

# Analysis of the Existing Problems and Countermeasures of Chinese Enterprises Participating in Overseas Variable Energy Investment

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**Abstract:** With the response to climate change and the promotion of energy transition becoming the consensus of the international community, the global variable energy market is entering a period of rapid development. China proposed that "China will vigorously support the green and low-carbon development of energy in developing countries, and will no longer build new overseas coal power projects", which will provide a direction for high-quality international energy cooperation in the new era. This paper firstly systematically sorts out the current situation of Chinese enterprises' participation in overseas variable energy investment, and makes an in-depth analysis of the problems and challenges behind them from the perspectives of their own motivation, ability and experience, external constraints, and international environment. On this basis, put forward countermeasures and suggestions to promote Chinese enterprises to participate in overseas variable energy investment and enhance international competitiveness.

**Keywords:** Climate Change; Chinese Enterprises; Variable Energy Projects; Overseas Investment; Countermeasures

## 1. Introduction

As efforts to address climate change and achieve carbon neutrality goals accelerate, both China and other countries around the world have implemented policies and measures to promote the green and low-carbon transformation of energy. This has led to a "golden age" of global variable renewable energy development [1]. In September 2020, China announced that it would enhance its

nationally determined contributions, striving to peak carbon dioxide emissions before 2030 and achieve carbon neutrality by 2060. In September 2021, China further stated its strong support for the green and low-carbon energy development of developing countries and its commitment to no longer build new overseas coal-fired power projects. This has provided guidance for high-quality energy international cooperation in the new era. Currently, Chinese enterprises' participation in overseas variable energy markets primarily involves investment and development, project contracts, equipment exports, and financial services. However, unlike its leading position in the global market share of equipment manufacturing and project contracting [2], Chinese enterprises have been relatively slow in expanding their investment and development in overseas variable energy markets and their competitiveness in comparison to international competitors is insufficient [3]. Particularly, there is a significant gap between Chinese enterprises and top international corporations in terms of international operational capabilities, international talents, and innovative development [4]. Furthermore, Chinese enterprises' participation in overseas variable energy investment is primarily through joint ventures and mergers and acquisitions, with a lower proportion of higher value-added greenfield investments [5]. Considering that investment plays a crucial role in the value chain of the variable energy industry and has a significant driving effect on the entire industry, the next step should focus on strengthening top-level design and overall coordination, seizing investment opportunities, and enhancing the international competitiveness of investment enterprises. This will accelerate

China's pace of expanding its investment in the variable energy sector overseas and contribute to the global green and low-carbon energy transformation.

## **2. Current Status of Chinese Enterprises' Involvement in Overseas variable energy Investment**

### **2.1 Limited Scale of Chinese Enterprises' Investment in Overseas Variable Energy Markets**

According to statistics from fDiMarkets, the average annual investment by Chinese enterprises in overseas solar and wind power from 2018 to 2020 was \$2.25 billion and \$1.11 billion, respectively. These figures account for only 2% and 1.3% of the total annual global investments in solar and wind power markets (excluding China), according to the report *Renewables Global Status Report 2019-2021*. In terms of the internationalization level of Chinese power enterprises, the overseas revenue of the five major power generation groups (China Energy, China Huaneng Group, State Power Investment Corporation, China Huadian Corporation, China Datang Corporation) in 2019-2020 was less than 7%. According to the report *Comparative Analysis Report on Chinese Power Generation Enterprises and Similar Energy Enterprises Worldwide 2021* published by China Electric Power Development Research Institute, this is significantly lower than the overseas revenue share of enterprises such as RWE from Germany, Iberdrola from Spain, and Enel from Italy, which exceeds 60%. Compared to traditional power projects such as hydropower and thermal power, Chinese enterprises have a relatively smaller overall investment scale in overseas variable energy markets.

### **2.2 Limited Competitiveness of Chinese Enterprises in Overseas Variable Energy Investment Market**

Currently, Chinese enterprises primarily acquire variable energy projects through purchasing development rights or already operational power plants. They have a disadvantageous position in competing with top international investors in the overseas market, as they have limited success in securing projects through greenfield development and public bidding. Taking

Uzbekistan as an example, in May 2021, during the bidding process for a 220MW photovoltaic project in the Samarkand region, the UAE's Masdar Energy won the bid with a tariff of 1.791 cents/kWh. In comparison, two Chinese enterprises participating in the bidding, Jinko Solar and China Power International Holding Ltd., as well as PowerChina Resources Limited and Solarfun Power Holdings, submitted bids with tariffs of 2.228 cents/kWh and 3.098 cents/kWh, respectively, which were 24.4% and 72.98% higher than the winning bid price, highlighting a substantial gap. Moreover, internationally renowned investor ACWA Power from Saudi Arabia disclosed that out of the 97 projects it had participated in bidding, it secured 66, achieving an impressive success rate of 68%. Additionally, their bidding prices consistently breaking records, with a record-breaking tariff of 1.04 cents/kWh for a 600MW photovoltaic project in Saudi Arabia in 2021, further demonstrating their strong market competitiveness.

## **3. Problems and Challenges for Chinese Enterprises to Participate in Overseas Variable Energy Investment**

### **3.1 Inadequate Drive of Chinese enterprises in Overseas Variable Energy Investment Projects**

In comparison to traditional thermal and hydropower projects, overseas variable energy projects are typically characterized by smaller installed capacities, lower investment amounts, and lower return on investment. These factors contribute to a lesser appeal for Chinese enterprises, particularly those that are centrally controlled or state-owned. Additionally, overseas projects often face multiple risks, including political, market policy, legal, and exchange rate risks, etc, which require higher levels of enterprise management and risk control. In particular, the recent impact of the COVID-19 pandemic has led to significant increases in raw material prices and freight costs, restricted personnel mobility, and economic pressures in various countries. As a result, overseas project investments face greater uncertainties [6]. In contrast, the domestic market in China is experiencing a thriving growth in the variable energy sector, driven by the "carbon peaking and carbon

neutrality” targets. The risks in the domestic market are relatively controllable, and the returns are stable. Numerous large-scale variable energy bases are currently being planned and developed, indicating a strong momentum. Consequently, investment enterprises are more inclined to focus their investments on the domestic market and exhibit a relatively cautious approach towards overseas market investments. Thus, the impetus for “Going Global” investments is limited.

### **3.2 Limited Capacity and Inadequate Experience of Chinese Enterprises in Investing in Overseas Variable Energy Projects**

One prominent issue lies in the low level of internationalization and insufficient multinational operational capabilities of Chinese enterprises. Presently, the majority of multinational investment enterprises have achieved a workforce internationalization rate exceeding 50%, with some even achieving complete localization in certain countries. In contrast, Chinese enterprises still heavily rely on Chinese employees for their overseas projects, lacking sufficient localization and a deficiency in talents who possess profound knowledge of local politics, economics, legal environments, and international financing frameworks. Consequently, they confront disadvantages in terms of information acquisition and market competition. Another challenge is the inadequate market understanding and risk management capabilities. Chinese enterprises have limited experience and achievements in overseas variable energy investments, lacking familiarity with the investment environments, legal systems, and market rules of host countries [7]. Moreover, there is a lack of professional assessment tools and talent pools for overseas projects. Furthermore, the global variable energy market is currently undergoing profound changes. The prevalence of power purchase agreements (PPAs) “guaranteeing fixed quantity and price” is declining, subsidies for electricity prices are gradually being reduced or abolished, and more countries are adopting market-based electricity pricing. These factors increase the uncertainty of project investment returns, to which Chinese enterprises find it difficult to adapt in

a short time. The third challenge lies in the need to enhance integrated management capabilities. In comparison to top-tier international enterprises, Chinese enterprise management tends to be relatively rough, lacking meticulousness. Insufficient integration management capabilities concerning design supervision, suppliers, contractors, and financial institutions result in problems or potential risks in project cost, schedule, and quality management. These issues, in turn, impact the overall competitiveness of enterprises and project profitability level.

### **3.3 Numerous Factors Constraining Chinese Enterprises’ Investments in Overseas Variable Energy Projects**

Chinese enterprises face the dual influence of performance assessment by the State-owned Assets Supervision and Administration Commission of the State Council (SASAC) and the relatively higher profitability of domestic variable energy projects. As a result, they generally demand higher return on investment in overseas variable energy projects compared to their international competitors. Additionally, Chinese enterprises encounter limitations in terms of financing flexibility and higher financing costs, which further weaken their competitiveness. Against the backdrop of continually declining grid electricity prices in the global variable energy market, obtaining project development rights has become increasingly challenging for Chinese enterprises. Moreover, the investment process for overseas variable energy projects requires the same level of corporate and governmental approvals as traditional energy projects, making it difficult to adapt to the short development cycles and high demand for rapid investment decision-making in the variable energy sector. Consequently, this has led to missed opportunities for substantial investments.

### **3.4 Intensifying Competition in Overseas Variable Energy Investments Presenting Greater Challenges for Chinese Enterprises’ Going Global**

The variable energy projects, especially wind and photovoltaic power projects, which features are shorter development cycle and lower industry entry barriers. As addressing

climate change and transitioning towards green and low-carbon energy become an international consensus, an increasing number of traditional energy enterprises are embarking on business transformation. Recognizable international energy giants such as Shell, BP, and Total have made high-profile forays into the variable energy industry [8]. Moreover, pension funds, private equity funds, and other institutions from Europe, the United States, and other countries are continuously intensifying their investments in variable energy through acquisitions and other means. Consequently, the competition in the future variable energy investment market should become even more intense. In addition, large international corporations possess evident advantages in terms of geopolitical context, resources, capital, costs, and brand recognition, making them formidable competitors for Chinese enterprises seeking to engage in the overseas variable energy market.

### **3.5 Complex and Volatile International Landscape Raising Risks for Overseas Business**

Western countries, led by the United States, have “politicized” industrial issues and imposed sanctions or excessive regulations on Chinese variable energy enterprises through national security reviews and antitrust investigations [9]. For instance, the 2018 *Foreign Investment Risk Review Modernization Act* passed by the United States expanded its mandatory declaration list to include distribution technologies, which was widely believed to specifically target Chinese investors. Similarly, the European Union’s *White Paper On Establishing a Fair Competition Environment Regarding Foreign Subsidies*, launched in 2021, adopts broad definitions of “subsidy providers” and “foreign subsidies”, which are highly indicative of China. The current international environment is intricate and complex, driven by the rise of trade and investment protectionism worldwide, which will inevitably result in increased friction for Chinese enterprises’ overseas investments [10]. There is a possibility that the US and Western countries may further utilize non-market means to suppress Chinese variable energy enterprises, creating more difficulties and obstacles for Chinese enterprises to invest in overseas variable

energy projects.

## **4. Suggestions for Promoting High-Quality Development of Chinese Enterprises “Going Global”**

### **4.1 Strengthening Top-level Design to Facilitate Comprehensive Expansion of Chinese Enterprises’ Overseas Investment in Variable Energy Sector**

Firstly, policy guidance should be enhanced: In order to ensure the comprehensive development of China’s international energy cooperation within the framework of the domestic and international dual-circulation strategy, it is crucial to issue policy guidelines that prioritize variable energy investments as a key driver for high-quality development. These guidelines should continually guide and support enterprises in actively participating in overseas variable energy projects. Secondly, increased government support is warranted: By leveraging the multilateral and bilateral cooperation platforms and mechanisms established at the national level, policy dialogues, technological exchanges, planning research, and capacity-building efforts at the investment level between nations in the variable energy sector should be strengthened [11]. Such efforts will create favorable conditions for enterprises to be involved in overseas variable energy markets. Thirdly, government approval processes should be streamlined or integrated, and efficient one-stop services should be provided to facilitate the involvement of enterprises in the overseas variable energy sector.

### **4.2 Enhancing Resource Integration and Fully Leveraging the Advantages of the Entire Industry Chain to Form Alliances for Overseas Expansion.**

By leveraging domestic variable energy investment as a foundation, maximizing the coordinating role of enterprises, and collaborating with upstream and downstream enterprises in the domestic variable energy industry chain, friendly partnerships can be established through framework agreements with EPC contractors, equipment manufacturers, financial and insurance enterprises, etc. This will allow enterprises to take advantage of their complementary strengths in overseas market competition.

Additionally, exploring opportunities for equity cooperation and distributing investment returns and risks based on the respective resource endowments and characteristics of each enterprise will enable collective efforts to expand abroad. Consequently, the advantage of the industrial chain can be transformed into a value chain advantage, enhancing the competitive capabilities of Chinese enterprises in overseas markets.

#### **4.3 Leveraging Internal and External Resources and Strengthening Competitiveness for Internationalization**

First and foremost, active observation and study of renowned international variable energy developers should be engaged in, with a focus on the proficient execution of premium greenfield project development strategies within the market. The capacity for investment analysis and judgment should be continuously reinforced to swiftly adapt to subsidy-free electricity trading regulations. The internal methods employed for investment evaluation should be adjusted and enhanced, while competent third-party consulting agencies should be entrusted to conduct comprehensive research on the investment environment, legal system, and market regulations of the host countries, thereby formulating prudent risk mitigation measures. Furthermore, the participation of local investors and international investment institutions should be proactively explored in overseas variable energy endeavors. On one hand, the diverse strengths possessed by these investors, including project resources, investment risk management acumen, government relations in the host country, and access to financing channels, should be leveraged, thereby diversifying investment risks. On the other hand, opportunities for collaboration with both local and international investors should be actively sought, with the aim of acquiring advanced investment knowledge and expertise. In the pursuit of expanding the enterprise's global footprint, a pool of international talents well-versed in the intricacies of the variable energy industry should be nurtured, as well as possessing a comprehensive understanding of overseas market policies, languages, and cultures.

#### **4.4 Improving Work Efficiency and**

#### **Simplifying Approval Process for Overseas Variable Energy Project Investment Decisions**

First, in order to integrate the characteristics of overseas renewable energy projects, it is essential to optimize the internal investment decision-making process and approval system within the company, while ensuring compliance. For instance, implementing a hierarchical authorization management approach can delegate the authority for project investment approval and decision-making to second-tier units for projects with lower risks that fall below a certain scale. Second, it is crucial to establish a multi-level comprehensive rate of return evaluation index model, eliminating the constraints of a single rate of return threshold. This can be achieved by creating a streamlined process and offering one-stop expedited services through the establishment of a green channel. By rationalizing the approval process and enhancing its efficiency, we aim to prevent the company's approval procedures from becoming a constraint and barrier to the success of renewable energy projects.

#### **5. Conclusions**

Through conducting visits, surveys, and discussions with major energy investment enterprises in China, this paper aims to gain a deep understanding of the situation, status, advantages, and shortcomings of Chinese enterprises participating in overseas renewable energy investments. It systematically analyzes and organizes information from various perspectives, including internal driving forces, capabilities and experiences, external constraints, and the international environment. Based on this analysis, it puts forward strategic recommendations to support Chinese enterprises in achieving high-quality participation in overseas renewable energy projects. These recommendations serve as an important reference for promoting the high-quality development of international cooperation in clean energy for the country. Considering the relatively short research and study period, as well as the macroscopic nature of the content, future work will involve conducting more in-depth research to provide more targeted and actionable recommendations.

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