



## Accounting for Production Sharing Contracts (PSCs) in the Context of Global Oil Price Uncertainty

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**Abstract:** Global oil price volatility disrupts upstream oil and gas stability, complicating Production Sharing Contracts (PSCs) through challenges in accounting treatment, revenue recognition, and asset valuation. This study aims to evaluate PSC accounting concepts and analyze oil price fluctuation impacts on financial reporting. Employing a qualitative Systematic Literature Review (SLR), the population comprises Scopus- and SINTA-indexed journals (2018-2026); the sample includes 20 relevant publications selected via keywords like "PSC accounting" and "oil price volatility." Data were analyzed using content analysis to synthesize fiscal mechanisms and risks. Results show Cost Recovery offers contractor safeguards but bureaucratic hurdles, while Gross Split enhances adaptability via Variable Split yet demands efficiency; volatility triggers asset impairments, reserve downgrades, and DD&A spikes, mitigated by hedging. In conclusion, PSC resilience hinges on flexible fiscal policies, robust accounting systems, and risk management to ensure financial transparency amid energy transitions..

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### Introduction

The upstream oil and gas sector is naturally highly vulnerable to market shocks, particularly due to fluctuations in global commodity prices. Over the past ten years, this situation has become increasingly volatile due to macroeconomic dynamics such as the 2020 pandemic and geopolitical tensions, which triggered significant price spikes into 2026 (Guntoro, 2021). Economic relations between host countries and contractors are generally regulated through Production Sharing Contracts (PSCs), the success of which is heavily influenced by the flexibility of accounting systems and fiscal policies in responding to price changes (Ivanov, 2024; Thompson, 2021). Recent academic discourse has highlighted the

comparative resilience of conventional cost recovery schemes with the gross split model. While cost recovery systems mitigate cost risks for contractors, these mechanisms often face accountability issues and complex audit processes, particularly during periods of declining oil prices (Pratama, 2022). On the other hand, Gross Split promises bureaucratic simplification, but transfers all the risk of price uncertainty to the contractor, which ultimately affects the stability of state revenue or government take (Smith & Raharjo, 2025; Hadi et al., 2023).

In the context of financial reporting, price instability complicates the consistent implementation of international accounting standards. Fair value estimation and revenue recognition under IFRS 15 present complex issues, particularly in contracts with intertwined price adjustment clauses (Lopez, 2025; Miller, 2024). Furthermore, volatile price trends require companies to conduct asset impairment assessments in accordance with IFRS 6 to review the economic value of their oil reserves (Chen, 2023; Tan, 2024). Beyond operational issues, the global energy transition is beginning to reconstruct the accounting framework for PSCs. The adoption of carbon taxes and compliance with ESG reporting are now crucial components of contemporary oil and gas contract structures (Ngo, 2023; Putra, 2025). The phenomenon of "stranded assets" has become a real risk that requires careful calculation of the remaining economic life of the asset and projections of mine recovery or decommissioning costs (Brown, 2024; Sari, 2022).

To address these challenges, optimizing accounting information systems through digitalization and implementing hedging techniques is a strategic technical step to ensure reporting accuracy and liquidity resilience (Al-Saadi, 2022; Zheng, 2024). Management accounting also plays a vital role in formulating investment portfolio strategies amidst high market risks (Dixon, 2026). Overall, accounting transformation in PSCs is not merely an administrative exercise, but a strategic pillar for the sustainability of energy investments in an uncertain future. A deeper exploration of adjustments to operating cost accounting and tax liabilities within the PSC system is a central objective of this research. This is done to minimize the risks arising from global commodity price volatility while ensuring that the entire process continues to meet global expectations for state financial transparency (Widjaja, 2021; Olowookere, 2023).

Although discourse on PSC accounting has filled the academic literature, the majority of previous studies have tended to focus on the global energy economic dimension and its influence on global oil price fluctuations. There remains a dearth of studies that thoroughly examine the accounting aspects of PSCs, particularly those that examine the implications of the mechanism, implementation, recognition, and financial reporting strategies for upstream oil and gas entities. This gap highlights the need for further exploration of how these contractual instruments influence the technical presentation of financial statements.

Based on this phenomenon, this study aims to evaluate the accounting concept in the PSC scheme in the oil and gas sector and analyze its impact on oil price uncertainty in the global market. Using a Systematic Literature Review (SLR) approach, this study examines various scientific literature from the Scopus and SINTA databases to map the concept, risks, and effectiveness of the implementation of Gross Split PSC as a risk mitigation instrument in the financial reporting of energy companies. Specifically, this research focuses on answering two main problems: first, regarding the construction of the PSC accounting concept in oil and



gas industry operations; and second, the extent to which global oil price volatility affects items in the company's financial statements. The results of this study are expected to enrich the oil and gas accounting literature, while providing comprehensive insights regarding the adaptation of financial reporting practices in facing the dynamics of the energy transition.

**Research Methods**

This study employed a qualitative approach through a literature review to examine the accounting treatment and financial implications of the PSC scheme under the pressure of global oil price volatility. Data collection was conducted systematically through exploration of international and national scientific journal databases indexed by Scopus and SINTA. Keywords used included oil and gas sector accounting, cost recovery, and asset impairment. Using content analysis, the collected literature was compared based on fiscal mechanisms and macroeconomic conditions, ultimately synthesizing it to provide a comprehensive overview of reporting efficiency and financial risk mitigation in the upstream energy sector.

Twenty previous studies indicate that financial resilience within a PSC framework is highly dependent on the interaction between cost recovery instruments and the dynamics of global crude oil prices. Several studies underscore the effectiveness of adaptive profit-sharing models and progressive fiscal policies in minimizing potential revenue deficits for both the government and contractors. Furthermore, studies focus on the vulnerability of reserve estimates and price volatility as determinants of asset devaluation or impairment. Integrating these diverse research perspectives is crucial for developing a financial reporting and risk management framework that is responsive to energy sector uncertainty.

**Table 1. Previous Research on the Relationship between Structural Investment and Transition Costs**

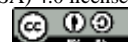
Writer	Findings
Al-Saadi (2022); Dixon (2026); Smith & Raharjo (2025); Ivanov (2024); Thompson (2021); Zheng (2024); Pratama (2022); Miller (2024); Al-Mansoori (2024).	(+)
Tan (2024); Chen (2023); Brown (2024); Olowookere (2023); Hadi et al. (2023); Sari (2022); Men (2025); Ngo (2023); Guntoro (2021); Lopez (2025); Widjaja (2021).	(-)

(+) positive effect, (-) negative effect

**Results and Discussion**

**Cost Recovery Mechanism vs. Low Oil Prices**

The economic balance in PSC contracts is at a critical juncture as cost recovery mechanisms confront global price volatility. The sharp decline in oil prices has not only worsened contractors' cash flow positions but also distorted state revenue projections.



**Implications of Narrowing Margins for Cost Recovery:** When market prices decline, the quantity of oil required to compensate for operational costs automatically increases. This creates the risk that total operational expenditures exceed the upper limit of cost recovery stipulated in the contract. Guntoro (2021) identified the phenomenon of accumulated unrecovered costs as a significant impact of the 2020 oil price plunge in Indonesia. Furthermore, Al-Mansoori (2024) highlighted that the limitations of production-sharing schemes in responding to long-term low prices in the Middle East pose a serious threat to the stability of capital and investment in the upstream sector.

**Break-Even Analysis in Accounting Projections.** Management accounting serves as a vital instrument in identifying the economic limits of wellbore operations in the face of market uncertainty. It is crucial for the accounting function to map the conditions under which production costs per barrel approach market prices. Dixon (2026) argues that adeptness in calculating marginal costs is essential for optimizing PSC portfolios during times of volatility. Without dynamic break-even projections, companies are vulnerable to operational waste. According to Al-Saadi (2022), the integration of digital technology into accounting reporting offers a solution to enhance the accuracy of cost data needed for rapid decision-making.

**The Impact of Ceiling Tests on Asset Impairment.** Asset revaluation, or impairment, is a major financial risk for oil and gas companies due to the drop in oil prices. Under IFRS 6, extractive sector players are required to implement ceiling tests to ensure that asset book values do not exceed projected future cash flows. Persistently low commodity prices directly reduce revenue estimates, often triggering the recording of impairment losses. Chen (2023) highlights that current market uncertainty complicates impairment analysis globally. Furthermore, Brown (2024) warns that the synergy between low prices and climate regulation accelerates the risk of stranded assets in PSC schemes. This phenomenon necessitates the application of more conservative accounting principles to reflect true economic conditions.

### **Implementation of Gross Split PSC as Risk Mitigation**

In the dynamics of the upstream oil and gas industry in Indonesia, the selection of a contract model is a strategic instrument for managing operational risk exposure while maintaining liquidity stability amidst global market uncertainty. The fundamental difference between existing contract models lies in how the financial risk burden is distributed between the government and investors. **Analysis of Cash Flow Resilience and Risk Distribution.** **Characteristics of Cost Recovery PSCs:** In this model, the government acts as the financial burden bearer through a system of recoverable costs. When commodity prices depreciate, the share of state revenue will be significantly eroded because the priority of cash flow is allocated to recovering contractor expenses first. For Production Sharing Contract Contractors (KKKS), this scheme provides financial protection because the risk of operational costs remains guaranteed by the government.

**Gross Split PSC Characteristics:** Unlike its predecessor, this scheme eliminates the cost recovery mechanism but offers a more attractive base split portion for KKKS. According to research by Smith & Raharjo (2025), the main advantage of Gross Split lies in the simplification of bureaucracy, which increases project adaptability. However, KKKS are required to assume full responsibility for operational efficiency, especially when oil prices



reach low levels. Flexibility through the Variable Split Mechanism. The reliability of the Gross Split model in mitigating uncertainty is largely determined by the Variable Split instrument. This feature allows the profit-sharing proportion between the government and the contractor to automatically adjust to market price fluctuations, for example when prices drop below \$40 or skyrocket beyond \$100 per barrel. According to Hadi et al. (2023), this automated mechanism serves as a crucial internal balancer. Its presence ensures that the project's economic value remains competitive without having to go through a bureaucratic and time-consuming contract renegotiation process.

### **Revenue Recognition and Estimation of Reserves**

Fluctuations in commodity prices in the global market not only put pressure on liquidity but also risk distorting the validity of the statement of financial position. This is because the value of oil and gas assets is highly sensitive to future price projections. Recalibration of Proved Reserves. In upstream sector accounting standards, reserve calculations typically refer to the unit of production method. However, market price movements have significant consequences for the classification of these assets. Economic Threshold Depreciation. When oil prices decline, the economic limit of a production well will be reached earlier. Reserves previously classified as "Proved" risk being downgraded to "Contingent" or even having to be written off due to their perceived lack of commercial value.

Impact on DD&A Expenses. A reduction in recognized reserve volume will change the denominator in the accounting formula, which then triggers a spike in Depreciation, Depletion, and Amortization (DD&A) expenses per barrel. According to Chen (2023), this phenomenon will systematically erode the company's net profit significantly. Harmonization of Reporting Standards: PSAK 64 and IFRS 6. Alignment between PSAK 64 (regarding the Exploration and Evaluation of Mineral Resources) and the international standard IFRS 6 is the main foundation for maintaining the integrity of financial statements. Amid unfavorable market conditions, exploration assets become highly vulnerable to impairment. Therefore, KKKS are obliged to conduct a comprehensive impairment test. Tan (2024) emphasized that this step is crucial to ensure that the book value of assets on the balance sheet does not exceed their recoverable amount, in order to prevent the presentation of misleading financial information to stakeholders.

### **Financial Risk Management Strategy (Hedging)**

To minimize the impact of price volatility on cash flow, PSC Contractors (KKKS) typically utilize derivative instruments as a hedging tool. Implementation of Hedge Accounting. The proper application of hedge accounting standards is crucial in financial reporting in the upstream oil and gas industry. Without this mechanism, fluctuations in the fair value of derivative instruments—such as swaps or put options—will be directly reflected in the income statement, potentially triggering artificial volatility in the company's financial performance. Referring to Zheng's (2024) study, the use of the Cash Flow Hedge method allows entities to first record gains or losses from derivatives in the equity component (Other



Comprehensive Income/OCI). This recording will only be reclassified to the income statement after the hedged oil sales transaction is actually realized.

Analysis of the Effectiveness and Urgency of Hedging. Although premium costs for instruments such as options tend to spike sharply during times of extreme market uncertainty, this measure is still considered a strategic investment. For oil and gas companies with debt-dominated capital structures, hedging acts as mandatory "financial insurance." This is vital for maintaining a stable interest coverage ratio, ensuring that the entity remains able to meet its financial obligations even when global commodity prices are depressed.

### **Impact on Long-Term Investments**

The uncertainty of commodity prices in the global market often traps oil and gas companies in managerial dilemmas, particularly regarding the recognition of long-term assets and liabilities on their balance sheets. These values are highly sensitive to changes in macroeconomic assumptions. The Dynamics of Decommissioning and Land Restoration (ASR) Obligations. Post-mining liabilities, also known as Abandonment and Site Restoration (ASR), are future obligations whose present value is highly dependent on fluctuations in discount interest rates.

The Phenomenon of Operational Suspension. Based on Sari's (2022) findings, when profitability margins are eroded due to low oil prices, Production Sharing Contract Contractors (KKKS) tend to prioritize liquidity availability by postponing decommissioning activities. Accounting Reporting Risk. Even though physical work is suspended, accounting standards still require periodic updates to the estimated cost of clearing the mine area. The synergy between inflationary pressures and commodity price depreciation can trigger a drastic increase in ASR provision expenses, ultimately placing greater financial pressure on companies in the future.

Deferred Tax Asset Analysis. When an entity's operations experience fiscal losses due to falling market prices, the KKKS has the opportunity to recognize Deferred Tax Assets, which serve as a reduction in tax burden in future periods. However, Olowookere (2023) critically notes that the recognition of these assets is not absolute but conditional. Companies are required to provide objective evidence that taxable profits will be available in the future—when the price cycle improves—to realize these tax benefits. If low oil prices are structural and permanent, for example due to the acceleration of the energy transition, then these tax assets must be written off because the requirement for future economic benefits is no longer met.

### **Conclusion and Recommendation**

This study reveals that Production Sharing Contracts (PSCs) in the upstream oil and gas sector face profound challenges from global oil price volatility, with Cost Recovery mechanisms offering contractor protection at the expense of bureaucratic complexity and state revenue risks, while Gross Split models enhance adaptability through Variable Split but



demand superior operational efficiency from contractors. Key findings underscore the critical role of hedge accounting, rigorous asset impairment tests under IFRS 6 and PSAK 64, and recalibrated reserve estimates in mitigating impacts on DD&A expenses, cash flows, and long-term liabilities like decommissioning obligations. However, these insights are limited by the qualitative SLR approach, which relies on secondary sources from Scopus and SINTA without empirical data from specific PSC implementations, potentially overlooking contextual nuances in diverse jurisdictions.

Practically, these results urge oil companies and regulators to prioritize digital accounting systems, hedging strategies, and ESG-integrated reporting to bolster financial resilience amid energy transitions. For future research, quantitative analyses or case studies on Indonesian Gross Split PSCs during recent price spikes could validate these mechanisms, while exploring AI-driven forecasting for impairment risks would address identified gaps. Ultimately, adaptive fiscal policies and robust accounting practices are essential for sustaining investor confidence and national energy security.

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