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Designing An Integrated Local Content Commodity Catalog and Monitoring Mechanism for Procurement at PT Bumi Energi

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Abstract

Background: The Domestic Component Level Policy (TKDN) is a strategic instrument of the government in encouraging national industrial independence through procurement mechanisms, especially in State-Owned Enterprises (SOEs). PT Bumi Energi as a national energy company is required to integrate TKDN in every procurement process. However, its implementation still faces challenges, especially at the stage of analyzing the minimum value of TKDN and monitoring post-contract realization.

Objective: This study aims to analyze the influence of the weaknesses of TKDN monitoring on the effectiveness of the procurement process at PT Bumi Energi and formulate a strategy to improve it.

Methods: The research method uses a qualitative approach with a case study design. Data was collected through semi-structured interviews, participatory observations, internal document review, and benchmarking with oil and gas sector companies that have more mature TKDN practices. The analysis was carried out using thematic analysis and gap analysis to compare existing conditions with ideal conditions based on regulations and best practices.

Results: The results show that the weakness of verification standards, reliance on vendor self-declaration, and the absence of an integrated TKDN database affect the effectiveness of procurement decision-making and increase governance risks.

Conclusion: This study concludes that strengthening TKDN monitoring procedures, establishing clear PIC mandates, and developing an integrated TKDN commodity catalog and database system are the key strategies to enhance procurement governance effectiveness at PT Bumi Energi. These findings contribute to the micro-organizational governance literature and provide actionable policy recommendations for SOEs facing similar TKDN compliance challenges.

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INTRODUCTION

The lack of realization of committed Domestic Component Level (TKDN) values in procurement contracts at PT Bumi Energi indicates a wider challenge to governance that occurs in Indonesian energy-sector SOEs, where regulatory requirements and operational implementation remain structurally unaddressed. The monitoring and verification of TKDN realization is linked as the critical variable that connects policy compliance to procurement effectiveness and it is an operational aspect that has not been so evident in existing academic literature on the subject local content policy in Indonesia (Pereira et al., 2021; Thai, 2017).

It is globally accepted since the last two decades, especially in resource-rich nations where while implementing Local Content Policy (LCP) or Local Content Requirement (LCR), issues have popped-up (Kalyuzhnova et al., 2016). This policy is implemented as a strategic instrument to

increase domestic industrial participation, encourage job creation, accelerate technology transfer, and strengthen national economic independence (Aditya et al., 2025; Nurhidayah et al., 2024; Nwapi, 2016). Globally, about 90% of natural resource-producing countries have adopted local content policies in various forms (Dobbs et al., 2013). However, the effectiveness of its implementation is highly dependent on the readiness of the domestic industry, governance capacity, and adequate monitoring systems (Suriyanti et al., 2020). In this context, the main variable of concern is the monitoring and verification of TKDN realization as a representation of the quality of local content policy governance at the organizational operational level.

Although LCP is designed to support national industrial development, various studies show that the emergence of problems in its implementation is influenced by several structural and institutional factors. These factors include limited domestic industrial technology capacity, weak coordination between organizational units, complex regulations, and reliance on self-declaration mechanisms from vendors (Sitompul et al., 2022; Purba & Irianto, 2025). In addition, the absence of post-contract verification standards and an integrated database system causes TKDN policies to often stop only at the administrative stage without substantial control over their realization. This misalignment between regulatory design and implementation mechanisms then creates a gap between policy objectives and practices on the ground.

The impact of these factors is not only related to the effectiveness of industrial policies, but also affects procurement efficiency and the quality of corporate governance. International studies show that the implementation of LCP that is not supported by system readiness can increase project costs, distort competition, and create governance risks due to unverified local content data (Fernando & Ing, 2022; Gourdon & Guilhoto, 2019). In the context of public procurement and SOEs, weak monitoring of the realization of local content has the potential to affect price evaluation mechanisms, domestic preferences, and reporting accuracy to regulators. Thus, the weakness of monitoring is not only an administrative problem, but also has an impact on the quality of strategic decision-making and organizational accountability (Febrianto et al., 2024; Setiawan et al., 2021).

For example, to foster the spirit of domestic products in various regulations in Indonesia, including Government Regulation No. 29 of 2018 concerning Industry and Trade in Domestic Products (TKDN), Presidential Regulation No. 12 of 2021 on Non-Tariff Measures and Business Expansion, as well as presidential instruction over domestic product UUD delivers to ministry and SOE (Aditya et al., 2025; Nurhidayah et al., 2024; Purba & Irianto, 2025). Conceptually, TKDN includes material components, labor, production tools, and indirect costs, which are calculated as a percentage of the value of local content. This amount is then used as an assessment criteria in the selection process, including when determining the final evaluation price (HEA). By this, the TKDN monitoring variable in this study is as a control instrument so that the commitment stated during the tender process are indeed implemented. It means that the procurement effectiveness variable is reflected by and reflects the purpose of the organization in producing procurement decisions that are accurate, accountable, efficient, and according to applicable regulations (Trepte, 2004).

Previous research has only investigated TKDN from a mostly macro perspective: Fernando & Ing (2022) discussing the tensions between Indonesia's TKDN policy and its obligations under free trade agreements, while Sitompul (2022) documenting structural barriers to implementation focused on the energy sector. Moreover, in 2025, Aditya discussed the challenges and strategies of renewable energy in Indonesia on an extensive scale. Maddi (2024) and Mudofir (2025) went deeper into socioeconomic contexts of energy policies, including lessons learned from efforts to implement energy programs in Indonesia. However, to the best of our knowledge, none of these studies examine how internal organizational governance mechanisms such as standards specificity and verification workflows, and cross-functional coordination affect TKDN realization outcomes at an individual company level. This micro-organizational dimension is an important gap: while the research community knows that TKDN commitments can commonly are not realized, there is no empirically-based framework for diagnosing why internal monitoring fails and how company-level governance can be redesigned to address realisation gap. This study addresses this gap, utilizing thematic analysis of internal stakeholder perspectives in conjunction with systematic gap analysis and inter-company benchmarking to inform actionable governance improvement strategies.

This study employs two complementary theoretical lenses. Agency Theory According to

Eisenhardt (1989), the primitive mechanism leading to TKDN monitoring failure is: Principal-Agent Relationship; this refers to a principal-agent relationship between PT Bumi Energi and its vendors that gives rise to information asymmetry over TKDN, as vendors are privy to proprietary knowledge regarding their actual components of local content, thus providing incentives for them to inflate their TKDN declarations in all tenders. In the absence of vigorous verification after contract implementation, this asymmetry systematically inflates TKDN values that were reported. Through the lens of institutional theory DiMaggio & Powell (1983), this paper explains how ineffective governance persists at the organisational level: mimetic isomorphism results in PT Bumi Energi adopting holding-company TKDN templates, despite their mismatch with local circumstances, resulting only in a formal compliance that uncouples from substantive implementation. Individually and collectively, these frameworks provide the conceptual framework for understanding the thematic and gap analysis results discussed in the Results section.

This research' urgency becomes even stronger when correlated with the large value of procurement contracts that are vulnerable to risk in terms of governance if TKDN monitoring is not done systematic. The percentage value from TKDN is very crucial because at the PT Bumi Energi as a state-owned enterprise in the energy sector, the procurement contracts are worth trillions of rupiah, in particular for packages above one billion rupiahs using TKDN as an evaluation factor. Not having a verification mechanism for checking the realization of local content data post-contracts can endanger the procurement decisions based on that unvalidated data. Such a situation may decrease the credibility of reporting to regulators (e.g., the Ministry of Energy and Mineral Resources, BKKP) and heighten the risks of an audit as well as uncertainty in governance (Febrianto et al., 2024; Putra & Berawi, 2024). Thus, strengthening TKDN monitoring through a system of the watchdog while also tightening access to data relevant to procurement creates an immediate condition and demand for the future to maintain integrity in open bidding.

Based on this background, this study aims to: (1) identify the main challenges and gaps in the implementation of TKDN in the procurement process at PT Bumi Energi, especially at the stage of monitoring and verification of realization; and (2) formulate contextual and applicable improvement strategies to improve the effectiveness of TKDN-based procurement governance. Using a qualitative case study approach, this study utilizes semi-structured interviews, participatory observations, internal document review, and benchmarking with oil and gas sector companies that have a more mature TKDN system.

The benefits of this research are both theoretical and practical. Theoretically, this study contributes to the development of literature on local content policy governance at the micro-organizational level by emphasizing the relationship between TKDN monitoring and procurement effectiveness. Practically, the results of the research are expected to provide the basis for recommendations for improving procedures, strengthening the role of PICs, standardizing verification documents, and developing an integrated TKDN database at PT Bumi Energi. In addition, the findings of this study can also serve as a reference for other SOEs in strengthening the TKDN monitoring system so that national policies regarding the increased use of domestic products do not only stop at administrative commitments but produce added value for the domestic industry and more accountable corporate governance.

METHOD

This research was a qualitative study with a case study design intended to produce strategic solutions to the problem of implementing the Domestic Component Level (TKDN) in the procurement process at PT Bumi Energi. The research was conducted within the Procurement Division of PT Bumi Energi during the period from 2025 to early 2026, with a focus on procurement packages worth \geq IDR 1 billion that used TKDN as one of the evaluation factors. This research concerned several main aspects, namely the planning of the minimum value of TKDN, the evaluation of TKDN-based tenders, monitoring and verification of post-contract realization, and reporting to regulators. The methodology was designed with the aspiration to identify the divergence between inward looking policies, outward national regulations and real life challenges in order to formulate solutions that were relevant and contextual.

The main data sources in this study comprised all procurement transactions in 2025 with TKDN obligations, beyond any filters; nonetheless moving into packages \geq IDR 1 billion where TKDN was mandatory for evaluation. We purposively selected key informants, who were directly

involved in the implementation cycle of all TKDN stages. There were a total of ten (10) informants who consist of: two (2) User Unit functionaries who prepared the TOR and minimum TKDN value; two (2) P3DN Team members in charge of TKDN policy coordination; two (2) Procurement Planning Verifiers who evaluated the compliance of planning documents with regard to TKDN; two (2) Tender Implementing Buyers whose roles included managing vendor TKDN declarations during procurement; and two (2) Contract Monitoring PICs responsible for monitoring post-contract execution related to TKDN realization. This purposive selection was to cover the TKDN governance cycle from planning, implementation to evaluation. The data were collected from primary sources of in-depth interviews with key informants and secondary data sources included procurement standard operating procedures (SOPs), evaluation progress report of P3DN, vendor self-assessment form used by the provincial health office.

Data analysis adhered to an interactive, qualitative methodology structured through three concurrent and iterative processes: (1) data condensation, in which raw interview transcripts, observation notes, and internal documents were progressively reduced by identifying meaning units or significant statements and assigning preliminary codes; (2) data display, in which coded data were organized into thematic matrices and gap-analysis tables to identify emerging patterns across respondents and sources of information; and (3) conclusion drawing and verification, during which we progressively cross-validated emerging themes against regulatory benchmarks as well as benchmarking data from PHR (non-HIT organizations) and PPN. Thematic analysis was applied as the main analytical approach, consisting of open coding (ascribing meaningful statements), categorization (organizing codes based on conceptual similarities) and theme development (integrating categories into over-arching systemic themes). Additionally, for the gap analysis, based on the comparison of empirically derived themes with ideal condition standards (Government Regulation No. 29/2018; Presidential Regulation No. 12/2021) produced by PT Bumi Energi a sustainable operational decision-making improvement recommendation that is contextual to PT Bumi Energi was obtained.

RESULT AND DISCUSSION

Result

In this section, the empirical findings of the research on the Local Content policy implementation in PT Bumi Energi as the procurement process is discussed. What do the ideal or desired policies and processes look like, how are they different from regulatory requirements, and between inception in the office and procurement in the field? The results of their research are examined to determine the most important Local Content problems and form the basis for developing a more relevant governance improvement need in relation to the company's operational realities.

Key Challenges and Gaps in Local Content Implementation

To answer RQ1, ideally comparing the existing conditions with more ideal ones (as defined by government policy and based on best available practices in companies with more mature Local Content regimes) an analysis was developed that assessed these differences.

Interview Result and Findings

To overcome the issue of Local Content implementation in PT Bumi Energi, this analysis will use semi-structured interviews integrated with participant observation. The interviews were conducted with representatives from the User Department, P3DN Team, Verificator (Procurement Planning Department), Buyer (Procurement Executing Officers) and Contract Monitoring PIC who are directly involved in local content implementation verification and monitoring.

The interview data were analyzed via an inductive thematic analysis approach, extracting recurring themes and dominant systemic issues. The thematic analysis was conducted through three stages, namely: a) Open coding, to identify significant statements in the interview transcripts. b) Categorization, by grouping codes into categories with similar conceptual meanings. c) Theme development, by integrating these categories into broader themes that represent the systemic issues affecting the implementation of Local Content.

Based on the coding results from all interview transcripts, recurring issues among respondents were consolidated into thematic categories. A summary of these themes, along with representative quotations from key stakeholders, is presented in Table 1.

Table 1. Summary of Thematic Analysis Interview Results

Respondents	Interview Question (Translated)	Answers (Translated)	Initial Code	Theme
Representative of User	1 Do you understand what Local Content is and how it is applied in the procurement process?	I am aware of the Local Content policy as an obligation to use domestic products, services, and labor. However, in procurement practice, we do not yet fully understand the technical aspects of its analysis, such as how to define Local Content thresholds, complete self-assessment forms, or translate them into the TOR or technical specifications.	Normative understanding of Local Content	Limited technical capability in Local Content
	2 Do you feel that you have been adequately equipped with sufficient knowledge or guidelines related to Local Content?	The available guidelines are still general in nature. We do not yet have technical guidance that explains Local Content analysis methods or provides examples of Local Content application for specific types of work, especially for complex service works such as mining services or transshipment services.	Lack of technical guidelines	Weak Local Content governance and standardization
	3 When preparing technical specifications or the TOR, do you consider the use of local products or labor?	Local Content considerations have not yet become a primary variable, due to the limited availability of local products for operational needs. There is concern that forcing Local Content requirements may adversely affect quality or operational continuity.	Local Content is not a priority yet	Weak prioritization of Local Content in planning
	4 What challenges do you anticipate if users are required to verify the realization of Local Content?	We experience difficulties when asked to verify Local Content realization due to limited understanding of how to complete the self-assessment forms and the absence of clear technical indicators, such as measurement parameters, required supporting documents, and standardized reporting mechanisms.	Difficulty in verifying realization	Unclear Local Content verification mechanisms

Respondents	Interview Question (Translated)	Answers (Translated)	Initial Code	Theme
	5 What types of systems or support do you need to effectively monitor Local Content realization?	We need technical guidelines and supporting systems that explain practical ways to analyze and monitor Local Content without significantly increasing our workload.	Need for supporting systems	Need for system support in Local Content implementation
P3DN Team	1 How do you assess the level of awareness of work units regarding Local Content obligations?	In general, work units are aware of Local Content obligations; however, their technical understanding remains limited, particularly in relation to calculation, verification, and control of Local Content realization.	Low technical awareness	Low internal technical capability
	2 What challenges has the company faced in promoting Local Content implementation so far?	The main challenge is the absence of clear and detailed technical references for the Local Content implementation flow from planning to post-contract stages, which hinders effective cross-functional coordination.	Absence of technical references	Weak governance of Local Content implementation
	3 Is there a specific plan or roadmap for comprehensive Local Content implementation?	We do have a Local Content implementation roadmap; however, it fully refers to the document prepared by the holding company. We were not involved in its formulation, and there is no evaluation or adjustment mechanism to align the roadmap with the company's operational conditions and developments.	Top-down roadmap	Misalignment between the roadmap and the company's operational conditions
	4 How has the coordination among the P3DN Team, Procurement, and technical units been so far?	Coordination remains ad hoc and is not yet supported by a formal system or procedures that bind all relevant functions.	Ad hoc coordination	Weak cross-functional coordination
	5 What types of socialization or tools are most needed by users and the procurement	More practical and applicable socialization is needed, not only explaining Local Content requirements normatively, but also how	Normative socialization	Need for more practical and applicable capacity building

Respondents	Interview Question (Translated)	Answers (Translated)	Initial Code	Theme
	team to strengthen Local Content implementation?	to conduct Local Content analysis in actual procurement practice.		
	6 What are your expectations regarding management's direction and commitment to Local Content implementation?	We expect stronger commitment from management, particularly in clarifying the roles and responsibilities of each function in Local Content implementation. Management support is also needed so that Local Content policies and the roadmap can be adjusted to the company's operational conditions.	Weak management commitment	Weak managerial support for Local Content
Verificator	1 Do the PR documents submitted by users reflect compliance with Local Content requirements?	In some PRs, Local Content analysis has been included; however, the references used are often invalid or not traceable. In addition, errors are still found in the completion of Local Content self-assessment forms, particularly in the classification of work items.	Invalid Local Content analysis	Inconsistency in planning documents
	2 What challenges do you face when evaluating or requesting clarification on Local Content data?	We often face difficulties because the Local Content data submitted are inconsistent, invalid, or not supported by clear references.	Inconsistent Local Content data	Issues in data quality and consistency
	3 How clear are the internal guidelines used to verify Local Content elements?	The existing internal guidelines do not yet provide clear verification standards, such as minimum required documents, verification methods, or tolerance levels for Local Content deviations.	No verification standards in place	Absence of Local Content verification standards
	4 What recommendations would you provide to strengthen the integration of Local Content in procurement planning?	We recommend that Local Content integration be strengthened from the procurement planning stage through clear technical guidelines for users, particularly in determining valid minimum Local Content values that can be justified	Need for planning guidelines	Weak integration of Local Content at the planning stage

Respondents	Interview Question (Translated)	Answers (Translated)	Initial Code	Theme
		as tender requirements.		
Buyer	1 Have you ever selected vendors by considering Local Content values?	In the tender process, Local Content requirements are applied to projects with a value of \geq IDR 1 billion. The minimum Local Content value set by the user becomes a mandatory requirement and may function as a disqualifying criterion if vendors are unable to meet the minimum threshold.	Local Content as a disqualifying criterion	Local Content as a tender requirement
	2 What difficulties do you face related to Local Content during tender preparation or evaluation?	The minimum Local Content values set by users are sometimes not supported by valid analysis, and are therefore often challenged by vendors who understand Local Content. On the other hand, vendors with limited understanding of Local Content analysis frequently complete the self-assessment inaccurately and inconsistently with their bid prices.	Invalid minimum values	Risks in setting minimum Local Content values
	3 Do vendors understand and are they ready to declare Local Content commitments?	Some vendors have understood this requirement; however, many vendors still do not understand how to calculate and technically substantiate Local Content, resulting in declarations that remain largely normative.	Low vendor readiness	Low vendor readiness for Local Content
	4 What support or guidance do you expect from the P3DN Team or management?	We expect clear guidance from the P3DN Team and management so that the minimum Local Content values are finalized in the HPS and TOR.	Need for finalized guidelines	Dependence on clarity of internal policies
Contract Monitoring PIC	1 Is the verification of Local Content realization currently integrated into the contract	Monitoring of Local Content realization has not yet become a formal part of contract performance indicators and is not integrated into the contract close-out	Local Content is not a contract performance indicator	Local Content is not yet integrated into contract management

Respondents	Interview Question (Translated)	Answers (Translated)	Initial Code	Theme
	monitoring or close-out process?	process.		
2	What challenges do you face in coordinating with users to verify Local Content realization before contract close-out?	The challenge we face is the lack of clarity regarding our role in verifying Local Content realization. To date, we have never carried out this monitoring function because we were not aware that this role was part of our responsibility. In addition, the mechanisms for recording and reporting Local Content realization from the outset have not been clearly defined.	Unclear role mandate	Unclear responsibility for verification
3	Are the existing contract provisions sufficient to support the enforcement of Local Content realization verification before contract close-out?	The Local Content clauses in the contract generally follow the holding company's template; therefore, their application tends to be merely formalistic and has not yet functioned as an effective control instrument.	Formalistic clauses	Weak contractual enforcement of Local Content
4	What types of systems or support do you need to effectively monitor Local Content realization in the future?	We need an integrated monitoring system that can be used to record, monitor, and provide reminders on Local Content realization up to the contract close-out stage, as well as integration with a database so that monitored Local Content data can be properly documented.	Need for an integrated system	Need for Local Content monitoring and documentation systems

Using thematic analysis and open coding, the interview narratives were then reviewed by the author to identify recurring issues across respondents. The coded results were consolidated into five dominant themes detailed in Table IV.2, namely Weak Local Content Governance and Standardization (GOV), Limited Technical Capability in Local Content Implementation (CAP), Ineffective Integration of Local Content in the Procurement Process (INT), Compliance and Operational Risks in Local Content Implementation (RSK), and the Absence of Local Content Monitoring and Documentation Systems (SYS).

Table 2. Thematic Code of Interview

Dominant Theme	Code
Local Content Governance	GOV
Local Content Technical Capability	CAP
Integration of Local Content in the Procurement Process	INT
Local Content Compliance and Control	RSK
Local Content Monitoring and Documentation Systems	SYS

Based on Table 2, after the coding process of the interview materials was completed, all statements were coded and grouped into the main thematic categories as presented in the table. Each category represents issues that repeatedly emerged in the respondents' explanations throughout the procurement cycle, both explicitly stated and implicitly reflected in their narratives. To strengthen the analysis of the relative importance of each category, the frequency of occurrence of each category was calculated and presented in the form of a coding matrix in Table 3 below.

Table 3. Summary of Identified Gaps in Local Content Implementation

Code	Frequency	Interpretation
GOV	7	Local Content implementation is not yet supported by clear governance and technical standards from the planning stage to post-contract.
CAP	6	Internal and vendor technical capabilities in analyzing, calculating, and verifying Local Content remain limited.
INT	4	The integration of Local Content has not been consistently implemented across planning documents, tender processes, and contract management.
RSK	3	Unclear roles, formalistic contract clauses, and invalid data increase compliance risks.
SYS	3	The absence of integrated systems and databases results in suboptimal monitoring and documentation of Local Content realization.

Based on Table 4 above, the analysis identifies consistent response patterns across the interviews and shows the frequency of occurrence of each initial code across all interview transcripts. This indicates the issues that most frequently arise in the implementation of Local Content in the procurement process, which can be further grouped into the following five main themes:

The following comparative synthesis table is added to strengthen the linkage between findings and prior research.

Table 4. Comparative Synthesis: PT Bumi Energi Findings vs. Prior Research and Theoretical Frameworks

Theme (Code)	PT Bumi Energi Finding	Supporting Literature	Theoretical Explanation
GOV (Governance)	TKDN roadmap copied from holding company without contextual adaptation or evaluation cycles	Nwapi (2016); Sitompul (2022)	Institutional Theory: Mimetic isomorphism
CAP (Capability)	Normative TKDN understanding; vendor self-assessments frequently inaccurate	Scheifele et al. (2022)	Agency Theory: Information asymmetry
INT (Integration)	Minimum TKDN values in TOR not always valid; inconsistent application across procurement cycle	Fernando & Ing (2022)	Agency Theory: Self-declaration creates moral hazard
RSK (Compliance)	Undefined PIC mandates; formalistic contract clauses; no post-contract verification	Dwi Ardiana et al. (2025)	Institutional Theory: Decoupled formal compliance
SYS	No centralized TKDN database;	Suleman &	Agency Theory:

Theme (Code)	PT Bumi Energi Finding	Supporting Literature	Theoretical Explanation
(Systems)	documentation scattered and not sustained	Zaato (2021)	Principal cannot monitor without information systems

1. Local Content Governance

The Local Content governance theme describes how roles, policies, and implementation mechanisms for Local Content are applied in the procurement process. The interviews indicate that Local Content governance is still heavily influenced by holding-level policies, while adjustments to the company's operational conditions have not yet been fully implemented.

One respondent from the P3DN Team stated, "The Local Content roadmap already exists, but it fully refers to the one prepared by the holding company and has never been re-evaluated based on the company's operational conditions." This indicates that Local Content governance operates in a top-down manner and is not yet fully contextualized.

2. Local Content Technical Capability

This theme indicates the level of technical expertise available to internal stakeholders and vendors on Local Content requirements. Respondents pointed out that understanding of Local Content is still normative and there aren't yet enough technical skills for analysis methods. A representative from a user explained, "We understand Local Content as an obligation, but we don't really know what the analysis entails indeed technically especially when it comes to translate this into the TOR. From a buyers' perspective, vendor readiness is uneven: Some vendors already know how to analyse Local Content but most still do not understand it and fill out the self-assessment incorrectly.

3. Integration of Local Content in the Procurement Process

This theme is indicative of the consistency in Local Content application across the procurement cycle. The results of the interview showed that the integration of Local Content was very dependent on the quality of planning documents. "For packages above one billion, Local Content has become a disqualifying requirement," one buyer said. But the issue is once the minimum value is set at start it may not be valid sometimes." This is indicative of formal integration of Local Content already, but challenges to consistent application remain.

4. Local Content Compliance and Control

This theme is related to: the control mechanism for compliance with Local Content requirements imposed on tenders and post-award contracts. Unclear roles and weak control instruments were cited by respondents. A Contract Monitoring PIC from one of the Companies said, "We have never exercised the function of reminding or monitoring Local Content realisation because we like any other stakeholder in the industry were not aware that this was part of our responsibilities. Moreover, contract clauses are seen as a weak tool to control: "Local Content clauses can be already found in the individual contracts, but these tend to remain formalistic as they follow the holding company's template."

5. Local Content Monitoring and Documentation Systems

In closure, this last theme emphasizes the importance of systems and documentation to aid in Local Content monitoring. The findings from the interviews reveal that Local Content data is not currently captured in a structured and centralised way. As one of the monitoring function said "We need a monitoring system with a database, so Local Content that we monitor is properly documented until contract completion." This emphasizes that information systems through Local Holding have become important pillars in implementing sustainable Local Content.

Discussion

Gap Analysis of Local Content Implementation

To address the gaps in the implementation of Local Content at PT Bumi Energi, this study employs a gap analysis. The analysis is conducted by comparing the actual conditions based on the previous interview findings with the ideal conditions defined in the applicable regulatory and policy framework, as well as benchmarking against oil and gas companies that have more mature Local Content implementation ([Taufiq et al., 2024](#); [Wandebori & Pratama, 2026](#)).

1. Literature-based case study on PT Pertamina Hulu Rokan (PHR). Based on the PHR case study, several practices have been identified that are directly aligned with government regulations and are able to address operational challenges under the Gross Split Production Sharing Contract scheme, including:
 - a. Linkage to revenue should be reversible In the Gross Split scheme, achievement of Local Content by PHR contributes to adjust variable split which gives an additional maximum value of up to 4%. During the 2021-2022 period, PHR successfully reached a Local Content level of 63.82%, representing an additional 3% split for Local Content generation with the remaining gap at approximately USD 30 million per year, equivalent to only 1% of the total amount. The financial connection, therefore, is a powerful incentive for the company to prioritise meeting Local Content quotas and align better business outcomes with compliance with Local Content requirements.
 - b. Independent verification required. Under Decree of Dirjen Migas No. 0159. K/10/DJM. (p) Not exceeding USD 10 million, i.e. any contract worth USD 10 Million and above in value, using B/2019, all contracts shall mandatorily be subjected to Local Content verification post contractual execution by independent surveyors accredited with the Office of National Local Content. This requirement is designed to promote transparency and accountability in Local Content reporting.
 - c. Place emphasis on Local Content for the goods. While the Local Content for services was far above the 70% target, it has fallen short of that mark in terms of goods. Thus, when reviews of procurement terms for both TPA systems and new orders are perceived as such variables more beneficial to reducing costs and raising Local Content percentage (i.e. altering the delivery scheme from Delivered Duty Paid (DDP) to Delivered at Place (DAP)), PHR has applied this strategy in its operations.
 - d. Capability development of contractors. PHR promotes supplier development by requiring contractors to engage certified Local Content assessors. Furthermore, PHR plays an ongoing coordination role with government institutions to ensure that the Local Content roadmap objectives remain aligned with the existing capacity in national and local markets. This also echoes earlier research findings by Taufiq ([2024](#)) in the Indonesian oil and gas sector on CSR communication strategies, and Setiawan with corporate social performance in the electrical energy industry by Setiawan ([2021](#)).
 - e. National approach unit integrated. PHR establishes a robust integration of procurement, field supervision and contract management functions such that Local Content execution is exercised from end-to-end. In addition, the reporting function is bolstered with digitalization and dashboards, thus creating a transparent monitoring process.
2. Interview Results with PT Pertamina Patra Niaga (PPN) Based on the interview results with PPN, there are also some additional practical measures taken in Pertamina Group as follows:
 - a. Appointing a dedicated Local Content PIC. For the implementation of Local Content in each subsidiary under the Pertamina Group - including PPN, a dedicated person in charge (PIC) will be appointed. At the holding level (Pertamina Persero), Local Content is not a standalone, separate division per se but more of a dedicated task function under the auspices of LCUM (Local Content Utilization Management) to ensure centralized governance and policy alignment across subsidiaries.
 - b. Distinct phases in the Local Content process These highlight the distinct phases in the Local Content cycle at PPN (planning, procurement, monitoring and verification) where forms and accompanying documentation are required (the A1-A2 identify commitments from planning through long- term commitment from vendors, while A4-A5 discuss those commitments pre- and post-project).
 - c. More structured exercises of verification. The verification is done by checking the Local

- Content commitment as declared by vendors against actual realization of the project with needed documents (like invoices, payroll slips, depreciation records and etc). In some complexity cases, verification may be extended to subcontractor layers up to the third tier.
- d. Intermediary conclusion of agreements with approved bodies In response to these, Pertamina Holding also signed framework agreements with Independent Verification Bodies (Lembaga Verifikator Independen — LVI), which are PT Sucofindo and PT Surveyor Indonesia for Local Content identification (planning stage) & Local Content verification (implementation stage). These contracts include fixed tariffs determined by contract value and at-cost elements like travel and accommodation. This is cost certainty, LVI appointment parties are simple, and the service quality of projects is basically reached.
 - e. Data completeness for optimizing Local Content value The verification process which could be undertaken, Vendors are encouraged to submit all supporting data as per the criteria so that values of Local Content can be optimized. Sometimes insufficient or unrevealed data due to lack of understanding or trepidation about confidentiality leads to Local Content outcome being lower than the first commitment and even leading to penalties.
 - f. Finally, the vendor commitment accuracy challenges. In most cases, Local Content commitments made during the tender stage tend to be obstacles for the entire project lifecycle and lead to significant gaps between committed and actual realization. Such discrepancy may cause conflation between vendors and LVI, and in the worst case scenario lead to legal actions if the difference is enough to ensure red sanctions. The imposition of similar sanctions acts as a check on vendors making fraudulent Local Content claims in order to gain an unfair advantage while bidding for tenders.

Referring to the benchmarking results of Local Content implementation practices above sourced from the literature review and interviews, a more structured, adaptable, and integrated ideal condition is identified according to Local Content implementation throughout the procurement process. The results obtained are then used as a reference in conducting gap analysis to find out the ideal condition and the current state of PT Bumi Energi. The aspects of the gap analyzed include not only benchmarking results, but also the constraint framework were identified in previous studies, i.e data storage issues, time constraints, inadequate manpower, lack of technological support and high commitment set to make proposals more attractive adjusted with process characteristics regulatory context of PT Bumi Energi and operation realities. Table 5 shows the results of this analysis and highlights some of the key gaps for implementing Local Content.

Table 5. Gap Analysis Local Content Implementation (Existing vs Ideal)

Aspect	Existing Condition (PT Bumi Energi)	Ideal Condition (Benchmark: PHR & PPN)	Main Gap
Local Content Governance	Roadmap and clauses follow the holding company; local evaluation and contextual adjustment are limited	Centralized yet adaptive governance; regular performance-based evaluations	Roadmap is not contextualized and lacks regular evaluation
Performance Incentives	There is no direct linkage between Local Content and financial incentives	Local Content is directly linked to revenue incentives (Gross Split)	Weak performance incentives for Local Content
Planning Integration (TOR & HPS)	Minimum Local Content values are sometimes invalid or inconsistent	Local Content values are clearly finalized at the planning stage and properly documented	Risk of disputes and tender uncertainty
Roles and Functional Mandates	Verification and monitoring roles are unclear (contract PICs are not aware of their mandates)	Clear separation of phases (planning–procurement–monitoring–verification)	Weak cross-functional accountability
Local Content Verification	Not mandatory or standardized for all contracts	Mandatory independent verification for all contracts	Low credibility of reporting

Aspect	Existing Condition (PT Bumi Energi)	Ideal Condition (Benchmark: PHR & PPN)	Main Gap
Contract Clauses	Template-based clauses, largely formalistic	Operational and enforceable clauses through to contract close-out	Weak post-contract control
Internal Technical Capability	Technical understanding varies; practical guidelines are limited	Practical technical guidelines and detailed SOPs	Inconsistent implementation
Vendor Readiness	Most vendors lack understanding; self-assessments are inaccurate	Vendors are developed; certified Local Content assessors	Gaps between commitments and realization
LVI & Costs	Ad hoc appointment; limited cost certainty	<i>Framework agreements with LVI with clear tariffs</i>	Inefficient verification process
Data & Documentation	No centralized database	End-to-end integrated systems/dashboards	Weak monitoring and traceability
Sanctions & Compliance	Sanction mechanisms are not firm or operational	Clear sanctions (including red sanctions)	Low deterrent effect

In addition to comparing the existing and ideal conditions of Local Content implementation, the gap analysis was also conducted using a thematic approach based on the five dominant themes identified from the interview results. This approach aims to map, in a more structured manner, the key areas that require attention and improvement in the implementation of Local Content at PT Bumi Energi, as summarized in Table 6, Gap Analysis Based on the Dominant Themes of Local Content Implementation at PT Bumi Energi.

Table 6. Gap Analysis Based on the Dominant Themes of Local Content Implementation at PT Bumi Energi

Dominant Theme	Existing Condition	Ideal Condition	Main Gap
Local Content Governance	The Local Content roadmap and clauses refer to the holding company; there is no evaluation or adjustment based on the company's operational conditions	Adaptive Local Content governance with regular evaluations and clear cross-functional roles	The roadmap is not contextualized, and evaluation mechanisms are not yet in place
Local Content Technical Capability	Local Content understanding remains normative; technical guidelines are limited; most vendors do not yet understand Local Content analysis	Adequate technical capability supported by practical guidelines and vendor development	Gaps in technical understanding among internal stakeholders and vendors
Integration of Local Content in the Procurement Process	Minimum Local Content values are not always valid and are inconsistently reflected in the TOR and HPS; this creates potential disputes	Local Content is integrated from the planning stage and applied consistently throughout the procurement process	Local Content integration is not yet end-to-end
Local Content Compliance and Control	Monitoring and verification roles are unclear; contract clauses are largely formalistic	Compliance is controlled through clear roles, operational clauses, and verification mechanisms	Weak post-contract accountability and control
Local Content Monitoring and	There is no centralized system or database; Local Content	An integrated monitoring system	Local Content monitoring and

Dominant Theme	Existing Condition	Ideal Condition	Main Gap
Documentation Systems	documentation is scattered and not maintained continuously	with a centralized database and data traceability	documentation are not yet structured

Table 6 shows that the implementation of Local Content at PT Bumi Energi still faces structural and operational gaps across the end-to-end process. In terms of governance, the Local Content roadmap and clauses that refer to the holding company have not been adjusted to the company's operational context and are not supported by regular evaluation mechanisms. From a technical capability perspective, Local Content understanding at the user level remains limited, as not all users adequately understand the methods and stages for analyzing minimum Local Content values. On the vendor side, most vendors also lack sufficient understanding of Local Content self-assessment calculation mechanisms, resulting in data quality that varies and cannot yet be fully relied upon.

The integration of Local Content in the procurement process is also not yet consistent from the planning stage, as reflected in minimum Local Content analyses that are not always validated in the TOR and HPS and may lead to disputes. In addition, weak clarity of post-contract monitoring and verification roles results in low accountability and control over Local Content realization. This condition is further exacerbated by the absence of a centralized system and database, meaning that Local Content documentation is not structured and does not yet support sustainable data traceability.

Thus, the findings from the gap analysis conducted in different aspects of Local Content implementation were summarized into five main themes which symbolize the key root causes for Local Content problems found at PT Bumi Energi. The thematic mapping was performed to simplify the problems as much as possible while maintaining a 1:1 connection between the set of gaps identified and the associated recommendations for improvements. Moreover, the five main themes were grouped to produce two strategic recommendations: (1) establishing an Integrated Local Content Commodity Catalog and (2) proposing improvements to support procedures for implementing local content (See Table 7).

Table 7. Analysis Gap and Recommendation

Gap Analysis	Process Stage	Recommendation
Gaps in technical understanding among internal stakeholders and vendors	User, Procurement	Development of an Integrated Local Content Commodity Catalog
Local Content integration is not yet end-to-end	User, Procurement	
Weak post-contract accountability and control	User, Procurement Monitoring and Administration	
The roadmap is not contextualized, and evaluation mechanisms are not yet in place	Procurement Planning	Strengthening of Local Content Implementation Procedures
Local Content monitoring and documentation are not yet structured	User, Procurement Monitoring and Administration	

CONCLUSION

It identifies the challenges and gaps in TKDN implementation in PT Bumi Energi's procurement process, formulates strategies to improve procurement governance effectiveness. The results of this study show that the factor contributing to TKDN is not due to regulatory framework but rather than operational implementation especially post-contract monitoring and verification of realization are very weak. Governance risks are caused by vendor self-declaration based on the absence of verification standards and roles and responsibilities (PIC) being undefined, as well as no integrated database system. Such gaps impact decision making quality and increase governance risks in high-value procurements. Findings: The study finds that in addition of strengthening the TKDN monitoring mechanism would improve procurement

governance, in terms of tender evaluation accuracy and regulatory reporting credibility, and reducing audit risks. This research provides a unique micro-organizational view, emphasizing in-house governance mechanisms as vital to the local content policy implementation process, diverging from previous studies focused on macro perspectives. To provide a basis for improving TKDN implementation by conducting gap analysis and benchmarking with industry best practices, the study presents a valuable model.

While this research offers valuable insights, it is specific to PT Bumi Energi and lacks empirical validation of the proposed solutions. Future studies may follow a cross-SOE comparative approach or use quantitative methods to statistically elucidate the implications of improved TKDN governance on extraction efficiency and performance across budgets over the long term. Moreover, future research could assess the real-world feasibility of the suggested governance solutions to prove their scalability and cross-industry relevance within the energy supply chain but also across other sectors.

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AUTHOR CONTRIBUTION STATEMENT

Ade Febriyani: Conceptualization, methodology, data collection, analysis, and manuscript writing. Yuanita Handayati: Supervision, review, and editing of the manuscript. Both authors contributed equally to the study and approved the final manuscript.

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