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Effects of Increased Oil Prices on the Thai Construction Industry

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Abstract

This research looks into the effects that the increasing crude oil prices have on Thailand's construction sector. This study uses recent data (2025-2026). The findings show that rising oil prices affect the industry mainly in three ways. First, they directly raise the costs of construction materials. Second, they increase logistics and transportation costs. Third, they indirectly impact housing demand by lowering consumer purchasing power. Analyzing the Construction Material Price Index, it shows a 5.9% increase year-on-year, reaching 112.4 in April 2026. This is the highest in 44 months, with materials like asphalt seeing a 15.8% rise. Sectors that use a lot of energy, such as cement (25.92% energy intensity) and glass (22.26%), are under significant cost pressure. The research points out that small to medium contractors with fixed-price contracts are at the greatest risk of financial trouble, while larger developers are raising their prices by 4-10%. The study wraps up by stating that the construction industry is moving into a "New Cost Base" phase, which will have lasting effects on housing affordability, project feasibility, and industry consolidation.

Discipline: Construction Management.

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1 Introduction

The construction industry is a key sign of Thailand's economic health. It includes houses, commercial developments, and public infrastructure. In 2025, this sector faced high cost jumps. This was due to geopolitical tensions in the Middle East. The ongoing conflict involves Iran, the USA, and Israel. Shipping routes via the Strait of Hormuz have been disrupted. It is a vital passage for 20% of the world's daily oil supply. The situation caused a sharp increase in crude oil prices.

The Thai construction sector's vulnerability to energy price fluctuations is from its materials and manufacturing processes that use high oil and energy. Unlike service sectors, construction operates on thin profit margins and requires huge upfront investment in materials. This makes it particularly sensitive to changes in input costs.

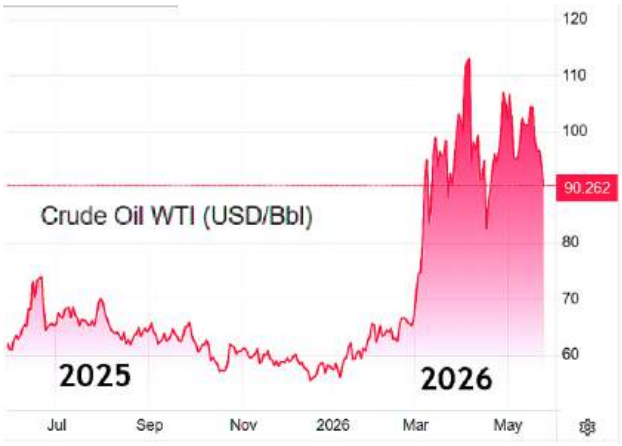

Figure 1: WTI crude oil price 1-year data (2025-2026) (TE, 2026).

While the relationship between energy prices and construction costs is conceptually straightforward, the magnitude, transmission mechanisms, and differential impacts in construction subsectors in the Thai context remain inadequately quantified. The rapid escalation of oil prices from $60-70 per barrel to $100-105 in early 2026 (Figure 1), with scenarios projecting $150 per barrel, necessitates urgent empirical investigation. Further, the interaction between supply-side cost pressures and demand-side constraints—particularly weakening consumer purchasing power amid rising living costs—creates a compounded effect requiring systematic analysis.

This research aims to find the transmission channels through which oil price increases affect the construction industry in Thailand. Also, this study assesses the impact on housing demand and affordability.

2 Literature Review

Thailand's investment and economic growth are driven by the construction sector. It is about 3-5% of the country's GDP. It has a value of 1.3-1.4 trillion baht for 2026. If this includes construction materials and real estate, the value will double. The construction industry heavily depends on energy-intensive logistics, operating heavy machinery, and manufacturing raw materials. This industry is very sensitive to changes in the world energy market. Crude oil prices are a crucial factor that affects both the direct costs of operations and the overall economic conditions.

2.1 Cost Push Inflation in Construction

The transmission of oil price shocks to construction costs operates through established mechanisms in industrial economics. Kilian (2009) distinguished between oil supply shocks, aggregate demand shocks, and precautionary demand shocks, each with distinct transmission characteristics. For Thailand's construction industry, the current episode represents a supply-side shock originating from geopolitical disruption, which differs fundamentally from demand-driven price increases in its persistence and structural implications.

The cost-push inflation model posits that increased input costs reduce aggregate supply, shifting the supply curve leftward and resulting in higher equilibrium prices with lower output. In construction, this manifests as simultaneous cost inflation and activity contraction—a particularly challenging combination for industry participants.

2.2 Energy Intensity in Construction Materials

Building material expenditures typically account for as much as 60 percent of total construction project outlays. This makes any fluctuation in material production costs a direct determinant of a project's financial viability. Crucially, major foundational materials like iron, steel, and cement require massive thermal and electrical energy inputs during production. Because Thailand's inflation dynamics and industrial energy costs are heavily dependent on global factors, specifically world oil prices. The surges in crude oil create a swift domestic pass-through that raises the baseline cost of raw industrial materials (Manopimoke & Direkudomsak, 2015).

Construction materials exhibit varying degrees of energy intensity, defined as energy cost as a percentage of total production cost. Cement manufacturing is notably energy-intensive, with fuel and electricity costs comprising 30-40% of production expenses. The Thai cement sector's 25.92% energy intensity, as documented by the Office of Industrial Economics, positions it among the most exposed industries. Similarly, glass (22.26%) and ceramics (19.82%) demonstrate high vulnerability.

Steel products, while having lower direct energy intensity (approximately 8-12% of production cost), face indirect pressure through coking coal requirements and transportation costs. The 6.2% increase in steel and iron products prices in April 2026 reflects this composite pressure.

2.3 Logistics Cost Transmission

Beyond material production, crude oil price spikes directly escalate transportation, trucking, and maritime freight rates. Because heavy building components must be hauled long distances from manufacturing centers to construction sites (such as Bangkok and its vicinity). Rising Diesel prices cause unstable material retail pricing. This places extreme financial pressure on smaller domestic building suppliers and local contractors. The Thai Home Builders Association identified logistics cost surges as a primary pressure point, with freight rates and cargo insurance premiums potentially rising 50-140% in severe disruption scenarios (THBA, 2026)

For imported materials, ocean freight costs multiply this effect. The rerouting of shipping vessels away from conflict zones increases both distance and insurance costs, creating a compounded impact on landed material prices.

2.4 Demand-Side Effects: Housing Affordability

The demand-side channel operates through household purchasing power. Higher oil prices increase transportation and utility costs for consumers, reducing disposable income available for housing purchases. This effect is particularly pronounced for mid-to-lower income segments, where housing expenditure constitutes a larger proportion of household budgets.

KPB's analysis (2026) indicates that the combination of higher construction costs (passed through to selling prices) and reduced borrowing capacity (due to higher living costs and potential interest rate increases) creates a dual affordability squeeze. The projected decline in property transfers to 290,000 units in 2026—the lowest in eight years—exemplifies this demand contraction.

2.5 Fixed-Price Contract Vulnerability

A distinctive feature of construction industry cost shock transmission is the role of fixed-price contracts. Unlike manufacturing sectors, where price adjustments can be implemented relatively quickly, construction contracts often lock in prices months or years in advance. Contractors bear the immediate financial impact when material prices rise during project execution.

The Thai Home Builders Association's warning of a potential "domino effect" of business closures reflects this mechanism (THBA, 2026). Smaller operators with limited liquidity and minimal bargaining power face disproportionate risk, as they cannot absorb cost overruns nor negotiate favorable material pricing.

2.6 Previous Oil Shock Episodes

Historical oil price shocks provide comparative context. The 1973 oil embargo, 1979 Iranian Revolution, 1990 Gulf War, and 2008 price spike each affected construction industries differently based on prevailing contract structures, material substitution possibilities, and government intervention levels. However, Thailand's current high dependence on imported oil (evidenced by $28.5 billion in 2025 imports from the Middle East) and the prevalence of fixed-price home building contracts create unique vulnerabilities not present in previous episodes.

2.7 Macroeconomic Inflation and Construction Cost Overruns

The macroeconomic consequence of sustained high oil prices is systemic inflation, which severely impairs project budgeting and execution.

2.7.1 Direct and Indirect Inflationary Triggers

Macroeconomic research indicates that positive oil price shocks have an asymmetric, highly pronounced upward pressure on domestic inflation in Thailand (Choi et al., 2017). This inflationary wave impacts the construction industry through two primary pathways:

Direct Impacts: Escalations in the Construction Price Index (CPI), triggered by rising raw materials, machinery operation costs, and the subsequent demand for higher labor wages to meet elevated living expenses (Maqsoom et al., 2024).

Indirect Impacts: Central banks typically respond to oil-driven inflation by raising interest rates to stabilize the economic threshold (Maqsoom et al., 2024). Higher interest rates raise the cost of capital, making borrowing more expensive for developers and adding a steep layer of debt-servicing costs onto the lifetime budget of active projects.

2.7.2 Budget Deviations and Project Delays

Over-budgeting and cost overruns represent a primary challenge preventing sustainable growth within Thailand's multi-billion-dollar construction market (Maqsoom et al., 2024). When oil shocks cause the real closure cost of a project to exceed early estimations, it leads to severe financial setbacks for clients. This budgeting misalignment frequently causes cash-flow stagnation, forcing developers to pause operations, which triggers project delays that further compound the final cost of construction goods and services.

2.8 Financial Market Spillover and Sectoral Equity Volatility

The adverse effects of escalating energy prices extend into the financial structures that underwrite large-scale construction and industrial infrastructure.

2.8.1 Stock Market and Capital Vulnerability

Univariate and multivariate volatility models show that international crude oil prices exercise strong spillover effects on the Stock Exchange of Thailand (SET) equity sector returns (Theplib et al., 2020). Historically, unexpected oil price volatility transmits a shock transmission to the wider market, increasing capital uncertainty. Because construction projects depend on steady equity financing and corporate bond issuance, heightened oil market volatility often acts as a signal of broader economic downturn or incoming recession, prompting investors to contract their capital allocations away from high-risk industrial and property development sectors.

2.8.2 Macroeconomic Output Contraction

From a broader structural perspective, general equilibrium analyses indicate that as a net oil-importing country, Thailand experiences a measurable annual contraction in gross domestic product (GDP) during sustained multi-year oil price spikes (Sanchez, 2011). Because public and private construction investments are tied closely to national GDP growth, a macro energy-induced economic slowdown dampens the aggregate demand for new residential, commercial, and public infrastructure developments, creating a cyclical contraction across the entire built environment sector.

The academic literature demonstrates that an increase in global oil prices acts as a multi-layered economic stressor for the Thai construction industry. The transmission begins with immediate supply-chain shocks, elevating the costs of freight and energy-intensive materials like steel and cement. These microeconomic strains quickly scale into broader macroeconomic challenges, inflating the Construction Price Index, driving project overruns, and inducing restrictive monetary tightening via higher interest rates. Further, equity market spillovers reduce the availability of investment capital. For the Thai construction sector to maintain its projected growth, developers and policymakers must shift toward energy-resilient building technologies, adopt robust contractual hedging against material volatility, and optimize logistics to mitigate energy dependency.

3 Methodology

3.1 Research Design

This study employs a mixed-method approach combining quantitative analysis of price indices and macroeconomic indicators with qualitative assessment of industry stakeholder responses. The research design is exploratory-explanatory, seeking both to document the magnitude of oil price effects and explain the mechanisms of transmission.

3.2 Data Sources

Primary quantitative data sources include:

- Construction Material Price Index: Monthly data from the Trade Policy and Strategy Office (TPSO), Ministry of Commerce, covering January 2024-May 2026

- Industrial GDP data: Office of Industrial Economics (OIE) estimates of oil price impact scenarios

- Macroeconomic indicators: National Economic and Social Development Council (NESDC, 2025) quarterly reports on construction sector activity

- Trade statistics: Thailand-Middle East trade flows, petroleum import values

Qualitative data sources include:

- Industry association statements: Thai Home Builders Association (THBA), Home Builder Association (HBA)

- Corporate disclosures: Public statements from major developers (Supalai, D-Land Group)

- Financial institution analyses: KPB property market assessments

3.3 Analytical Framework

The analysis uses a transmission channel framework, identifying three pathways (Table 1).

Table 1: Three channels due to the increased oil price on the Thai construction industry.

Channel 1: Direct Material Cost Transmission Oil prices ➔ Energy costs ➔ Manufacturing input costs ➔ Construction material prices
Channel 2: Logistics Cost Transmission Oil prices ➔ Diesel/fuel costs ➔ Transportation expenses ➔ Delivered material costs
Channel 3: Demand-Side Transmission Oil prices ➔ Consumer living costs ➔ Housing affordability ➔ Construction demand

3.4 Calculation Methodology

Energy intensity for each material category is calculated as

$$\text{Energy Intensity (\%)} = \left(\frac{\text{Energy Cost}}{\text{Total Production Cost}}\right) \cdot 100 \quad (1).$$

Price change transmission is estimated as

$$\text{Material Price Change (\%)} = (\text{Energy Intensity}) \cdot (\text{Oil Price Change \%}) \cdot (\text{Pass} - \text{Through Coefficient}) \quad (2).$$

The pass-through coefficient reflects the degree to which energy cost increases are passed to final material prices, ranging from 0 (fully absorbed by manufacturers) to 1 (fully passed through).

4 Results

4.1 Aggregate Construction Material Price Movements

The Construction Material Price Index rose to 112.8 in March 2025, continuing a 10-month growth trend with a 0.5% year-on-year increase (OTPS, 2025). By April 2026, the index surged to 112.4, representing a 5.9% year-on-year escalation—the highest level in 44 months. (THBA, 2026; TPSO, 2026) (see Table 2).

Table 2: Construction Material Price Index Movement (TPSO, 2026)

Period	Index Value	Year-on-Year Change
March 2025	112.8	+0.5%
April 2026	112.4	+5.9%

4.2 Subsector Price Impacts

Price increases varied significantly in many material categories, correlating with energy intensity and petroleum-derived content (Table 3).

Table 3: Material Price Changes by Category (April 2026) (TPSO, OIE, 2026)

Material Category	Price Change (% YoY)	Energy Intensity (%)
Asphalt	+15.8%	High (petroleum-derived)
Steel and iron products	+6.2%	Medium
Precast concrete	+5.6%	Medium
Electrical equipment	+4.9%	Medium
Cement	+2.8%	25.92%
Sanitary ware	-1.2%	Low

Asphalt's 15.8% spike exemplifies the direct petroleum linkage, as bitumen is a crude oil refining byproduct. Steel's 6.2% increase reflects both energy costs for smelting and elevated ocean freight rates for imported billet and scrap. Cement's more moderate 2.8% increase masks significant variation within the category, with ready-mix concrete seeing larger increases due to transportation components.

4.3 Industrial GDP Impact Projections

The Office of Industrial Economics (OIE) estimated that crude oil price increases to $100-105 per barrel would contract Thailand's industrial GDP by 10-12 billion baht (approximately 0.15% of industrial GDP) (Table 4). In a severe scenario with Strait of Hormuz closure and oil at $150 per barrel, impacts would be substantially larger.

Table 4: Sectoral Energy Intensity Rankings (OIE, 2026)

Industry	Energy Intensity (%)	Impact Severity
Cement and concrete	25.92%	Severe
Glass and flat glass	22.26%	Severe
Ceramics and tiles	19.82%	Severe
Gas and petroleum	9.58%	Moderate
Textiles and garments	9.54%	Moderate
Pulp and paper	9.54%	Moderate

4.4 Construction Activity Contraction

NESDC (2025) data revealed that the construction sector contracted by 4% in the third quarter of 2025, with private construction investment declining for six consecutive quarters. Residential construction fell 3.2%, continuing from a 4.4% drop in the previous quarter, while non-residential construction showed resilience with 1.7% expansion, driven by industrial factory construction (6.9% growth) in the Eastern Economic Corridor.

4.5 Housing Price Transmission

Major developers reported varying degrees of cost pass-through to selling prices (Table 5). Supalai estimated average house price increases of 4-5%, while D-Land Group indicated necessary increases of approximately 5%. The Home Builder Association (HBA, 2026) projected custom-built house price rises of 3-5% and new housing project increases of 5-10%.

Table 5: Developer Reported Cost and Price Impacts

Developer/Association	Cost Increase	Price Pass-Through
Supalai	Not specified	4-5%
D-Land Group	12%+	~5%
Home Builder Association (HBA)	Not specified	5-10% (new projects)

4.6 Demand Response Indicators

The demand-side impact manifested through reduced property transfer projections. KPB (2026) forecast property transfers in 2026 to fall to 290,000 units, the lowest level in eight years. The mid-to-lower end market (2-5 million baht housing segment), accounting for 54% of sales worth 76.2 billion baht, faced the greatest risk due to high unsold inventory in areas including Rangsit-Pathum Thani and Bang Na-Samut Prakan.

4.7 Differential Impact by Operator Size

Small operators emerged as the most vulnerable segment. The Thai Home Builders Association identified that smaller contractors operating with limited liquidity and low bargaining power face the highest risk of business failure under continued cost pressure. Larger operators, while better positioned through advanced material stockpiling and stronger supplier relationships, still face net profit erosion if price increases persist.

5 Discussion

5.1 Transmission Mechanism Validation

The results confirm that oil price increases transmit to Thailand's construction industry through the three hypothesized channels, though with varying intensity and timing (Figure 2).

#1 Direct Material Costs: This demonstrated the strongest and most immediate transmission, with petroleum-derived materials (asphalt at +15.8%) showing the most dramatic increases. The correlation between energy intensity rankings and price increases generally holds, though imperfectly, due to supply chain factors and global market dynamics for specific materials.

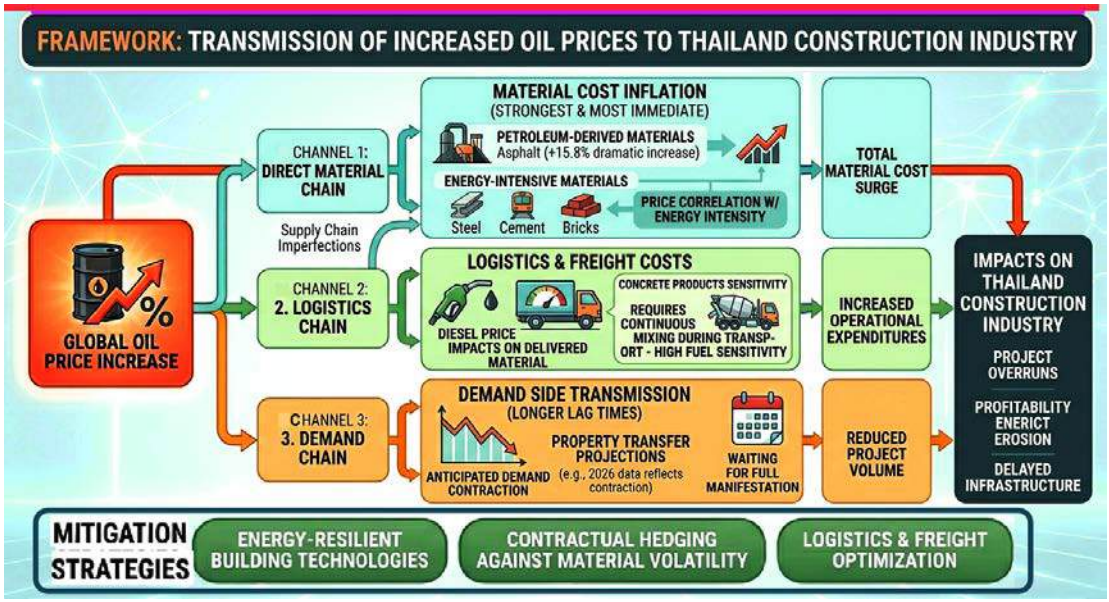

Figure 2: Framework of the transmission mechanism of the increase in oil price to Thailand construction industry.

#2 Logistics Costs: manifested through diesel price impacts on delivered material costs. The concrete products category, which requires continuous mixing during transport, showed sensitivity to fuel costs beyond what its direct energy intensity would predict.

#3 Demand Side: showed evidence of transmission but with longer lag times. Property transfer projections for 2026 reflect anticipated demand contraction, but actual transaction data will require more time for full manifestation.

5.2 The Fixed-Price Contract Problem

A critical finding concerns the interaction between oil price shocks and fixed-price contracting practices. Contractors with pre-sold homes at fixed prices face immediate margin compression as material costs rise during construction. This mechanism is particularly acute in Thailand's home-building sector, where fixed-price contracts are standard.

The THBA (2026) has warned about a possible "domino effect" of business closures. This is based on real evidence of this contractual weakness. Small businesses, without enough financial backup to handle extra costs and unable to change prices for their customers, are under serious threat. This is different from larger developers who might have bought materials in advance or included price increase clauses in their contracts.

5.3 Sectoral Resilience Heterogeneity

Non-residential construction demonstrated greater resilience than residential construction, with industrial factory construction expanding 6.9% despite overall construction contraction. This reflects the Eastern Economic Corridor's continued investment momentum, suggesting that location-specific factors and project type can moderate oil price impacts. Government infrastructure projects, supported by the 185.3 billion baht Ministry of Transport budget allocation, also showed relative stability.

5.4 The "New Cost Base" Hypothesis

Perhaps the most significant finding is the structural shift toward permanently elevated construction costs. Kiatnakin Phatra Bank's characterization of a "New Cost Base" phase suggests that recent price increases may not fully reverse even if oil prices moderate. This hypothesis is supported by the multi-year trajectory of infrastructure investment (2023-2027) and the supply chain adjustments that, once made, create inertia.

If confirmed, this structural shift has profound implications. Housing affordability would face permanent erosion unless household incomes rise correspondingly. Developer business models predicated on stable material costs would require fundamental revision. Government affordable housing programs might need subsidy adjustments.

5.5 Comparison with Previous Oil Shocks

Compared to the 2008 oil price spike (Hamilton, 2009), the current episode exhibits both similarities and differences. The 2008 crisis saw crude oil reach $147 per barrel, with a similar transmission to construction materials. However, Thailand's current higher dependence on imported oil (reflecting depleted domestic reserves) and tighter household financial conditions (elevated debt levels) may amplify impacts. Conversely, improved infrastructure and more diversified material sourcing options provide some mitigation.

5.6 Policy Implications

Several policy responses emerge from the analysis, Table 6.

Table 6: Some policies regarding increased oil prices.

Item	Policy Details
Energy Price Stabilization Mechanisms	Temporary subsidies or price caps for diesel used in construction transport could prevent cascading cost increases.
Contract Flexibility Promotion	Encouraging or mandating escalation clauses in construction contracts would distribute oil price risk more equitably between contractors and customers.
Targeted Support for Small Operators	Given small contractors' disproportionate vulnerability, access to emergency credit lines or material procurement cooperatives could prevent cascading business failures.
Infrastructure Investment Prioritization	Maintaining public infrastructure spending during cost shocks provides countercyclical support while delivering needed assets.

5.7 Adaptation Strategies

Industry adaptation strategies observed in the data are given in Table 7.

Table 7: Industry adaptation strategies regarding increased oil prices.

Item	Industry adaptation strategies
Advance Material Procurement	Larger developers stockpiled materials before price increases took full effect.
Transparent Customer Communication	Builders engaged customers on global factors driving cost changes, reducing contractual friction.
Pricing Structure Revision	Developers shifted from fixed to adjustable pricing models for new projects.
Cash Management Intensification	Operators focused on payment timing and material supply security to maintain construction continuity.

5.8 Unresolved Questions and Future Research

Several questions remain for future investigation. First, what is the elasticity of housing demand with respect to oil-driven price increases across different income segments? Second, how do substitution effects—shifting from energy-intensive to alternative materials—mediate transmission? Third, what is the long-term impact on industry concentration as smaller operators exit? Fourth, how do different contract structures (fixed-price vs. cost-plus) affect project completion rates during oil shocks?

6 Conclusions

This research shows that increased oil prices exert substantial, multi-channel pressure on Thailand's construction industry. The Construction Material Price Index's 5.9% surge to a 44-month high in April 2026 provides quantitative evidence of transmission, with petroleum-derived asphalt (15.8% increase) and energy-intensive materials bearing the brunt. The construction sector's 4% contraction in Q3 2025 reflects activity decline accompanying cost inflation.

Small operators operating under fixed-price contracts face the highest risk of financial distress, with potential "domino effect" business failures if cost pressures persist. The mid-to-lower end housing market (2-5 million baht segment) shows the greatest vulnerability due to combined cost increases and demand constraints.

This research contributes to the literature on oil price transmission to construction sectors in emerging economies. It validates a three-channel transmission model (direct material, logistics, demand-side) while identifying the fixed-price contract mechanism as a crucial moderating factor amplifying shock impacts. The concept of a "New Cost Base"—structurally elevated construction costs persisting beyond the oil price shock—represents a theoretical extension requiring further investigation.

For industry practitioners, the findings underscore the necessity of contract flexibility, advanced procurement strategies, and transparent customer communication. For policymakers, targeted support for small operators and energy price stabilization measures may prevent cascading failures. For consumers, the research suggests that delaying housing purchases may not yield cost savings, as the industry appears to be entering a higher cost equilibrium.

Contractors should review fixed-price contract exposure, negotiate escalation clauses, and maintain material inventory buffers when feasible. For developers, pricing models should be adjusted to reflect current costs rather than historical baselines, and communicate global factors transparently to customers. The government may consider targeted diesel subsidies for construction transport, establish emergency credit facilities for small contractors, and maintain infrastructure investment to provide countercyclical support.

The Thai construction industry stands at a structural inflection point. The current oil price shock, driven by geopolitical tensions, is not merely a temporary cost fluctuation but potentially a redefinition of the industry's cost baseline. Stakeholders who adapt through contract flexibility, pricing adjustment, and cash management will be positioned for resilience. Those who cannot may face existential pressure. The ultimate resolution depends on both geopolitical developments and the adaptive capacity of Thailand's construction ecosystem.

Effects of increased oil prices on the Thai construction industry

7 Availability of Data and Materials

All information is included in this article.

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