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CHALLENGES AND OPPORTUNITIES FOR DEVELOPING COMPETITIVE STRATEGIES IN CONSTRUCTION MATERIALS ENTERPRISES

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Abstract. *This article examines the challenges and opportunities for developing competitive strategies in construction materials enterprises of the Republic of Uzbekistan. The relevance of the study is determined by the rapid expansion of the industry, the emergence of structural overcapacity in cement production, rising energy tariffs and the entry into force of carbon border regulation in the European Union. The aim of the research is to identify the key challenges and opportunities that shape the strategic choice of enterprises and to substantiate a set of competitive strategies adapted to different groups of producers. The study employs comparative and structural analysis of official statistics and industry data for 2017-2025, calculation of compound growth rates, capacity utilization and export unit value, a cost-sensitivity model of capacity utilization, a scenario estimate of carbon border costs and a strategic matching matrix. The results show that between 2017 and 2025 the output of construction materials grew at an average annual rate of 21.1% and exports at 42.4%, reaching USD 1.2 billion. At the same time, cement production capacity of 40.5 million tonnes exceeds domestic demand by more than two times, capacity utilization is about 50%, and the export unit value of cement is about USD 40 per tonne. The model shows that raising utilization from 50% to 80% reduces unit costs by 15-23%, while under full application of carbon border adjustment the carbon cost of cement could reach USD 52-69 per tonne. Four strategic directions are proposed: export-oriented cost leadership, product upgrading, diversification and low-carbon competitiveness.*

Keywords: *competitive strategy, construction materials industry, cement, overcapacity, capacity utilization, export diversification, dynamic capabilities, decarbonization, carbon border adjustment, Uzbekistan.*

INTRODUCTION

The construction materials industry occupies a special place in the structure of national economies: it supplies the basic inputs for housing, infrastructure and industrial construction, is closely linked to the mining sector and largely determines the cost and pace of investment projects. Because most construction materials are heavy, low-value and costly to transport, the industry has traditionally been oriented towards regional markets, and its competitiveness has depended on access to raw materials, energy prices and the efficiency of production capacities. In recent years, however, the conditions of competition have changed fundamentally: overcapacity has emerged in many emerging markets, energy prices have been liberalized, and carbon regulation has begun to affect international trade in cement and other energy-intensive goods. In Southeast Asia, for example, weak growth in demand has reduced the utilization of cement plants to 50-60%, and competition has intensified with the arrival of new producers [26]. In such an environment, the traditional strategies of construction materials enterprises, built around the expansion of capacity and low prices, lose their effectiveness, and the question of how enterprises should compete becomes a central issue for both

management and industrial policy.

For the Republic of Uzbekistan these processes are particularly relevant. The output of the construction materials industry increased from 11.4 trillion soums in 2017 to 47.1 trillion soums in 2024, and exports from USD 71 million to USD 831 million [33]. In 2025 the industry produced 52.6 trillion soums worth of products, exports reached USD 1.2 billion and investments exceeded USD 2.4 billion [32]. At the same time, the rapid growth of capacities has created new problems. The 42 cement plants in the country have a combined capacity of 40.5 million tonnes per year [34], while domestic demand was 18.8 million tonnes in 2025; the domestic market is described as structurally oversupplied, and capacity utilization remained just under 50% [3]. Electricity and gas tariffs for businesses are being raised as part of the transition to market pricing [11, 6], and since 1 January 2026 the EU carbon border adjustment mechanism (CBAM), which covers cement, has entered its definitive phase [2].

State policy sets the task of producing resource-saving, energy-efficient and environmentally friendly materials and increasing the export potential of the industry [7]. Neighbouring countries represent a construction materials market worth more than USD 4 billion, and there is potential to increase exports of nine product types to 26 countries [13]. However, the transition from extensive capacity growth to sustainable competitive advantage requires enterprises to choose and implement appropriate competitive strategies.

Thus, the scientific problem lies in the contradiction between the rapidly growing production potential of construction materials enterprises and the absence of strategies that would allow them to convert this potential into sustainable competitiveness under conditions of overcapacity, rising costs and new external regulation.

The aim of the study is to identify the key challenges and opportunities that determine the strategic choice of construction materials enterprises in Uzbekistan and to substantiate competitive strategies adapted to different groups of producers. To achieve this aim, the following *objectives* were set: (1) to systematize theoretical approaches to competitive strategy with reference to capital-intensive industries; (2) to analyse the dynamics and structure of the construction materials industry in 2017-2025; (3) to quantify the effect of capacity utilization on unit costs and the potential carbon border costs for cement exports; (4) to develop a matrix of competitive strategies for the main groups of enterprises.

The object of the research is the construction materials industry of the Republic of Uzbekistan, with particular attention to cement production as its largest segment. *The subject* is the set of economic relations and factors that determine the formation of competitive strategies of construction materials enterprises. *The hypothesis* of the study is that, under structural overcapacity, competition based only on low prices is not sustainable, and that enterprises can achieve lasting advantage by combining higher capacity utilization with product upgrading, diversification and low-carbon capabilities.

The scientific novelty of the research consists in the following: a framework linking external challenges and opportunities with enterprise capabilities and four strategic directions has been proposed; a cost-sensitivity model of capacity utilization has been applied to quantify the economic cost of overcapacity; the potential CBAM cost for cement has been estimated and compared with the actual export unit value of Uzbek cement; and a strategic matching matrix for different groups of enterprises has been developed.

LITERATURE REVIEW

The literature relevant to the topic can be grouped into four streams: classical theories of competitive strategy; the resource-based view and the concept of dynamic capabilities; empirical studies of competition in cement and construction materials markets; and research on the decarbonization of the industry.

Classical theories of competitive strategy. M. Porter showed that the profitability of an industry is determined by five competitive forces - rivalry among existing competitors, the threat of

new entrants, the bargaining power of buyers and suppliers and the threat of substitutes - and that a firm can achieve above-average returns through one of three generic strategies: cost leadership, differentiation or focus [22]. This framework is widely used for the analysis of construction materials markets, where products are relatively standardized and cost leadership seems a natural choice. However, the classical approach treats industry structure as relatively stable and gives little attention to cycles of overcapacity, to state regulation of prices and to cross-border regulatory shocks, which are characteristic of the current situation in Uzbekistan.

In his analysis of industry evolution, M. Porter also paid special attention to capacity expansion decisions in commodity industries: when many firms add capacity simultaneously on the basis of optimistic demand forecasts, the industry experiences prolonged periods of overcapacity, and high exit barriers - specialized assets and fixed costs - keep unprofitable capacity in the market [22]. This analysis is directly relevant to cement production, where plants have long service lives and cannot be easily converted to other uses.

Resources and dynamic capabilities. J. Barney argued that sustained competitive advantage is based on resources that are valuable, rare, inimitable and non-substitutable [1]. D. Teece, G. Pisano and A. Shuen extended this view by introducing dynamic capabilities - the ability of a firm to integrate, build and reconfigure internal and external competences to address rapidly changing environments [29]. Later, D. Teece linked dynamic capabilities with business models, emphasizing that sensing opportunities, seizing them and transforming the organization are needed to design and renew the ways in which a firm creates and captures value [28]. In capital-intensive industries such as cement, access to limestone deposits, modern kilns and logistics infrastructure are important resources, but they are increasingly available to many producers, including new entrants with foreign investment; therefore, the ability to reconfigure the product portfolio and markets becomes decisive. At the same time, this stream offers few operational indicators that managers of commodity-producing enterprises could use in practice.

Value innovation and shared value. W. Kim and R. Mauborgne proposed the idea of "blue ocean" strategies, in which firms escape price competition by creating new market space through value innovation [12]. M. Porter and M. Kramer introduced the concept of shared value, according to which firms can strengthen their competitiveness by addressing social and environmental problems through their products and value chains [23]. For construction materials enterprises, these ideas are reflected in the development of energy-efficient and environmentally friendly materials, which open new segments and correspond to state priorities. However, their application requires market institutions that reward product quality and environmental performance, which are still developing in the region.

Empirical studies of cement markets. Studies of markets with oversupply confirm that price competition becomes dominant when capacity grows well beyond demand. O. Wagdi and A. Fathi, analysing six Egyptian cement companies, found that price competition was the main form of rivalry and attributed price differences to oversupply after 2018; they recommended focusing on pricing, delivery and customer responsiveness and exploring export markets to absorb surplus [35]. S. Mucheru and co-authors showed for Kenyan cement manufacturers that market development strategies have a positive influence on sustainable competitive advantage [16]. F. Remi-Aworemi and A. Salami found for the Nigerian cement industry that the sensing, seizing and reconfiguring dimensions of dynamic capabilities have significant positive effects on sustainable supply chain performance, with sensing being the strongest [25]. Consulting studies point to similar problems in Southeast Asia, where weak demand growth has led to 50-60% capacity utilization of cement plants and competition has intensified due to Chinese producers [26]. These studies demonstrate the universality of the overcapacity problem, but they are based mainly on surveys in individual countries and do not consider the effect of carbon border regulation on export strategies.

Decarbonization of cement. K. Scrivener, V. John and E. Gartner showed that eco-efficient cements based on clinker substitution can be economically viable solutions for reducing CO2 emissions in the cement industry [27]. G. Habert and co-authors reviewed the environmental impacts

of cement and concrete and the main decarbonization strategies, from material efficiency and clinker substitution to carbon capture [10]. The EU Regulation 2023/956 established the carbon border adjustment mechanism, which requires importers of cement and other covered goods to purchase certificates corresponding to embedded emissions [24]. The definitive phase began on 1 January 2026, and the phase-in will last until 2034, with full application from 2035 [4]. These works show that carbon intensity is becoming a factor of competitiveness, but they rarely translate it into the strategic choice of producers in emerging economies.

Institutional context of strategy. In transition economies, the strategic choice of enterprises is strongly influenced by the institutional environment. In the construction materials industry of Uzbekistan, this environment includes state investment and localization programmes, trading of cement through the commodity exchange, tax regulation of the use of mineral resources and the activities of the industry association. On the one hand, these institutions helped to attract investment and rapidly expand production; on the other hand, they shaped expectations of continuous demand growth and encouraged many enterprises to follow similar strategies of capacity expansion. The national studies of A. Turdiev and co-authors and of M. Kutbitdinova emphasize the importance of improving the management systems and economic efficiency of enterprises in this context [30, 14], while the Development Strategy of New Uzbekistan for 2022-2026 shifts the emphasis towards resource-saving and energy-efficient products [7]. This means that competitive strategy cannot be considered separately from industrial policy: the same external shock - overcapacity or carbon regulation - may require different responses depending on the institutional support available to enterprises.

A critical comparison of these streams shows that they complement rather than contradict each other. The industrial organization approach explains why overcapacity leads to price competition and low profitability; the resource-based view and the dynamic capabilities concept explain why some firms nevertheless succeed - because they can renew their products, markets and processes; and the decarbonization literature identifies a new dimension of competition that will increasingly determine access to international markets. At the same time, the empirical studies differ in their recommendations: some emphasize price, delivery and service [35], others market development [16], and still others green capabilities [25]. This suggests that the choice of strategy depends on the position of a particular group of enterprises, which justifies a differentiated approach.

National studies. In the national literature, J. Faizullaev examined the role of building materials production in the economy of Uzbekistan and the directions of managing growth efficiency in the context of diversification and export potential [8]. A. Turdiev and co-authors studied the priorities for increasing the competitiveness and export potential of construction industry enterprises [30], while S. Mirzayev considered clustering and its organizational and economic mechanism as a factor of competitiveness [15]. M. Kutbitdinova analysed the production management system and the dynamics of economic efficiency indicators of construction materials enterprises [14]. These studies confirm the importance of the topic, but most of them were carried out before the emergence of overcapacity and the entry into force of CBAM and contain little quantitative analysis of these factors.

A comparative summary of the main approaches is presented in Table 1.

Table 1

Comparison of theoretical approaches to competitive strategy in construction materials enterprises

Approach	Key authors	Main contribution	Limitation for the conditions of Uzbekistan
Industrial organization and generic strategies	Porter [22]	Five forces; cost leadership, differentiation and focus	Static view; weak attention to overcapacity cycles and regulation
Resource-based view and dynamic capabilities	Barney [1]; Teece et al. [29]; Teece [28]	Advantage based on unique resources and the ability to sense, seize and reconfigure	Few operational indicators for capital-intensive commodity industries
Value innovation	Kim, Mauborgne [12];	New market space; linking	Requires market

and shared value	Porter, Kramer [23]	competitiveness with social and environmental value	institutions and demand for differentiated products
Sector studies of cement markets	Wagdi, Fathi [35]; Mucheru et al. [16]; Remi-Aworemi, Salami [25]; Roland Berger [26]	Oversupply leads to price rivalry; market development and green capabilities improve advantage	Survey-based, country-specific; no link to carbon border costs
Decarbonization of cement	Scrivener et al. [27]; Habert et al. [10]	Clinker substitution and low-carbon cements as economically viable options	Technological focus; strategy and market effects not addressed
National studies	Faizullaev [8]; Turdiev et al. [30]; Mirzayev [15]; Kutbitdinova [14]	Role of the industry, factors of competitiveness, clustering, management efficiency	Little quantitative analysis of overcapacity and external regulation

Thus, the analysis of the literature reveals a research gap: existing studies either describe general competitive strategies or analyse individual factors - overcapacity, marketing, innovation, decarbonization - separately, while there is no integrated approach that quantifies the main challenges facing construction materials enterprises in Uzbekistan and links them with differentiated competitive strategies for different groups of producers. The present study aims to fill this gap.

METHODOLOGY

The research was designed as an applied study combining quantitative analysis of secondary data with strategic modelling. This design was chosen because enterprise-level financial data for the industry are not publicly available, while aggregated official and industry data make it possible to identify the main structural parameters of competition and to assess their economic consequences.

Data. The empirical base consisted of data of the National Statistics Committee of the Republic of Uzbekistan on cement production, cement exports and the volume of construction work [19, 17, 20, 18]; data of the Uzsanoatqurilishmateriallari Association on output, exports, investment and production capacities of the industry [33, 32, 34]; and industry analysis of the cement market [3]. Information on energy tariffs and regulatory changes was taken from official and media sources [11, 6, 9], and the parameters of CBAM from the EU regulation and its guidance materials [24, 2, 4]. The period of analysis covered 2017-2025; where different sources reported different values for the same indicator, both values were shown and the source of each was indicated.

Values in soums were analysed in nominal terms, because deflators for the construction materials industry are not published separately; therefore, growth rates in soums were interpreted together with physical indicators and exports in US dollars, which are less affected by inflation. To ensure reproducibility, only publicly available sources were used, and for each indicator the original source is given in the notes to the tables; all derived indicators can be recalculated from these sources using formulas (1)-(4). When an indicator was available only for part of a year (for example, January-September exports of cement), the calculation was carried out for that period, and the period was indicated explicitly. The choice of 2017 as the base year is explained by the start of large-scale reforms in the industry and by the availability of comparable data for that year in the sources used.
Structural analysis. Average annual growth rates were calculated as compound annual growth rates:

$$CAGR = (X_T / X_0)^{1/T} - 1 , \quad (1)$$

where X_0 and X_T are the values of the indicator in the initial and final years and T is the number of years. The capacity utilization rate and the export unit value of cement were calculated as follows:

$$u = Q / K , \quad p_x = V_x / Q_x , \quad (2)$$

where u is capacity utilization; Q is annual production; K is installed capacity; p_x is the export unit value, USD per tonne; V_x and Q_x are the value and physical volume of exports.

Cost-sensitivity model. To assess the economic consequences of overcapacity, the unit cost of production was represented as the sum of variable and fixed components. Expressed as an index relative to the unit cost at full capacity utilization, it takes the form:

$$c(u) = (1 - f) + f / u\,, \tag{3}$$

where $c(u)$ is the unit cost index; f is the share of fixed costs (depreciation, maintenance, fixed labour and overheads) in unit cost at full capacity. Because the cost structure of individual enterprises is not published, three values of f (0.25, 0.35 and 0.45) were considered, reflecting the high capital intensity of clinker-based production. The model was chosen because it is transparent, requires a minimum of assumptions and directly shows the cost of idle capacity. The lower value corresponds to enterprises with largely depreciated assets, the upper value to new plants with high depreciation and debt service; the central value was used for the main conclusions. Utilization levels of 65% and 80% were selected as intermediate and benchmark levels, the latter corresponding to the normal operating level of well-managed cement plants.

Carbon border cost estimate. The potential CBAM cost per tonne of cement exported to the EU was estimated as:

$$CB_t = e \cdot P_{CO2} \cdot \varphi_t\,, \tag{4}$$

where e is the embedded emission intensity, t CO_2 per tonne of cement; P_{CO2} is the certificate price, EUR per t CO_2; φ_t is the CBAM factor in year t, which rises from 2.5% in 2026 to 100% in 2034 as free allocation in the EU is phased out [2]. The calculation used e = 0.6-0.8 t CO_2/t, a certificate price of EUR 75 per tonne [2] and an exchange rate of 1.15 USD/EUR. The range of emission intensity corresponds to typical values for Portland cement with a high clinker content produced in dry-process kilns, which is the dominant technology in the country. The estimate is an approximation of gross exposure: it does not deduct any carbon price paid in the country of origin and assumes that embedded emissions are close to the benchmark used for the free allocation adjustment.

Strategic modelling. The challenges and opportunities identified were arranged in a matrix of the SWOT/TOWS type, and the main groups of enterprises were distinguished on the basis of industry data on market structure: established producers, new large plants with foreign investment, producers of finishing and value-added materials, and small and medium-sized enterprises. The groups were distinguished according to three criteria: the age and technological level of production assets, the main product segment (bulk cement or value-added materials) and the scale of the enterprise. For each group, strategic directions were derived by matching external factors with the resources and dynamic capabilities of the group, in line with the approaches of M. Porter and D. Teece [22, 28]. Data verification included comparison of figures from statistical and industry sources, checking of internal consistency (for example, between production, demand and trade) and conversion of values into comparable units. The research was carried out in four stages: data collection and verification; calculation of structural indicators; cost and carbon border modelling; and development of the strategy matrix. The calculations were performed in Python 3 using the NumPy and Matplotlib libraries.

ANALYSIS AND RESULTS

The main indicators of the construction materials industry and construction activity are presented in Table 2.

Table 2

Main indicators of the construction materials industry of Uzbekistan, 2017-2025

Indicator	2017	2024	2025	CAGR 2017-2025, %
Output of construction materials, trln	11.4	47.1	52.6	21.1

UZS				
Exports of construction materials, mln USD	71	831	1,200	42.4
Investments utilized, bln USD	-	2.2	2.4	-
Construction work performed, trln UZS	34.7	259.7	313.9	31.7
Output of materials to construction work, %	32.9	18.1	16.8	-
Exports to output of materials, %*	-	≈22	≈27	-

In 2017-2025, output of construction materials grew at an average annual rate of 21.1% in nominal terms and exports at 42.4%; in 2025 alone exports increased by 44.4%. Construction work grew faster than the output of materials (31.7% per year), and the ratio of materials output to construction work decreased from 32.9% to 16.8%. The share of exports in output reached about 27% in 2025. The industry's product range in 2025 included 40 million m² of construction glass, 47 million m² of ceramic tiles, 110 million m² of gypsum board, 336 thousand tonnes of dry building mixes and 830 thousand units of sanitary ware [31]. Neighbouring countries represent a construction materials market worth more than USD 4 billion; the country has kaolin deposits exceeding 1 billion tonnes, while porcelain is still imported [13], and 40 kaolin deep-processing projects worth USD 515 million are planned [5].

The balance of the cement market is shown in Table 3.

Table 3

Main indicators of the cement market of Uzbekistan

Indicator	2024	2025
Installed capacity, mln t (42 plants)	-	40.5
Production, mln t	≈17.9*	20.2 / 21.5**
Domestic demand, mln t	18.4	18.8
Exports, mln t	≈0.2	≈1.5
Capacity utilization, %	45.1	just under 50
Capacity to domestic demand, times	-	2.15
Exchange price of Portland cement, thous. UZS/t	-	485-587
Export unit value (Jan-Sep), USD/t	-	40.4

Installed capacity exceeded domestic demand by 2.15 times. Production growth in 2025 was driven mainly by exports, which increased from about 0.2 to nearly 1.5 million tonnes, while domestic demand grew by only 2.2%; imports fell by almost 90% in the first nine months of 2025 [3]. In January-September 2025, 1.1 million tonnes of cement worth USD 44.4 million were exported to four countries, mainly Kyrgyzstan and Kazakhstan [17], which corresponds to an export unit value of USD 40.4 per tonne. Converted at about 12,700 UZS/USD, the exchange price of Portland cement in 2025 corresponded to about USD 38-46 per tonne [34]. Established producers have lost output since 2019, while newer, largely Chinese-backed plants have gained market share; seven plants with Chinese investment have a combined capacity of 15.7 million tonnes [3, 34]. With 40.5 million tonnes, Uzbekistan has the largest cement capacity in Central Asia, compared with 18 million tonnes in Kazakhstan [34]. According to the industry analysis, export gains have been driven mainly by low prices, and government measures such as reducing the mandatory share of exchange sales and the limestone tax rate have not restored sustained pricing power [3].

The results of the calculation by formula (3) are shown in Figure 1.

At the 2025 utilization level of about 50%, the unit cost index was 1.25-1.45, that is, unit costs were 25-45% higher than at full utilization, depending on the share of fixed costs. Raising utilization from 50% to 65% reduced unit costs by 9.2-14.3%, and from 50% to 80% by 15.0-23.3%; for the central value $f = 0.35$, the reductions were 12.0% and 19.4% respectively.

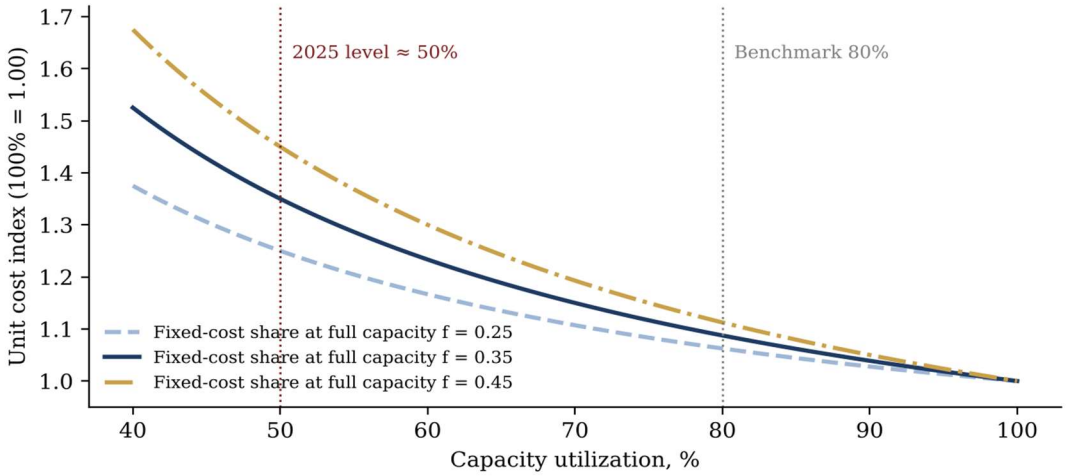


Figure 1. Unit cost index depending on capacity utilization

The estimated CBAM cost per tonne of cement exported to the EU is given in Table 4.

Table 4

Estimated CBAM cost for cement by year of the phase-in period

Year	CBAM factor, %	Cost at e = 0.6 t CO_2/t, EUR (USD) per t	Cost at e = 0.8 t CO_2/t, EUR (USD) per t
2026	2.5	1.1 (1.3)	1.5 (1.7)
2028	10.0	4.5 (5.2)	6.0 (6.9)
2030	48.5	21.8 (25.1)	29.1 (33.5)
2032	73.5	33.1 (38.0)	44.1 (50.7)
2034	100.0	45.0 (51.7)	60.0 (69.0)

In the first years of the definitive period the potential cost did not exceed USD 7 per tonne, but by 2030 it reached USD 25-34 per tonne, and under full application in 2034 USD 52-69 per tonne, which is 1.3-1.7 times the export unit value of Uzbek cement in 2025. In July 2026 the European Commission proposed slowing the phase-out of free allocation for CBAM sectors and extending it to 2038; this proposal is not yet law [21].

In May 2024, the first increase in energy tariffs since 2019 raised the price of electricity by 52.5% (from 295 to 450 soums per kWh) and of gas by 71% (from 380 to 650 soums per m^3), and further increases for businesses and households were announced for June 2026 [11]. The government plans to complete the transition to an electricity market by 2027 and to a wholesale natural gas market by 2028 [6]. In 2023, a partial transition of industries, including cement plants, from natural gas to coal was ordered [9].

On the basis of the identified challenges and opportunities, a framework for the formation of competitive strategies was developed (Figure 2). External factors are filtered through the capabilities of the enterprise and lead to four strategic directions.

Figure 2 illustrates the conceptual framework for developing competitive strategies among construction materials enterprises, while Table 5 presents a differentiated matrix of strategic priorities based on enterprise characteristics, market challenges, and available competitive opportunities. The proposed approach emphasizes that strategic decisions should reflect differences in production capacity, technological development, financial resources, and market positioning rather than rely on a uniform competitive model.

As presented in Table 5, established cement producers face challenges associated with declining market shares, ageing production facilities, and high energy consumption. Their competitive advantages, including established brands, access to raw material deposits, and developed logistics networks, provide opportunities for technological modernization, the introduction of low-

carbon cement products, and expansion into premium and regional market segments. In contrast, newly established large-scale enterprises with foreign investment benefit from modern production technologies and economies of scale but frequently encounter insufficient capacity utilization and intense price competition. Consequently, export-oriented cost leadership and long-term supply agreements with neighbouring markets represent appropriate strategic directions.

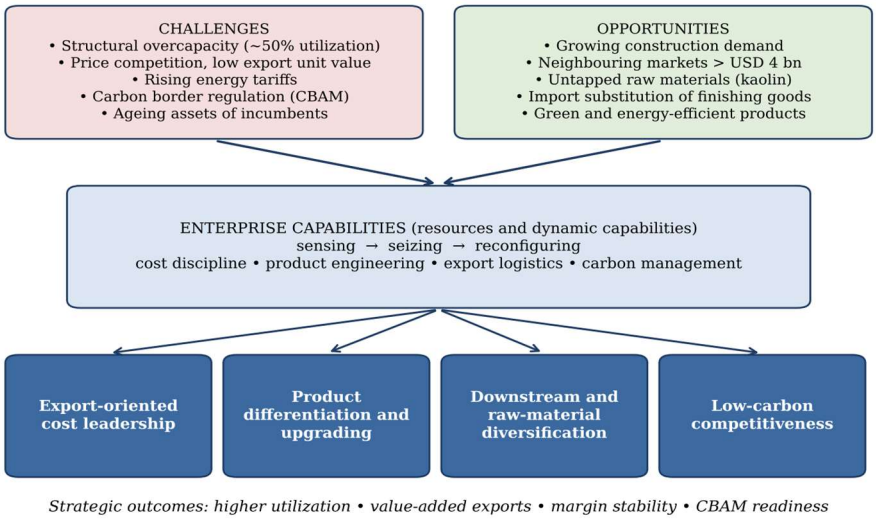


Figure 2. Framework for the formation of competitive strategies of construction materials enterprises

The matching of strategic directions with the main groups of enterprises is presented in Table 5.

Table 5

Matrix of competitive strategies for groups of construction materials enterprises

Group of enterprises	Main challenge	Main opportunity	Recommended strategic direction
Established cement producers	Loss of market share; ageing assets; high energy use	Brand, deposits, logistics links	Modernization and low-carbon cements; focus on premium grades and regional markets
New large plants with foreign investment	Low utilization; price competition	Modern kilns; scale	Export-oriented cost leadership; long-term contracts in neighbouring markets
Producers of finishing and value-added materials	Competition with imports; design and quality requirements	Import substitution; markets > USD 4 bln	Product differentiation; export brands; trade houses abroad
Small and medium-sized enterprises	Limited finance and technology	Local demand; raw materials such as kaolin	Focus and diversification; cluster cooperation with large producers

Producers of finishing and value-added construction materials operate under increasing competitive pressure from imported products and growing customer expectations regarding design and quality. Their strategic development should therefore prioritize product differentiation, import substitution, internationally competitive brands, and the establishment of trade houses in foreign

markets. Small and medium-sized enterprises, meanwhile, are constrained by limited financial resources and technological capabilities. Nevertheless, access to local demand and domestic raw materials, including kaolin, creates opportunities for market specialization, product diversification, and cluster-based cooperation with larger manufacturers.

Overall, the competitive strategy matrix demonstrates the importance of aligning internal enterprise capabilities with external market conditions. The differentiated application of modernization, cost leadership, product differentiation, and focused diversification strategies can contribute to stronger competitive positioning, improved resource utilization, and the sustainable development of the construction materials industry.

DISCUSSION

The results make it possible to answer the research questions formulated in the introduction. First, the analysis showed that the construction materials industry of Uzbekistan has passed through a stage of extensive growth: output has more than quadrupled since 2017, exports have increased almost seventeen times, and the country has built the largest cement capacity in Central Asia. However, growth has been driven primarily by the creation of new capacities, and in the cement segment their expansion has outstripped domestic demand. The fact that capacity is more than twice domestic demand and that utilization remains around 50% means that the industry has entered a phase in which the main competitive problem is not a shortage of supply but its excess.

Second, the results confirm the conclusions of studies of other oversupplied markets. As in the Egyptian case analysed by O. Wagdi and A. Fathi [35] and in Southeast Asia [26], overcapacity in Uzbekistan has led to intense price competition: the export unit value of about USD 40 per tonne is within the range of domestic exchange prices, and exports have become the main channel for absorbing surplus. In terms of M. Porter's framework [22], rivalry among existing competitors has become the dominant force, and the threat of new entrants has materialized in the form of large plants with foreign investment. Under such conditions, a cost leadership strategy based only on price does not create lasting advantage, because all modern producers have similar technologies and access to raw materials.

Third, the cost-sensitivity model shows that idle capacity has a significant economic cost. The difference of 15-23% in unit costs between 50% and 80% utilization is comparable to or larger than the typical margin of commodity producers, which explains why enterprises are willing to export at low prices: any additional sales above variable cost reduce the burden of fixed costs. However, this logic works only up to a point. If all producers follow it simultaneously, prices fall for everyone, and the industry ends up in a low-margin equilibrium. Therefore, higher utilization should be achieved not only through price but also through the expansion of markets and product ranges, as recommended by S. Mucheru and co-authors in their analysis of market development strategies [16].

Fourth, the estimate of CBAM costs reveals a strategic risk that is not yet visible in the current export structure. At present, Uzbek cement is exported mainly to neighbouring countries [17], which do not apply carbon border measures. However, CBAM changes the long-term terms of competition in the international cement trade: under full application, the carbon cost may exceed the current export value of a tonne of cement. This means that access to carbon-priced markets will be possible only for producers with substantially lower emission intensity. The decarbonization options described by K. Scrivener and co-authors and by G. Habert and co-authors [27, 10], in particular clinker substitution and low-carbon cements, are therefore not only an environmental but also a competitive necessity. The proposed extension of the phase-out to 2038 would only postpone, not eliminate, this effect.

Fifth, energy factors increase the importance of efficiency. The liberalization of electricity and gas prices removes one of the traditional cost advantages of domestic producers, and since energy accounts for a large part of the variable costs of clinker production, it raises the cost floor below which price competition becomes loss-making. The partial transition of cement plants from gas to coal reduces dependence on gas supply but increases the carbon intensity of production. This creates a contradiction between short-term energy security and long-term carbon competitiveness, which

enterprises must resolve through investments in energy efficiency, alternative fuels and clinker substitution.

Sixth, the results reveal significant opportunities. Exports of construction materials as a whole grew much faster than output, and the share of exports in output reached about 27%. Neighbouring markets and the creation of trade houses abroad provide a basis for an export-oriented strategy in value-added products such as ceramic tiles, glass, dry mixes and PVC profiles, which have higher value per tonne and are less sensitive to transport costs than cement. In addition, the combination of large kaolin reserves with continued imports of porcelain, together with the planned kaolin deep-processing projects, indicates that diversification into downstream and raw-material-based products can create new market space in the sense of W. Kim and R. Mauborgne [12].

The proposed framework (Figure 2) integrates these findings with the dynamic capabilities approach. According to D. Teece [29, 28], sustainable advantage requires the ability to sense changes in the environment, seize opportunities and reconfigure resources. The findings of F. Remi-Aworemi and A. Salami that sensing capabilities have the strongest effect on sustainable performance in the cement industry [25] support the recommendation that enterprises in Uzbekistan should develop market and regulatory intelligence functions - monitoring of export markets, energy prices and carbon regulation - as a basis for strategic decisions.

The decline in the ratio of materials output to construction work from 32.9% to 16.8% also deserves interpretation. Although this ratio is affected by differences in price dynamics and by the growing share of labour, engineering and imported equipment in construction value, it indicates that the domestic construction boom has not been fully converted into demand for locally produced materials. This means that the main reserve of growth for domestic enterprises lies not in additional volumes of bulk materials, whose market is saturated, but in higher-value finishing, engineering and energy-efficient products that are still partly imported. A strategy of import substitution in these segments is thus consistent with both the interests of enterprises and state priorities in the production of resource-saving and energy-efficient materials [7].

The results also highlight the geographical limits of export strategies. With an export unit value of about USD 40 per tonne, the economic radius of cement exports is limited by transport costs, and exports are concentrated in neighbouring countries. In contrast, products with higher value per tonne - ceramic tiles, glass, sanitary ware, dry mixes - can be competitive in more distant markets. Therefore, the export strategy of the industry should be built on two levels: regional exports of bulk materials, supported by long-term contracts and efficient rail logistics, and wider exports of value-added products, supported by brands, certification and trade houses.

From the standpoint of industrial policy, the results suggest that the role of the state should shift from stimulating the creation of new capacities to coordinating the development of the industry. In the cement segment, this means avoiding support for new capacities that are not backed by export contracts, encouraging the modernization and decarbonization of existing plants and creating a system for measuring and verifying emissions that will be required for access to carbon-priced markets. In the value-added segments, state support should focus on export promotion, certification, standards and the training of specialists, which corresponds to the cluster-based approach to competitiveness [15].

For individual enterprises, the findings can be translated into a sequence of strategic steps. In the short term, the priority is to increase utilization and reduce costs through energy efficiency, export contracts and better logistics. In the medium term, enterprises should upgrade their product portfolios towards higher grades, blended and special cements and value-added materials. In the long term, competitiveness will depend on low-carbon capabilities, including clinker substitution, alternative fuels and verified emission reporting. This sequence reflects the logic of dynamic capabilities, in which current operations finance the reconfiguration of the business model [28].

The strategy matrix (Table 5) shows that there is no single optimal strategy for the industry. New plants with modern kilns can rely on cost leadership in export markets, while established producers, which have lost market share [3], need modernization and a shift to low-carbon and

premium products. Producers of finishing materials should compete through differentiation and brands, and small and medium-sized enterprises through focus and cooperation, which is consistent with the clustering approach proposed by S. Mirzayev [15]. This differentiated approach extends the national studies [8, 30, 14], which considered the competitiveness of the industry as a whole. It also helps to avoid a situation in which all enterprises pursue the same strategy of volume growth and low prices, which, as the results show, leads to a collective loss of profitability. For the Association and industry bodies, this implies the need for regular monitoring of capacity, utilization and export prices by product segment, so that investment decisions of individual enterprises are based on reliable information about the market as a whole rather than on the experience of the previous boom.

The hypothesis of the study is confirmed: the results show that competition based only on low prices under structural overcapacity leads to low margins, and that higher utilization, product upgrading, diversification and low-carbon capabilities are the main sources of sustainable advantage.

The study has several limitations. Enterprise-level data on costs, prices and emissions are not publicly available, so the cost-sensitivity model uses assumed fixed-cost shares, and the CBAM estimate uses typical emission intensities rather than measured values for Uzbek plants. Different sources report different values of cement production for 2025, and the 2024 value was derived from the reported growth rate. The strategy matrix is based on aggregated data and should be verified by surveys and case studies of individual enterprises.

CONCLUSION

The study identified the main challenges and opportunities for developing competitive strategies in construction materials enterprises of Uzbekistan. It was established that in 2017-2025 the output of the industry grew at an average annual rate of 21.1% and exports at 42.4%, but that in the cement segment installed capacity exceeds domestic demand by more than two times, utilization is about 50% and exports are made at low prices. The cost-sensitivity model showed that increasing utilization from 50% to 80% can reduce unit costs by 15-23%, while the estimate of carbon border costs showed that under full application of CBAM the carbon cost of cement may exceed its current export value. The research hypothesis was confirmed: under structural overcapacity, price-based competition alone is not sustainable. Thus, the answer to the main research question is that the competitiveness of construction materials enterprises in Uzbekistan now depends less on the quantity of capacity and more on how efficiently it is used, how much value is added to products and how well enterprises are prepared for carbon regulation; the four strategic directions proposed - export-oriented cost leadership, product upgrading, diversification and low-carbon competitiveness - correspond to these requirements and should be combined according to the position of each group of enterprises.

The practical significance of the study lies in the proposed framework and strategy matrix, which can be used by enterprises and the Uzsanoatqurilishmateriallari Association. It is recommended to: coordinate capacity expansion with demand forecasts and avoid new cement capacities without export contracts; support the export of value-added materials through trade houses and certification; introduce low-carbon cements and systems for measuring and verifying emissions at cement plants; invest in energy efficiency in view of tariff liberalization; and promote diversification into kaolin-based and other downstream products, including through cluster cooperation between large and small enterprises. The implementation of these measures will make it possible to raise capacity utilization, increase the share of value-added products in exports and prepare enterprises for the tightening of carbon requirements in international markets, thereby turning the current production potential of the industry into a sustainable competitive advantage.

The contribution of the study consists in linking classical and resource-based theories of competitive strategy with quantitative indicators of overcapacity and carbon border costs for an emerging economy. Future research should focus on enterprise-level surveys of costs, emissions and strategic practices, on econometric analysis of the determinants of export performance and on modelling the effects of different decarbonization pathways on the competitiveness of the industry.

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