

# Building Global Capability: An Evaluation Model for Chinese Contractors<sup>1</sup>

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## Abstract

Chinese contractors currently face a structural dilemma in the international engineering market: while ranking first globally in the ENR Top 250 listings, their profitability is severely mismatched with market share, and overseas business gross margins lag significantly behind world-class contractors. Based on ENR Top 250 International Contractors data, this paper systematically analyzes the structural deficiencies of Chinese contractors in regional market distribution, business models, and capability structures, identifying four root-level mismatches in contract rules, organizational models, risk management, and cultural differences. A capability maturity model encompassing three capability dimensions—rule adaptation and compliance, project implementation and resource adaptation, and international operations and organizational support—across four maturity levels is proposed. A phased enhancement pathway tailored to CSCEC-8 is also developed. This research aims to provide theoretical tools and practical guidance for Chinese construction enterprises transitioning from scale-driven overseas expansion to value-driven globalization.

**Keywords:** *international construction capability; capability maturity model; ENR contractors; benchmarking; CSCEC-8 overseas*

## Introduction

After decades of rapid growth, China's construction industry has entered a critical period of stock optimization and structural transformation [1]. In 2024, the total contract value signed by construction enterprises fell to RMB 72.72 trillion, registering negative growth of -0.22% for the first time in nearly a decade; the floor area of buildings under construction reached 13.683 billion square meters, a year-on-year decline of 10.62%; and the number of construction workers dropped sharply by 8.33 million to 59.62 million, a decrease of 12.76%. Meanwhile, the industry's output profit margin has remained below 3% for three consecutive years, and traditional growth drivers

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have visibly weakened. Against this backdrop, expanding into overseas markets has become an important strategic choice for construction enterprises to offset the domestic downturn.

According to the Engineering News-Record (ENR) 2025 Top 250 International Contractors list, the total international revenue of listed enterprises reached USD 502.1 billion, a new high in nearly a decade [2]. In 2025, China's completed overseas contracted project turnover reached USD 178.82 billion, up 7.7% year-on-year, and newly signed contract value reached USD 289.22 billion, up 8.2%, both breaking historical peaks. However, the deep-seated contradictions facing Chinese contractors in the international market have become increasingly prominent: although 76 Chinese enterprises made the ENR list, ranking first globally, their average share of international business is only 9.5%; Chinese enterprises hold over 59% market share in Asia and Africa, yet their participation in the fastest-growing Middle East and Oceania markets is clearly insufficient; and the profitability of overseas business lags far behind world-class contractors such as Spain's ACS and France's Vinci.

These phenomena indicate that the internationalization of Chinese contractors faces a significant dilemma of growing quantity with declining quality and increasing volume without increasing profit, rooted in the lack of a systematic international construction capability framework. Existing internationalization evaluations mostly start from outcome-based performance indicators (such as ENR rankings), which can hardly reveal the underlying causes of capability differences or provide effective guidance for enterprise capability building. This paper seeks to move beyond the traditional performance-evaluation logic and, taking rule adaptation, project implementation, and organizational support as the main line, constructs a layered, graded international construction capability evaluation model, while proposing actionable development recommendations based on the actual overseas business of CSCEC-8.

## **1. Current Situation of Chinese Contractors' International Operations**

### **1.1 Domestic Construction Market Dilemma and Overseas Expansion Drivers**

The domestic construction market currently faces the triple pressures of shrinking aggregate volume, declining profits, and labor outflow. In 2024, the newly signed contract value nationwide reached RMB 33.75 trillion, down 5.29% year-on-year, and domestic orders entered a phase of dual squeeze between shrinking increments and depleting stock; total profit fell 9.8% year-on-year, and the decline continued into 2025, further narrowing the survival space of enterprises. The three physical volume indicators (floor area under construction, completed floor area, and number of employees) declined in tandem, indicating that the industry is undergoing deep structural adjustment: the residential market continues to contract, and the industry's growth momentum has

shifted from increments to stock optimization. Under this dilemma, overseas markets have become an important growth pole to offset the domestic downturn.

## 1.2 Global Market Landscape and Distribution Characteristics of Chinese Contractors

In 2025, the total international revenue of the ENR Top 250 International Contractors reached USD 502.1 billion, a slight increase of 0.5% over the previous year; growth has slowed but remains at a high level. From a regional perspective, the Middle East market generated USD 75.63 billion, up 17.7% year-on-year, making it the fastest-growing regional market globally; the Oceania market generated USD 34.93 billion, up 13.9%, a notable growth rate; while the Asian market, though ranking first regionally at USD 80.01 billion, decreased by USD 9.57 billion from the previous year, a decline of about 2 percentage points, becoming the region with the largest decline globally.

Chinese contractors' global market presence shows a distinctly regional concentration. Chinese enterprises hold a market share of 61.6% in Africa and 59.2% in Asia, dominating the two traditional markets. However, in the fastest-growing Middle East market, Chinese enterprises account for only 27.1%; in Oceania, only 16.7%; and penetration in European and American markets is below 10%. This severe mismatch between market layout and global growth direction has produced the structural dilemma that Chinese enterprises cannot enter the fast-growing markets, and earn little in the markets they have entered [3].

| Regional Market | ENR Global Revenue (USD 100M) | YoY Growth (%) | Chinese Enterprise Market Share (%) | Market Characteristics                                       |
|-----------------|-------------------------------|----------------|-------------------------------------|--------------------------------------------------------------|
| Asia            | 800.1                         | -10.7          | 59.2                                | Highest share but sharply declining revenue                  |
| Middle East     | 756.3                         | +17.7          | 27.1                                | Fastest-growing globally; insufficient Chinese participation |
| Africa          | 526.0                         | +4.5           | 61.6                                | Traditional advantage market with low profit margin          |
| Europe          | 1,120.0                       | -1.0           | 9.2                                 | High-barrier, high-profit market                             |
| Oceania         | 349.3                         | +13.9          | 16.7                                | Notable growth; low Chinese share                            |

|               |       |      |     |                        |
|---------------|-------|------|-----|------------------------|
| North America | 680.0 | +3.0 | 1.2 | Highest-barrier market |
|---------------|-------|------|-----|------------------------|

**Table 1. Chinese Contractors' ENR Regional Market Share vs. Global Growth Rate Comparison**

### 1.3 Internationalization Dilemma of Chinese Contractors: Typical Case Analysis

In the course of Chinese contractors' overseas expansion, the heavy losses of several well-known projects have clearly revealed the harm of systemic shortcomings. In the Saudi Mecca Light Rail project of China Railway Construction Corporation, because the EPC+O&M contract did not establish a reasonable design-change price adjustment mechanism, the client's incremental requirements were not compensated, and work stoppages caused by religious activities were not recognized as force majeure, ultimately resulting in a loss of RMB 4.1 billion [4]. In the Shanghai Electric India Sassan Power Station project, although arbitration was won, the Indian party refused to perform and counter-claimed RMB 2.1 billion, resulting in a cumulative loss of RMB 2.5 billion. As a representative project of Chinese infrastructure entering the EU market, the China Overseas Poland Expressway project suffered a loss of RMB 8.8 billion and lost access to the EU market because the team's insufficient understanding of international engineering practices caused a severe mismatch between contract terms and local rules. The common feature of these cases is that the losses stemmed from systemic deficiencies in contract-rule cognition, risk anticipation, and compliance governance, while construction technology capability itself remained adequate.

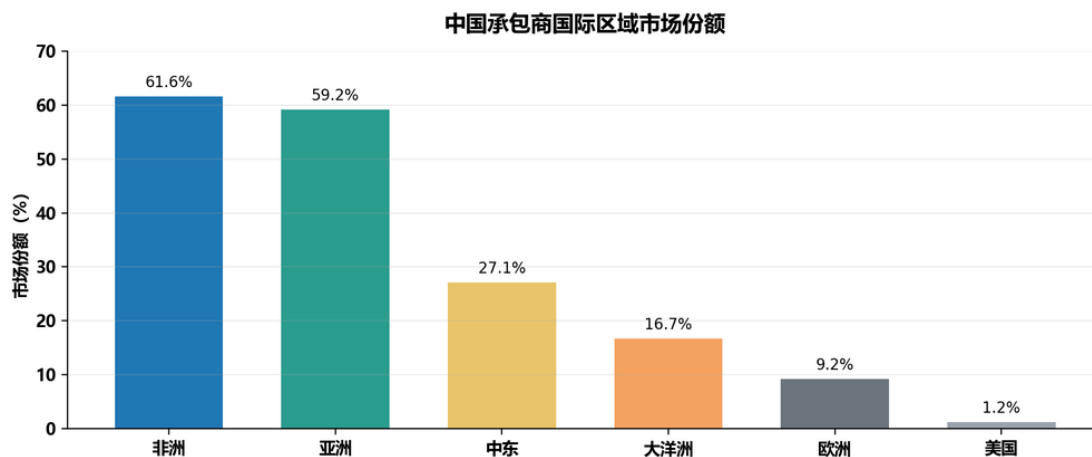


**Figure 1. International Regional Market Share of Chinese Contractors**

## 2. Benchmarking Analysis of World-Class International Contractors

### 2.1 Overview of Benchmark Enterprises

To identify the key gaps in the internationalization capability of Chinese contractors, this paper selects Vinci of France and ACS of Spain, two world-class international contractors, as benchmark

subjects. Vinci, ranked 4th in ENR, is a top global contractor known for its integrated investment-construction-operation concession model. The French market contributes about 41% of its revenue, with the remainder from other European regions, North America, and emerging markets; its overseas revenue share is about 56%, and its overall net profit margin reaches 23.4%. ACS is one of the most internationalized large contractors in the world, with overseas revenue exceeding 90%, expanding rapidly into high-barrier markets through strategic cross-border mergers and acquisitions (such as deep cultivation of high-end segments like US data centers through its subsidiary Turner), thereby avoiding price competition in low-end Asian and African markets.

## 2.2 Diagnosis of Key Gaps

Benchmarked against Vinci and ACS, China Communications Construction Company (CCCC), as a leader in the internationalization of Chinese contractors, reveals three structural gaps. First, a profitability gap: CCCC's overseas revenue share in 2025 is about 22%, with a net profit margin of only 2.85%, far below Vinci's 23.4% and ACS's high profit level—a gap of nearly ninefold. Second, a single business model: CCCC still relies mainly on traditional EPC contracting, with a very small share of high value-added businesses such as concessions, operation and maintenance, and design consulting. Third, an unbalanced market layout: it is highly concentrated in low- and middle-income economies in Asia and Africa, with severely insufficient penetration into high-barrier, high-profit European and American markets. These gaps reflect that Chinese contractors have long relied on factor-driven growth (cheap labor, low-priced materials, and extraordinarily tight schedules) and have yet to establish system-driven core competitiveness [5].

| Indicator                 | Vinci (France)                               | ACS (Spain)                      | CCCC (China)                |
|---------------------------|----------------------------------------------|----------------------------------|-----------------------------|
| ENR Ranking               | 4th                                          | Top 10                           | Top 5                       |
| Overseas Revenue Share    | ~56%                                         | >90%                             | ~22%                        |
| Net Profit Margin         | 23.4%                                        | High                             | 2.85%                       |
| Core Business Model       | Integrated investment-construction-operation | Cross-border M&A integration     | Traditional EPC contracting |
| Main Markets              | Europe / North America / Emerging            | North America / Oceania / Europe | Asia / Africa               |
| High Value-Added Business | High (concessions)                           | High (high-end segments)         | Low                         |

**Table 2. Benchmarking of Key Indicators against World-Class International Contractors**

## 3. Analysis of Basic Elements of International Construction Capability

Based on the above status analysis and benchmarking research, this paper diagnoses four root-level mismatches in Chinese contractors' international construction capability, which constitute the core bottlenecks constraining capability improvement.

### **3.1 Contract Rules: Domestic Relationship-Oriented vs. International Contract Supremacy**

Chinese enterprises have long been accustomed to a flexible model of design, construct, and modify simultaneously in the domestic market, where contracts are often treated merely as a flexible starting point for cooperation, lacking binding legal force. In international engineering, however, contract systems such as FIDIC strictly enforce the spirit of contract: claims lose their right once the notification deadline passes, and change procedures are complex and require client approval [6]. The heavy losses of the aforementioned Saudi Light Rail and Poland Expressway projects are directly related to insufficient understanding of international rules at the contract stage. In the international engineering field, contract capability has risen to become the foremost capability element; its absence will negate the output of all other capabilities (design, construction, and resource integration).

### **3.2 Organizational Model: Domestic Construction-Oriented vs. International Design-Led**

Domestic enterprises have long positioned themselves as construction contractors, while mainstream international contracting models require contractors to possess full-process integration capability from design to operation. Chinese construction enterprises generally lack design capability and design management experience, making it difficult to realize the cost advantages of design optimization in EPC projects, thus falling into the dilemma of passively accepting designs and passively responding to changes [7]. Vinci, by contrast, locks in the maximization of full-lifecycle value at the front end of design planning through its integrated investment-construction-operation model.

### **3.3 Risk Management: Domestic Low-Price Bidding vs. International Compliance First**

Domestic enterprises, relying on deep insight into the local environment, adopt a model of low-price bidding and multi-tier subcontracting, completing projects within budget through cost control and relationship coordination. After going overseas, however, due to a lack of in-depth research on the host country's labor policies, religious culture, and legal environment, risk anticipation is nearly zero, turning low-price bidding into a high-risk gamble. The core competitiveness of top international contractors lies precisely in the precise anticipation of full-cycle risks and refined management within rules [8].

### **3.4 Cultural Differences: Domestic Rush-Work Culture vs. International Respect for Rules**

Domestic engineering culture advocates high-intensity rush work, and enterprises are accustomed to making up for earlier delays through overtime and emergency sprints. In international engineering, however, rigid constraints such as religious holidays, environmental time limits, union regulations, and safety laws cannot be overridden. A deep understanding of local culture, religious customs, and the legal framework has become the basic precondition for international

engineering performance; the hidden cost of culture often far exceeds the explicit cost of technology [9].

## **4. Construction of the International Construction Capability Maturity Evaluation Model**

Existing internationalization evaluations mostly take a performance perspective, the most common indicator being the ENR international revenue ratio. Performance evaluation, however, essentially evaluates process by results: if project profitability, schedule, or quality results are simply used as the evaluation basis, it is difficult to truly reflect enterprise capability, and the capability model easily becomes a tool for post-hoc attribution. This study proposes systematization as the core of evaluation, constructing a graded evaluation approach centered on the formation stage, maturity, and operating state of capability elements [10].

### **4.1 Capability Dimensions and Evaluation Dimensions**

The model revolves around three capability dimensions. First, rule adaptation and compliance requirements—covering FIDIC contract application capability, international standard conversion capability, and compliance review coverage, which determine whether an enterprise can obtain access to high-standard markets. Second, project implementation and environmental/resource adaptation—covering design management maturity, supply chain integration index, and localized resource allocation rate, which measure the actual delivery level of enterprises in overseas markets. Third, international operations and organizational support—covering the proportion of expatriate executives, knowledge management coverage, and cross-border collaboration efficiency, which assess the sustainability of an enterprise's international operating system.

### **4.2 Four Maturity Levels**

Each capability element is evaluated across four maturity levels. Level 1 (Foundation): the enterprise possesses basic awareness or institutional documents, but there is no mandatory usage requirement, and capability remains at the level of individual experience. Level 2 (Standardized): partially implemented in overseas projects, with written processes but incomplete coverage; capability begins to be institutionalized but not yet standardized. Level 3 (Quantified): standardized processes and quantified assessment indicators have been established, and the coverage rate of key nodes reaches target values (e.g., 100% contract review coverage, conversion error rate below 5%); capability enters a measurable and replicable stage. Level 4 (Optimized): the enterprise possesses continuous improvement and industry-output capability, with mature data-driven decision mechanisms, and has formed proprietary knowledge assets in specific fields (such as patents and industry guidelines); capability reaches a world-class level.

| Capability Dimension                              | Capability Element                | Level 1                                        | Level 2                                                  | Level 3                                                           | Level 4                                                     |
|---------------------------------------------------|-----------------------------------|------------------------------------------------|----------------------------------------------------------|-------------------------------------------------------------------|-------------------------------------------------------------|
| Rule Adaptation & Compliance                      | FIDIC Contract Application        | Contract template available, no mandatory use  | Used overseas with lawyer review; records incomplete     | Standardized review; 100% clause coverage; quantified checklist   | Data-driven optimization; top-25% claim success             |
| Rule Adaptation & Compliance                      | International Standard Conversion | Aware of standards, no internal conversion     | Preliminary conversion at bidding; relies on consultants | Difference database; standardized process; error <5%              | Proprietary tools/patents; issues industry guides           |
| Project Implementation & Resource Adaptation      | Design Management Maturity        | Fully outsourced to external design institute  | Optimization suggestions at drawing stage                | Design front-loading; integrated teams; quantified change targets | Standard VE method; quantified cost savings                 |
| Project Implementation & Resource Adaptation      | Supply Chain Integration          | Domestic procurement; no overseas alternatives | 3-5 local suppliers; usage <30%                          | Local procurement >50%; supplier evaluation; key alternatives     | Global network; cross-region allocation; disruption <7 days |
| International Operations & Organizational Support | Expatriate Executive Ratio        | No expatriate executives                       | Advisors without decision authority                      | Deputy-GM expatriates >10% in decisions                           | Expatriates >15%; some in HQ; integrated decisions          |
| International Operations & Organizational Support | Knowledge Management Coverage     | No platform; experience individual             | Project-end summaries; scattered storage                 | Unified database; structured cases; mandatory upload              | System-integrated PM; auto case recommendation              |

**Table 3. International Construction Capability Maturity Model Matrix (Levels: 1 = Foundation, 2 = Standardized, 3 = Quantified, 4 = Optimized)**

## 5. Capability Enhancement Pathway for CSCEC-8 Overseas Operations

Based on the above capability model and the actual overseas business of CSCEC-8, this paper proposes a four-stage enhancement plan following the logical main line of status survey, capability diagnosis, root cause attribution, and improvement measures.

Stage 1 (short term, within 1 year): Status survey and data collection. Collect CSCEC-8's overseas organizational structure, recent operational data, management system documents, and typical project lists, and determine the interview subjects and evaluation indicators at three levels—

headquarters, regional companies, and projects. Complete the initial capability profile through archival research and semi-structured interviews.

Stage 2 (short term, within 1 year): Capability diagnosis and evaluation. Determine the maturity level for each of the nine capability elements, draw a capability profile radar chart, and ensure the objectivity of evaluation results through multi-evidence cross-validation. Focus on identifying weak elements scoring at or below Level 2.

Stage 3 (medium term, 2-3 years): Root cause attribution and classification. Conduct root cause analysis (RCA) on weak elements, verify the accuracy of attribution against typical loss-making or problematic project cases, and form a problem classification ledger—distinguishing four types of shortcomings: institutional deficiency, poor execution, insufficient resources, and environmental constraints.

Stage 4 (medium term, 2-3 years): Improvement measures and implementation. Propose specific improvement measures for each shortcoming, clarifying responsible departments, timelines, and acceptance criteria. Key initiatives include: establishing an international contract review and risk checklist mechanism covering the full cycle of bidding, signing, and execution; building a standard-difference comparison database for target markets; promoting design front-loading and value engineering management in EPC/DB projects; and formulating a dedicated plan for international talent pipeline development, establishing a normalized job rotation mechanism between domestic and overseas positions.

## 6. Conclusion

(1) Chinese contractors exhibit a typical large-but-not-strong profile in the international engineering market—leading globally in scale indicators (number of ENR listings and turnover) but lagging across value indicators (profitability, rationality of market layout, and diversity of business models). The root cause lies in long-term reliance on a factor-driven model and the absence of a systematic international construction capability framework.

(2) Through multidimensional benchmarking against world-class contractors such as Vinci and ACS, four root-level mismatches are diagnosed: contract rules, organizational models, risk management, and cultural differences. These mismatches reinforce one another: deficient contract capability leads to EPC model failure, a single organizational model aggravates the unbalanced market layout, and a weak risk culture amplifies the losses from contract defects.

(3) An international construction capability evaluation system model encompassing three capability dimensions (rule adaptation, project implementation, and organizational support) and four maturity levels is constructed. Taking systematization as the core of evaluation, the model breaks through the result-oriented limitations of traditional ENR performance evaluation,

providing the industry with a theoretical tool for shifting from result attribution to mechanism revelation.

(4) A four-stage enhancement pathway is proposed for CSCEC-8's overseas business, transforming the capability model from an evaluation framework into an actionable guide. The core approach is: in the short term, address institutional shortcomings in contract rules and compliance governance; in the medium term, establish localized resource integration and cross-border collaborative operating systems; and in the long term, achieve the fundamental transformation from scale-driven overseas expansion to value- and capability-driven globalization.

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