries globally have LCRs linked to their extractive industries. The Middle East and North Africa (MENA) region—home to some of the world's largest exporters of oil and natural gas—has increasingly introduced LCR, which includes laws and policies that require foreign companies to prioritize nationals, domestic companies, and locally produced material in the procurement of goods and services used for petroleum operations (Olawuyi & Boshoff, 2017).

Local content requirements (LCRs) have become an essential strategy for developing countries aiming to leverage their natural resource endowments. The strategic adoption of LCRs fosters industrial growth and technological transfer, creating a more resilient domestic economy. This approach not only stimulates local job creation but also enables a gradual

reduction of dependency on foreign imports, contributing to national economic sovereignty (Bloch & Owusu, 2012).

Indonesia's implementation of LCRs within its upstream oil and gas industry serves as a critical case study for understanding the balance between fostering domestic capacity and meeting global standards. Despite being resource-rich, Indonesia's reliance on imports for high-tech components underscores the need for robust policy interventions to boost local technological capabilities. Studies have shown that countries like Nigeria and Brazil, which adopted similar policies, faced initial challenges but eventually witnessed notable increases in local participation and economic benefits (Ramdoo, 2015).

Scenario planning emerges as a robust tool for analyzing uncertainties and preparing for future industry conditions. Integrating the Porter's Five Forces framework into scenario development enriches strategic planning processes, especially for industries as dynamic as oil and gas. This dual approach provides a structured pathway to evaluate competitive dynamics while also addressing regulatory and market-driven challenges (Wright, Bradfield, & Cairns, 2013).

The effectiveness of LCRs in Indonesia hinges on their alignment with broader economic strategies, such as the National Medium-Term Development Plan (RPJM). Programs like the "Peningkatan Penggunaan Produksi Dalam Negeri" (P3DN) emphasize integrating local products in public procurement, which is a significant step towards reinforcing domestic industrial capacity. However, achieving this requires addressing skill gaps and infrastructural bottlenecks that hinder local production capabilities (Silva & Onguglo, 2014).

The global transition toward renewable energy presents an opportunity for Indonesia to recalibrate its LCR strategies. Aligning LCRs with sustainable energy goals can position the country as a leader in renewable energy technologies. Policymakers must adopt adaptive strategies that prioritize local innovations while fostering international collaborations to fill technological gaps. This shift could significantly contribute to achieving Indonesia's ambitious energy targets (Irena, 2018).

**Table 1 Implementation of LCR in Extractive Industries in Various Countries
(Author, 2024)**

Country	Local Content Program	Implementation
Nigeria	Nigeria's local content policy in the oil and gas sector relies on three key mechanisms: State participation, the Local Content Development Act, and the marginal fields policy.	Nigeria is committed to improving the policy through better financing, monitoring, and governance. These aim to enhance local value addition, integrate industry benefits into the broader economy, and increase local participation in oil and gas operations.
Kenya	Kenya's local extractive content is guided by legislation like the Petroleum Act of 2019, the Energy Act of 2016, and the proposed Local Content Bill. These frameworks aim to develop a skilled workforce, promote local goods and services, and ensure knowledge transfer.	Despite progress, challenges include regulatory overlaps, unclear roles, skill gaps, and unmet community expectations. Kenya must harmonize policies, build local capacity, and link-local content goals to broader economic plans like Vision 2030 while addressing community needs and ensuring transparency.
Brazil	Brazil's local content policy in the extractives sector has primarily been implemented through concession contracts and production-sharing	The lack of robust coordination and declining oil prices have reduced investments, exacerbating Brazil's fiscal crisis. While local content measures could

Country	Local Content Program	Implementation
	agreements in the oil industry. These policies aim to protect local industries but lack effective state coordination to balance the interests of oil companies, suppliers, and the broader economy.	address issues like the learning curve and economies of scale, inefficiencies and rent-seeking practices have limited their effectiveness in Brazil. Policymakers may gain more flexibility to refine these policies as international operators increase their presence in the pre-salt oil fields
Iran	Iran's local content practices in the extractive sector are managed by the state-owned NIOC, which operates under government-designed budgets and development plans. Historically, Iran has used various contractual models, including Buy-Back contracts and the Iran Petroleum Contract (IPC), to manage oil and gas production, but these have faced limitations, including reduced foreign investment due to sanctions.	Challenges for local content integration include domestic inefficiencies, contradictory laws, marginalized resource-rich regions, and lack of access to advanced technology and funding. International sanctions have further hindered progress, limiting foreign investment and technical expertise. Without reforms, Iran's local content development in the extractive sector risks further stagnation
Malaysia	LCRs in Malaysia encompass employment, training, technology transfer, and procurement requirements as well as mechanisms crafted to maximize industry value.	Petronas has been a key driver of local content in Malaysia through its Vendor Development Programs (VDP), established in 1993, and the VDPx initiative launched in 2018. These programs aim to lower entry barriers for local entrepreneurs, foster profitable vendors, and enhance value creation within the oil and gas industry.

Overview of Indonesia's Oil and Gas Industry

Since the initial discovery in North Sumatra in 1885, Indonesia has maintained an active presence in the oil and gas sector for over 130 years. Declining oil production and increasing consumption have made Indonesia a net oil importer since 2004. (Amanda, ST, Setyadi, H Zainal Ilmi, & Zainal Abidin, n.d.)

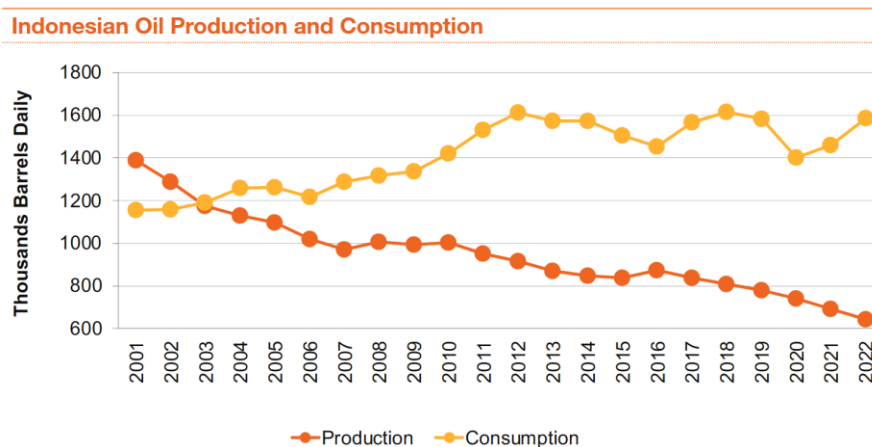


Figure 1. Indonesia oil production and consumption.(PwC, 2023).

Indonesia faces significant challenges in its oil and gas sector as its fields mature and no significant new reserves are being discovered. The natural decline in production rates is

difficult to manage. Oil production in Indonesia is insufficient to meet the rising demand for crude oil, which increased from 1.4 million barrels of oil per day (MBOPD) in 2020 to 1.585 MBOPD in 2022. As a result, crude oil imports are necessary to satisfy this consumption demand (PwC, 2023). In 2020, Indonesia was ranked 12th in global gas production, with a total output of 63.2 billion cubic meters (equivalent to 2.23 trillion cubic feet). The country had proven reserves of 44.2 trillion cubic feet. In terms of reserves, Indonesia ranks 23rd in the world and 4th in the Asia-Pacific region, following China, Australia, and India. However, in 2021, Indonesia experienced a decline in gas production, which caused its global ranking to fall to 15th, with a total volume of 59.3 billion cubic meters (equivalent to 2.09 trillion cubic feet). Despite this decrease in production, there was no change in proven reserves, so Indonesia remains 23rd in the world and 4th in the Asia-Pacific region. Looking ahead, Indonesia has set a target production goal of 12 billion standard cubic feet per day (BSCFD) for 2030 and beyond (SKK Report, 2023).

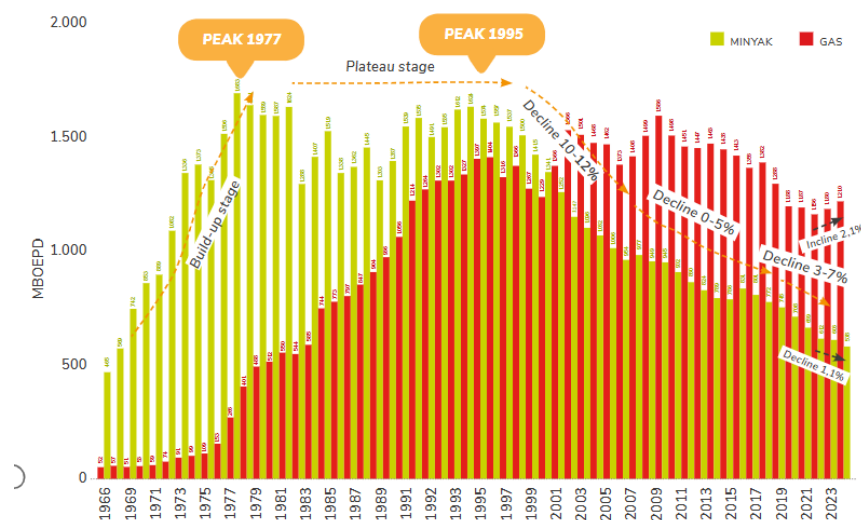


Figure 2. Indonesia Oil and Gas Production Profile (SKK Report, 2023)

The capital-intensive nature of the oil and gas industry has lent itself to very large companies because of the huge investments required to explore and develop production facilities. To improve the investment climate in this sector, the government is implementing a program that includes fiscal system flexibility, license simplification, data transparency, and fiscal stimulus (Sari & Sunitiyoso, 2020). The investment trend in 2023 has shown a notable increase compared to 2022. According to SKK Migas, the upstream oil and gas sector realized investments of US\$13.7 billion in 2023, which is approximately Rp211.2 trillion (based on the BI Central Rate of Rp15,416 per USD on December 31, 2023). This represents a 13% increase from the US\$12.1 billion invested in 2022 and surpasses the estimated global growth of 6.5% in upstream oil and gas investment. Furthermore, the investment realized in 2023 marks the highest level since 2016, making it the largest investment in the last eight years. (SKK Report, 2023) .

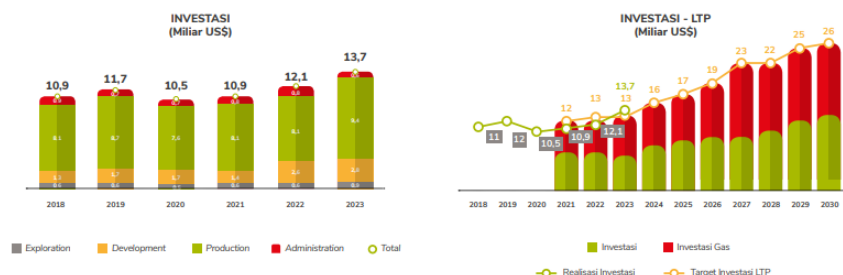


Figure 3 Investment Trend in Indonesia's Upstream Oil and Gas (SKK Report, 2023). LCR in Indonesia's Upstream Oil and Gas Industry

On January 17, 2020, President Joko Widodo signed Presidential Regulation (Perpres) Number 18 of 2020 on the National Medium-Term Development Plan (RPJM Nasional) 2020-2024. This Presidential Regulation was signed to implement the provisions of Article 19 paragraph (1) of Law Number 25 Year 2004 on the National Development Planning System (DGOG Report, 2024).

To strengthen domestic industries, the government needs to promote the use of P3DN in procurement projects. Bids will be evaluated based on technical aspects, price, and the domestic content (TKDN) level of the goods and services offered. The P3DN program aims to enhance national industries' production capacity and quality, allowing them to compete in the international market. It also decreases dependence on imported goods and shields against exchange rate fluctuations (Buku Pedoman P3DN, 2020).

Indonesian LCRs are spread across various laws, regulations, and decrees. The policy is based on the Constitution of the Republic of Indonesia 1945 and requires the state to control natural resources directly. The Oil and Gas Law divides activities into upstream and downstream. Upstream activities involve exploring and extracting oil and gas, while downstream activities include processing, transporting, storing, and selling these resources.

The urgency of this research lies in the increasing importance of complying with local content requirements (LCR) in Indonesia's upstream oil and gas industry to foster economic growth and reduce dependency on imported products. As global demand for sustainability and local industry development rises, foreign companies must adapt their business models to navigate the complexities of LCR compliance. The rapid shift toward local sourcing and the integration of domestic capabilities highlight the critical need for strategic planning to ensure sustainable operations in this evolving regulatory landscape.

Despite extensive studies on local content policies globally, there is limited research addressing how foreign companies can adapt their business strategies to meet Indonesia's LCRs while maintaining competitiveness. Existing literature often lacks a comprehensive framework that integrates scenario planning and decision-making tools like the Analytic Hierarchy Process (AHP) to address the complexities of balancing global standards with local compliance. This gap underscores the necessity of a tailored approach to explore future scenarios and strategic adaptations specific to the Indonesian context.

The novelty of this study lies in its dual-methodological approach, combining scenario planning and AHP analysis to navigate LCR compliance in Indonesia's upstream oil and gas industry. By developing plausible future scenarios and systematically evaluating strategic alternatives, this research introduces a robust framework that empowers decision-makers to adapt their business models effectively. The integration of theoretical insights with practical case studies provides actionable recommendations, distinguishing this study from previous research on LCR implementation.

The primary objective of this research is to analyze the strategies foreign companies can adopt to comply with LCRs in Indonesia while ensuring sustainable business operations. The findings aim to benefit policymakers by offering insights into the challenges and opportunities of LCR implementation, supporting the development of more effective regulations. For businesses, this study provides a practical framework to navigate compliance challenges, optimize resource allocation, and enhance local partnerships. Ultimately, the research contributes to fostering a more resilient and inclusive upstream oil and gas sector in Indonesia.

RESEARCH METHODOLOGY

This research adopts a qualitative approach to gather stakeholders' perspectives in adapting to local content requirements in the upstream oil and gas industry through qualitative methods. The data for this research will originate from both primary and secondary sources. Interviews involving O&G stakeholders such as oil operators, regulators, service companies, foreign companies, NGOs, and TKDN certificatory are used to acquire primary data. These in-depth interviews with each stakeholder serve multiple purposes, such as gathering their current view about what is going on now and might be happening in the industry, what their hopes and worries are, as well as their expectation for the business. A comprehensive literature review, including published journals and institutional annual reports, forms the robust foundation of the secondary data used in this research.

RESULT AND DISCUSSION

Three plausible scenarios were developed from the scenario development to explore potential future conditions. These scenarios are integrated with Porter's Five Forces framework to enhance the analysis, offering a robust assessment of how competitive dynamics might evolve under each scenario represented in *Table IV- 2*. Before incorporating Porter's Five Forces Framework, a gap analysis was conducted to see the potential changes in the TAS business model 10 years from now, as shown in the following analysis table.

Table IV- 1 Analysis of TAS's Current Business Model Adaptations Across All Three Scenarios

	Current Business Model	Scenario 1	Scenario 2	Scenario 3
Key Partners	- Local distribution partner - Government/regulatory bodies	- Local vendor/raw material sourcing - Local manufacture - Government/regulatory bodies - Research institutions	- Research institutions and universities - Government and regulatory bodies - Think tank organization for renewable energy	- Potential local manufacturer - Local distribution channel - Oil and gas service companies
Key Activities	- Manufacturing high-quality products - Delivering products - Consultative selling, providing training and workshop - Market expansion exploring new opportunities			

Value Proposition	• Innovative solutions specific to customer requirements • Proven technology and successful product history in the application • Operational Efficiency Products Solution	• Emphasize the importance of focused differentiation technology and highlight its alignment with TKDN requirements. • Quicker delivery to enhance local product availability and operational efficiency.	• Offer renewable energy-specific innovations • Sustainability solutions to reduce carbon footprint to meet industry roadmap to net zero	• Provide cost-efficient, adaptable solutions to tackle resource constraints. • Develop locally optimized solutions to align with strict TKDN policies.
Customer Segments	• Oil and Gas Exploration and Production • Drilling and Well Servicing Contractors	• Oil and Gas Exploration and Production • Drilling and Well Servicing Contractors	• Oil and Gas Exploration and Production • Drilling and Well Servicing Contractors • Renewable energy companies	• Oil and Gas Exploration and Production • Drilling and Well Servicing Contractors. • Oilfield Service Companies
Key Resources	• Intellectual Property: Patents and R&D capabilities • Manufacturing capability • Skilled engineers, researchers, and sales teams with industry expertise • TAS Brand Reputation	• Expand local manufacturing capabilities. • Upskill workforce to handle localized production aligned with TKDN.	• Invest in renewable energy expertise and workforce training • Develop R&D facilities for renewable energy technologies • Leverage brand reputation in both sectors.	• Intellectual Property: Patents and R&D capabilities • Manufacturing capability • Skilled engineers, researchers, and sales teams with industry expertise • TAS Brand Reputation

Channels	• Direct sales Dedicated sales team engaging with the key industrial player • Distribution Partners • Online Presence • Tradeshow and conference to showcase innovative product	• Direct sales Dedicated sales team engaging with the key industrial player • Distribution Partners • Online Presence • Showcase TKDN-compliant solutions at industry events.	• Direct sales Dedicated sales team engaging with the key industrial player • Distribution Partners • Online Presence • Establish channels targeting renewable energy players. • Create marketing campaigns emphasizing green energy innovations.	• Direct sales Dedicated sales team engaging with the key industrial player • Distribution Partners • Online Presence • Promote localized trade shows and events to support local engagement.
	• Fixed costs R&D expenditures for product innovation Manufacturing facility operations and maintenance Marketing and sales team costs • Variable costs Raw materials for production Distribution and logistics expenses Customization and after-sales support	• Increase investment in local manufacturing to meet TKDN demands. • Optimize fixed costs to support localized operations.	• Allocate a budget for renewable energy R&D. • Shift marketing spend toward promoting green energy solutions.	• Licensing cost for adoption technology of local manufacture
Revenue Streams	• Revenue from selling products • Revenue from lab testing during consultation services	• Explore incentives tied to TKDN compliance	• Explore incentives tied to support renewable energy development	• Licensing costs for the adoption of local manufacturing technology

Table IV- 2 A Relevancy Analysis Integrating Implications and Options within Porter's Five Forces Framework (Author, 2024)

TAS Competitive Dynamics	Relevancy			Competitive Level	Indication of market competition
	S1	S2	S3		
Threat of New Entrants					
TAS's brand and reputation in the industry as an innovation company promotes customer confidence and reliability.	R	R	R	Low	New entrants will face difficulty in gaining trust and market share quickly
Proven success in developing applications and patented technologies that are challenging to imitate.	R	NR	R	Low	New Entrants would face challenges replicating TAS's product applications
Manufacturing and quality assurance capability to ensure high product quality	R	R	NR	Low	TAS's substantial investment in research and development and advanced lab capabilities demands significant capital and expertise, which are not easily accessible to new players.
High investment in R&D and supporting lab capability to meet customer standard quality requirements.	R	R	R	Low	TAS's robust manufacturing capabilities and stringent quality standards ensure high product performance, making it harder for new entrants to match this level of quality.
TAS Innovation Culture fosters co-creation development with customers, providing flexibility to address industry challenges.	R	R	R	Low	TAS's collaborative approach to developing solutions with customers fosters long-term relationships, creating loyalty that new entrants cannot easily disrupt.
Enhance strategic partnerships with local manufacturers to increase TKDN compliance and provide access for foreign companies entering the market.	R	NR	R	Low	Strategic partnerships can help foreign companies meet compliance requirements more easily, thus lowering entry barriers.
Credibility marketing and brand positioning to enhance market outreach through global industry recognition	R	R	NR	Low	TAS's credibility marketing and global industry recognition strengthen its competitive position, further discouraging new entrants who lack a comparable track record.
Bargaining Power of Buyers					
High expectations for quality and standards product to meet strict performance product	R	NR	NR	Moderate	Businesses that are unable to meet customer expectations may find themselves losing valuable market share to their competitors.
Local players claiming similar product performance at lower prices provide buyers with more product options	R	NR	R	High	Local competitors are intensifying competition, giving buyers more choices and requiring TAS to justify its premium pricing with quality and innovation.
Government incentive programs encourage buyers to try local alternatives	R	NR	R	High	Government incentives for local products shift buyer interest towards local suppliers, even with performance differences.
Pressure for competitive pricing or exploring lower-cost alternative product solutions in	R	R	R	High	Buyers seek cheaper solutions in cost-sensitive markets, boosting competition among local

TAS Competitive Dynamics	Relevancy			Competitive Level	Indication of market competition
	S1	S2	S3		
cost-sensitive markets					manufacturers.
A narrow market segment with specialized needs reduces buyers' ability to switch to competitors easily	NR	R	R	Low	TAS operates in a niche market with few suppliers, reducing buyer power and enhancing its advantage, though new competitors could intensify competition.
Difficulty in finding comparable substitute products due to TAS patented technology	NR	NR	R	Low	TAS's patented technologies create barriers to entry and limit competition, strengthening its position by reducing alternatives for buyers.
Customer trust in TAS's quality and performance reduce	R	R	R	Low	Buyers' confidence in TAS's superior quality reduces competition and provides a buffer against lower-cost alternatives.
Threat of Substitute Products					
Competitors offer other innovative materials that serve as substitutes, offering additional benefits compared with current TAS technology	R	R	R	Moderate	Increasing alternative innovative materials could shift industry demand away from TAS's core offering and can capture market share.
Local manufacturers claim similar performance while offering products at lower prices and attracting TKDN compliance	R	NR	R	High	Increase potential local competitors with support with local industry support to provide more competitive prices in the market
Local manufacturers offering fast production lead times compared to imported products enable timely operations.	R	NR	R	High	Easy access and quick service appeal to customers with short-time demands to meet production timelines.
International suppliers may enter the market with cost-competitive alternatives, leveraging economics of scale and production efficiencies	R	R	R	Moderate	Imported products with innovative technology may replace TAS's current offering as no similar technology is available in the market.
Government incentives encourage the adoption of locally produced goods, even if they offer slightly lower performance	R	NR	R	High	This condition creates a market environment in which local substitutes become viable options for buyers, supported by financial and regulatory incentives.
Bargaining Power of Suppliers					
Limited availability of high-quality and specialized materials increases supplier leverage	NR	NR	R	High	Suppliers of unique or high-quality inputs have stronger bargaining power due to the limited availability of alternatives.
TKDN regulations encourage local sourcing; however, the quality of local materials often does not meet industry standards	NR	NR	R	High	Switching to local suppliers for specialized materials often incurs high costs and quality risks
The economic scale of raw material purchases increases supplier leverage as TAS products target a narrower market application.	R	NR	R	High	Dependence on limited suppliers increases the risk of supply chain disruptions or price increases.
Partnering with local manufacturers who produce	R	NR	R	Moderate	Local partnerships could reduce supplier power over time by

TAS Competitive Dynamics	Relevancy			Competitive Level	Indication of market competition
	S1	S2	S3		
similar products can increase purchasing power.					diversifying input sources and lowering costs.
Rivalry Among Existing Competitors					
The upstream oil and gas market in Indonesia is becoming saturated, with multiple suppliers competing for a relatively narrow market segment	R	R	R	Moderate to High	Limited market growth increases competition for existing customers
Government policies favoring high-TKDN compliance products create opportunities for local competitors to challenge TAS's market share	R	NR	R	High	TAS faces competitive pressure to increase localization while maintaining its high product standards.
Competitors with lower production costs can capture price-sensitive segments, challenging TAS's premium positioning	R	NR	R	High	Price remains a key driver for many buyers in cost-sensitive markets, encouraging competition based on cost leadership
Competitors are investing in new technologies to improve product performance, challenging TAS's technological edge	R	NR	R	Moderate to High	TAS must continually innovate to stay ahead of competitors in performance and reliability

Implementation Plan and Justification

Table IV- 3 Proposed Strategic Action Implementation Plan (Analysis, 2024)

Strategy Action Implementation Plan		Year 1-2	Year 3-4	Year 5-6	Year 7-8	Year 9-10
Corporate Level Strategy	Invest in local supplier development and partnerships to meet TKDN requirements.	S1, S3				
	Build capacity for balanced investments in fossil fuels and renewable energy infrastructure.		S2			S1, S3
	Initiate joint R&D programs with local academia to stay relevant, addressing quality and innovation challenges	S1, S2, S3			S1, S2, S3	
	Accelerate diversification into renewables		S2			
	Enhance partnerships with foreign investors for both oil and gas and renewable projects.		S1, S2, S3			S1, S2, S3
	If supply chain disruptions worsen, prioritize investment in local infrastructure to address bottlenecks.		S3			
	Scale renewable energy projects to capitalize on growing climate commitment.	S2		S2	S1, S3	
	If the decline in oil and gas persists, optimize fossil fuel operations for maximum efficiency while investing in		S2	S3		

Business Level Strategy	transitional energy solutions like natural gas and hydrogen .			
	Strengthen ties with international markets to mitigate local protectionist trade barriers			S3
	Fully integrate renewable energy solutions into TAS's portfolio to meet demand from committed climate policies.			S2
	expand upstream oil and gas operations while investing in hybrid energy systems.	S2	S2	S1
	Drive foreign and local partnerships to address ongoing supply chain challenges .	S1, S3		S1, S3
	Establish TAS as a sustainable energy leader through innovative renewables and low-carbon fossil fuels solutions.	S2		
	Consolidate operations in emerging markets while strengthening local partnerships			S1, S3
	Enhance cost-efficiency in oil and gas production to compete with local alternatives	S1, S3		
	Begin diversifying into renewable energy technology, such as energy storage and carbon capture solutions .	S2	S1, S3	
	Target operational excellence by streamlining supply chains to improve reliability	S1, S3	S1, S3	
	Increase focus on cost leadership in oil and gas while expanding specialized offerings for renewable energy markets.	S2	S1, S3	
	Develop tailored solutions for local upstream challenges, such as emission-reduction technologies and energy storage systems.	S2	S1	S3
	Launch pilot renewable energy projects to establish a foothold in the transition market	S2		
	Develop integrated offerings for low-carbon fossil fuel solutions and renewable energy systems .	S2		
	Increase product customization and localized R&D to address evolving buyer requirements.	S1	S3	S2
	Introduce dual-sector solutions that support both oil and gas and renewable energy.	S2	S2	
	Introduce cost-efficient, localized products for both energy sectors.	S1	S3	S1, S3
	Offer performance guarantees and	S1, S3		S1, S3

Functional Level Strategy	tailored solutions to meet government project requirements.		
	Lead hybrid energy solutions for the oil and gas and renewable energy markets.		S2
	Focus on cost-efficiency, sustainability, and technology-driven solutions to address supply chain constraints.	S3	S1, S3
	Research & Development		
	Develop energy-efficient solutions for both oil and gas and renewable sectors	S1, S2	S3
	Advance innovation in renewable technologies like solar hybrid solutions and low-carbon materials.	S2	
	Commercialize renewable solutions and low-emission products while optimizing fossil fuel technologies.	S2	
	Focus on next-gen energy solutions , such as energy storage, hydrogen, and sustainable materials.		S1, S2
	Lead innovation in carbon-neutral solutions and alternative energy materials .		S2
	Manufacturing:		
	Localize production processes to align with TKDN policies.	S1,S3	
	Enhance local capacity to produce both oil and gas equipment and renewable energy components	S2	
	Expand capacity for renewable component manufacturing.		S1, S2
	Strengthen partnerships with local suppliers and identify alternative sources for critical materials.	S1, S3	
	Build redundancies by identifying secondary suppliers to address disruptions.	S1, S3	S1, S3
	Address ongoing disruptions through strategic local alliances and inventory management.	S3	S1, S3
	Upgrade facilities for high TKDN compliance across all product categories.	S1, S3	S1, S3
	Fully localize production where feasible while building global supply redundancies.		S1, S4
	Marketing		
	Highlight TAS's role in innovation and sustainability leadership through campaigns promoting balanced growth.	S1, S2, S3	
	Position TAS as a transitional energy provider , balancing fossil fuel solutions and renewables.	S2	

Early Warning Signals	Rebrand as a leader in sustainable energy innovation, highlighting balanced contributions to both sectors.	S2		
	Position TAS as an industry leader in bridging energy transition challenges.		S1, S2	
	Promote TAS's proven success as a resilient energy solutions provider for both fossil and renewable sectors.			S1, S3
	KEI Index: Monitor improvement trends in innovation and local talent retention	S1	S1	
	KEI Improvement: Ensure Indonesia ranks among the top 50 globally.		S1, S2	S1, S2
	Investment Value: Ensure upstream oil and gas exploration investments exceed baseline projections.	S1, S2, S3		
	TKDN Products: Track the increase in TKDN-compliant products annually.	S1, S2, S3		
	Renewable Energy Share: Track progress toward 18-28% renewable energy in the national mix.		S2, S3	
	Renewable Share: Monitor renewable energy, achieving or surpassing 28% of the energy mix.			S2, S3
	Investment Value: Observe upstream investment declines and renewable investment surges.		S1, S2	
	Investment Trends: Monitor upstream and renewable investment projections.		S1, S2, S3	
	Foreign Investment: Assess FDI flow into oil and gas versus renewable energy.		S1, S2, S3	S1, S2, S3
	Oil Production Decline: Monitor annual reductions of 3-10% to assess long-term viability.		S1, S2, S3	S1, S2, S3
	TKDN Growth: Ensure local industry infrastructure catches up with increasing compliance demands.	S1	S3	S1, S3
	Government Policies: Evaluate shifts in regulatory focus between fossil fuels and renewable energy.	S1, S2, S3	S1, S2, S3	S1, S2, S3
	Supply Chain Stability: Evaluate progress in local infrastructure development and quality compliance.	S1, S3		S1, S3
	GDP Contribution: Evaluate oil and gas GDP contribution versus renewable energy growth.	S2, S3		
	Competitiveness: Assess TAS's market leadership amidst ongoing industry changes.	S2, S3		

CONCLUSION

This study analyzed 24 key factors influencing the implementation of Local Content Requirements (LCR) in Indonesia's upstream oil and gas industry by 2034, involving 563 respondents. It developed three scenarios: sustained industry growth (Long Way to Marathon Race), transition to renewable energy (Shifting the Baton in Relay Race), and industry decline with challenges (Run through the Obstacle). Integrated with Porter's Five Forces, these scenarios guide TAS in adapting its business strategies—focusing on differentiation, cost leadership, or a hybrid approach—to future industry dynamics over the next decade.

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