



Research on Strategic Position and Layout Strategy of Overseas Railway Project against the Background of “Belt and Road Initiative”

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Abstract. Through sorting out and summarizing the overseas railway databases ranging from 1967 to 2020, an overseas railway database covering 92 projects was built. In this paper, overseas railway projects were classified into strategic type, demonstration type, commercial type and assistance type. This paper analyzed the distinctive characteristics of different categories for overseas railway projects. Quantitative analysis was carried out from perspectives of economic corridor, target positioning, and etc., and development strategies were proposed tailored to different categories of overseas railway projects. The research can provide decision support for railway “going global” under “Belt and Road Initiative”.

Keywords: China Railway; Railway “Going Global”; “Belt and Road”; “Going Out” Mode

1 Introduction

“Belt and Road Initiative” was proposed by President Xi Jinping in 2013. Railway as an important carrier facilitating infrastructure connectivity, is becoming the essential area and priority for implementing national development strategy of open wide to the outside world, and promoting high-quality development of “Belt and Road.” Taking China-Laos Railway, Jakarta-Bandung High Speed Railway, Hungary-Serbia Railway, and etc., as examples, China international competitiveness of “railway global” improved substantially and China railway made solid progress. China railway with the edges in technology, equipment and safety, becomes the focused area to attract countries along “Belt and Road”. This paper constructed an overseas railway project database of “Belt and Road,” and analyzed the features of China railway “going global” from perspectives of geographic distribution and strategic positioning. Strategies for overseas railway layout were proposed to provide guidance and research references for “railway going global”.

2 Classification of strategic positioning for oversea railway projects

(1) Strategic-type projects

Strategic projects take the role of promoting Chinese railway standards (rail transit, whole high-speed railway chain), exploring regional market, and facilitating regional connectivity, and has strategic political and economic significance. Strategic projects serve as essential window for coordinating China railway standards with international standards and fully participating in international competition, and a tie linking "Belt and Road Initiative" with development strategies of Europe, Central Asia and Indo-China Peninsula. Strategic projects usually locate in China neighboring areas and are crucial components of economic artery. They can greatly promote the prosperity and development of the regions and industries along the route. While promoting local infrastructure construction and economic prosperity and development, they can undertake China surplus production capacity and build a new situation of win-win cooperation [1].

(2) Demonstration-type projects

Demonstration projects are usually landmark projects after Chinese companies enter a certain region for the first time, or are typical representatives of the two countries in railway construction, and have a flagship effect on the type of construction investment and the new pattern of "penguin huddle" for overseas investment. Demonstration projects represent Chinese contractors from the mid-to-low-end market to the mid-to-high-end market. The contractors have gradually changed from being promoted by the government under the "Belt and Road Initiative" to being spontaneously developed and survived by the contractors in the mid-to-high-end market. Demonstration projects will play an important supporting role in the eventual wider support for the "Belt and Road". Demonstration projects are successful models of the whole China railway industry chain integrating financing, design, construction, mechanical and electrical equipment, locomotive and rolling stock procurement, and operation. Each process is full of Chinese elements and has a demonstration effect on the future overseas projects. Demonstration projects will become a "model of friendship" between the two countries and promote cooperation in more fields between the two countries with far-reaching significance to the international image in the region.

(3) Commercial-type projects

Commercial projects are relatively densely distributed and account for a large majority of overseas projects, with enterprises taking the lead, and constantly expanding the market, to achieve certain benefits on the basis of gaining a firm foothold in overseas markets. Concerning geographic distribution, commercial projects have a major presence in Africa, with even distribution in other economic corridors, which reflects that state of China overseas railway projects gradually expanding from a single point to a multi-point development, and showing a trend of "full bloom". Commercial projects are more likely to exist when Chinese companies enter the "circular" development stage in a certain region or country, and are the product of a period of deepening cooperation and sustainable and healthy development between the two parties. The commercial projects deepen the cooperation between Chinese enterprises and the overseas

government and enterprises, and constantly cooperate in many aspects such as construction mode exploration, technical personnel training, standardization system construction, product R&D and manufacturing, operation management and maintenance, etc., and provides reference for similar international projects. It also accumulated valuable experience for China's railways to "go global"[2].

(4) Foreign aid projects

Foreign aid projects refer to projects of the nature of foreign aid that are approved by the Ministry of Foreign Trade and Economic Cooperation and are implemented in the recipient country with loan funds such as foreign aid joint venture and cooperation project funds and foreign aid preferential loans. A foreign aid project is a general term for all kinds of foreign aid projects, with three categories: financial aid projects, in-kind foreign aid projects and technical foreign aid projects. From the perspective of the nature of foreign aid, it mainly has two types: donation-based free aid and credit-based paid aid. From the channels of foreign aid, there are two categories: direct aid (that is, a government or institution of a country provides assistance directly to other countries or regions) and indirect assistance (that is, a government or institution of a country provides assistance to other countries through the United Nations and its affiliated institutions or through other world institutions or organization).

3 Quantitative analysis of oversea railway projects based on strategic positioning

3.1 Regional distribution of oversea railway projects

In the "Vision and Actions to Promote the Joint Construction of the Silk Road Economic Belt and the 21st Century Maritime Silk Road" announced at the end of March 2015, it was proposed to build six economic corridors, namely, China-Mongolia-Russia Economic Corridor, New Eurasian Land Bridge, China-Central Asia-West Asia Economic Corridor, China-Indochina Peninsula Economic Corridor, China-Pakistan Economic Corridor, and Bangladesh-China-India-Myanmar Economic Corridor. By sorting out and summarizing the data of the railway overseas project database from 1967 to 2020, a railway overseas project database containing 92 projects was established.

It was found that over 50% percent of overseas projects located in six corridors, namely 6 in New Eurasian Land Bridge, 15 in China-Indochina Peninsula Economic Corridors, 9 in Bangladesh-China-India-Myanmar Economic Corridors, 15 in China-Central Asia-West Asia Economic Corridors, 5 in China-Mongolia-Russia Economic Corridor and 2 in China-Pakistan Economic Corridors. Some of the above projects are planned or terminated. Apart from six economic corridors, 43.5% of overseas projects located in Africa and America area (33 in Africa, 7 in America). Geographic distribution of oversea projects was shown in Figure 1.

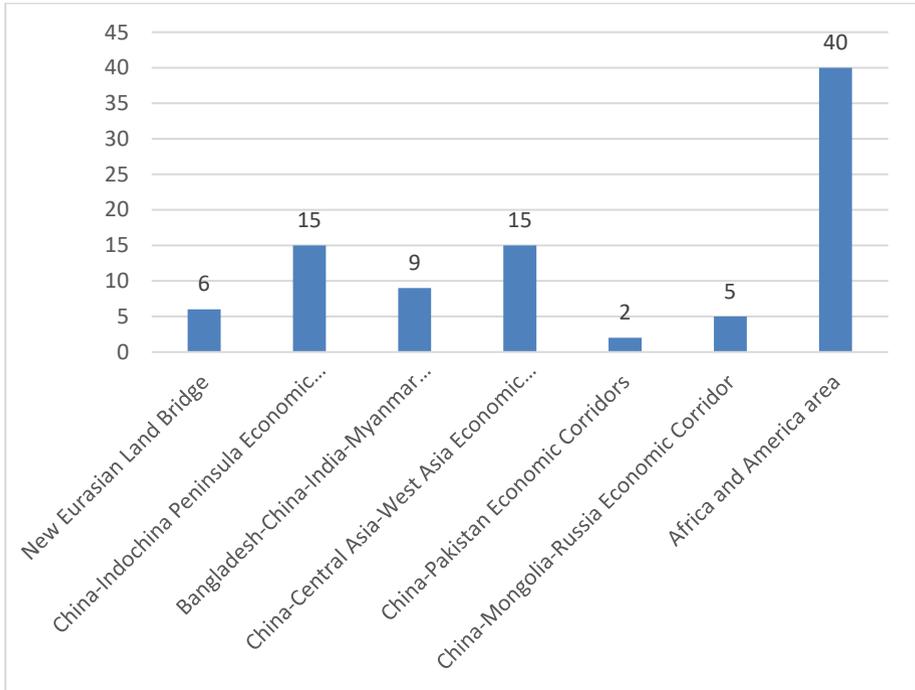


Fig. 1. Geographic distribution of overseas projects

3.2 Strategic positioning of oversea railway projects

According to the strategic positioning, the 92 oversea railway projects in the database are screened and classified from strategic, demonstration, commercial and foreign aid types. Among them, strategic projects account for 14.9%, demonstration projects account for 18.4%, commercial projects account for 64.9%, and foreign aid projects only account for 1.8%. Some projects have multiple types of attributes. The proportion of strategic positioning is shown in Figure 2. Among them, strategic projects are mainly distributed in the New Eurasian Continental Bridge Economic Corridor, China-Mongolia-Russia Economic Corridor, and demonstration projects are mainly distributed in China-Central Asia-West Asia Economic Corridor, China Indo-China Peninsula. Commercial projects and foreign aid projects are mainly distributed in Africa and America area.

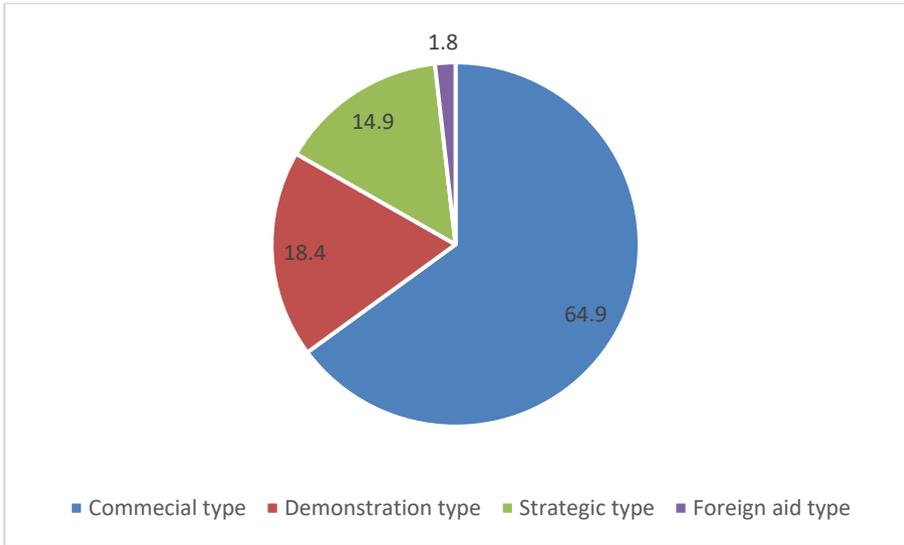


Fig. 2. The proportion of strategic positioning

4 Layout strategies of oversea railway projects

4.1 Strategic railway projects

China is located on the west coast of the Pacific Ocean, the bridgehead of the Eurasian Continental Bridge and the starting point of the "Silk Road" economic belt; at the same time, China is located in the east of Asia, bordering 14 neighboring countries, and the regional trade relations with neighboring countries are increasing, and political and economic cooperation is enhancing.

To "go global", China railways should first implement the requirement of "Belt and Road Initiative", connect with the railway planning and construction of countries along the route, give priority to the interconnection railway projects along the route, and strive to build an international railway corridor with large capacity to support the construction of the Silk Road Economic Belt.

The characteristics of strategic railway projects are as follows: firstly, they are of great strategic significance, and they are usually strategic transportation corridors that can change the current pattern of China import and export transportation and enhance regional influence; secondly, the projects might involve many countries and are difficult to coordinate. Strategic railway corridor usually passes through several countries, due to the complexity of geopolitics, it is difficult for countries along the route to reach consensus and coordination on the formation of the corridor; thirdly, the buckets effect is obvious, and the role of the strategic corridor depends on the shortcomings of the corridor, that is, there are missing sections or bottlenecks in the corridor path.

Among the strategic railway projects, the Eurasian Corridor is the basic support of the Silk Road Economic Belt. This corridor is not only the traffic artery of the ancient

Silk Road, but also the key area of the New Silk Road Economic Belt, and the most important link between China and Europe. With convenient land passages, the Central Asian countries are the center of the Eurasian continent. The West Asian countries are an important source of energy supply for China. The Eurasian corridor connecting the Asia-Pacific economic circle and the European economic circle, plays an essential role in the "Belt and Road" Initiative. Eurasian corridor also plays an extremely important role in promoting bilateral trade, especially a whole-journey Eurasia railway corridor with the unified gauge and China has a voice. The China-Pakistan Corridor, the Pan-Asia Corridor and the Bangladesh-China-India-Myanmar Corridor are mainly located in Southeast Asia and South Asia, where China has geological edge. Among them, Pakistan and Myanmar have established a comprehensive strategic partnership with China, and have very close political, military and economic cooperation. The Gwadar Port of the China-Pakistan Corridor and the Kyaukpyu Port of the China-Myanmar Corridor can enable China to break through the strategic restraint of the Strait of Malacca in the Pacific Ocean, and transfer the landing points of strategic materials such as energy, grain, and ores from the Pacific Ocean to the Indian Ocean, and the energy supply from important regions such as West Asia can be more secured. This corridor has very important strategic significance for changing the regional transportation pattern.

Besides, Malaysia, Singapore and other countries have good bilateral relations and close economic and trade cooperation with China. Through the construction of the Pan-Asian Corridor, the related countries can be interconnected, aiming at building the trade cooperation and close exchanges platform with Southeast Asia. Especially in the context of Sino-US trade frictions, these are of great strategic significance for building strategic hinterland for China foreign trade and promoting stable economic and trade growth.

4.2 Demonstration railway projects

Drawing from previous international railway cooperation, projects including the Jakarta-Bandung high-speed railway in Indonesia and the high-speed railway from Moscow to Kazan are highly valued by the government and actively promoted by the enterprise. The two-ocean railway between Brazil and Peru is jointly promote by two countries and the planned railway in South America has great potential with resources such as iron ore and soybeans. With the support of the governments of both parties, the construction enterprises will carefully organize and construct the relevant projects, and it is very likely to form a demonstration project.

(1) The role of government

Demonstration railway project is of great demonstrative significance for promoting national production capacity cooperation and economic and trade cooperation. It should not rely solely on the strength of the enterprise itself, but should cooperate closely with various parties under the unified planning and guidance of the government. Firstly, a communication mechanism between the two governments should be built through active intergovernmental dialogue and consultation, and a consensus on the planning and construction of regional cooperation can be reached and a favorable policy environment

shall be provided. Secondly, it is imperative to improve the foreign cooperation mechanism in investment protection, finance, taxation, customs, personnel exchanges, etc., to provide policy guarantees for enterprises to "go global". Thirdly, an enterprise coordination mechanism shall be established to organize and coordinate domestic design, construction, equipment, operation, finance and other related enterprises, strengthen communication and cooperation between governments and enterprises, and use government resources to comprehensively investigate, understand and systematically analyze various external environments.

Pros and cons for various oversea projects shall be carefully analyzed and an eye shall be kept on the real-time trends of competitors. It is necessary to collect relevant information in multiple directions and channels, speed up the exchange and sharing of various information resources, coordinate the allocation of resources, to avoid horizontal competition and malicious price reduction among China railway enterprises. Fourthly, financial support shall be provided. Through measures such as improving the financial support policy system, giving play to the leading role of government funds, and building a financial service system, the railway industry and relevant financial institutions are encouraged to work together to provide railway enterprises with high-quality, efficient and low-cost services. Fifthly, it is imperative to create a friendly atmosphere of public opinion. In the process of "going out", Chinese railway enterprises are often deliberately smeared by some media and other public opinion, and maliciously slander public opinion by distorting and propagating the threat of China's development, which brought friction, and negative impact to Chinese enterprises. It is necessary for government departments to lead Chinese enterprises to communicate candidly with oversea government departments and enterprises, strengthen positive publicity and guidance to create a friendly public opinion environment for Chinese enterprises[3].

(2) The role of enterprises

Fine analysis of project feasibility shall focus on technical economy and business model in the early stage of the project to ensure that the project has good economic prospects. Firstly, it is necessary to accurately grasp the market demand, and to study and demonstrate the feasibility, necessity and urgency of the market demand of the project through careful investigation of the basic data such as population distribution, economic society, transportation and natural characteristics of the cities along the project. Secondly, a win-win business model shall be formulated. Questions such as what value the railway project can bring to the host country, what value can it bring to Chinese enterprises or the country, and what way or method can be used to achieve the integration of resources and capabilities of both parties, and realize benefits and risks sharing, shall be evaluated in advance.

Only when a business model is established can both parties benefit from the projects. Thirdly, it is necessary to fully demonstrate and compare the technical solutions, based on the main technical standards and equipment configuration of China railways, combined with the functional requirements and natural conditions of the oversea market and other actual scenarios, to provide tailor-made cost-effective technical solutions with high applicability. Fourthly, project risks shall be evaluated in advance to establish a sound risk management system for overseas projects. Some Chinese enterprises have copied domestic project risk management experience and models in the process of

"going out". However, due to the completely different macro environment of foreign industries, "acclimatization" has left many lessons from the failure of projects. Through studying, it is found many enterprises have not yet established the scientific and perfect risk management system of overseas railway projects leads to insufficient risk identification and assessment of overseas projects and blind decision-making in response to risks.

In the early stage of the project, Chinese enterprises should fully investigate and sort out the macro risks of the oversea country in terms of political, economic, legal and other industrial environments. To establish a sound overseas project risk management system, it is necessary to establish a project risk management and control organization system to clarify the rights and responsibilities of all parties that participate in risk prevention and control. At the same time, a scientific risk assessment and early warning system should be established, covering a comprehensive risk assessment content and index system, risk assessment overrun early warning response mechanism[4].

(3) Localization strategy

In order to organize the implementation of the project, it is necessary to select a prudent construction cooperation model after the project is approved, actively implement localization strategies, and formulate a sound risk response mechanism to ensure the smooth implementation of the project. Firstly, a sound construction cooperation model shall be selected. Overseas railway projects require large investment, long construction period, complex system integration, with many risk factors in the construction process, and great impact of project failure. During the whole life cycle of the project's preliminary consultation, planning and design, project investment and financing, construction management, project implementation, trial operation acceptance, operation and maintenance, and personnel training, it is necessary clarify whether Chinese enterprises, on the basis of being project contractors, will involve in project investment and financing and which investment and financing model shall be chosen, whether to participate in project construction management and which construction model to choose, whether to participate in the post-project operation and etc. Secondly, localization strategies shall be implemented. Implementing the localization strategy is conducive to local communication and coordination of projects, reducing the cost and difficulty of project implementation, avoiding legal risks such as market access, and at the same time boosting the employment of oversea countries and the application of local materials and equipment. Industrial upgrading produces good social and economic benefits, making it easier to win the support of the local government and achieve a win-win situation between China and the oversea country. In the early stage of the project, it is necessary to organize the owner and relevant participating units to carry out in-depth and detailed research, and actively seek localized partners in survey and design, human resources, ground materials, equipment, personnel training and other aspects to meet the needs of project construction [5].

4.3 Foreign aid projects

Promoting friendship diplomacy is also one of the important missions of railway "going global". Through the construction of foreign aid railway projects, the friendship

between China and oversea countries can be deepened to demonstrate the responsibility of a major power, enable China voice to be heard, and enhance China's soft power.

Take the Tanzania-Zambia Railway as an example. In the 1970s, during the Cultural Revolution, China overcame many difficulties to build the Tanzania-Zambia Railway. This project is China's largest foreign aid railway project. The Chinese government has provided long-term interest-free loans and long-term technical support. It has been hailed by the African people as "the road of friendship" and "a monument in the history of China-Africa relations". This foreign aid project has played a huge role in winning the friendship of the African people. The social benefits are extremely significant. After the transfer of operations between the two countries, due to various factors such as poor management system, poor corporate management, low quality of employees and changes in the local transportation market, the operating conditions of Tanzania-Zambia Railway continued to deteriorate, and the operation was discontinued in 2013. In recent years, at the invitation of Tanzania-Zambia, China has conducted a comprehensive inspection and reconstruction plan of the Tanzania-Zambia Railway, with a view to providing assistance to improve the operation of the Tanzania-Zambia Railway.

Therefore, in terms of foreign aid projects, considering the large financial investment, long construction period and low economic benefits, it is advisable to minimize risks in project selection and participation. The target country should be politically stable, traditionally friendly with China with a sound prestige in the international community. At the same time, considering the political and cultural environment and technical foundation of the target country, the participation of Chinese enterprises in construction, operation, maintenance and other links should be comprehensively taken into consideration.

4.4 Commercial railway projects

Considering market participation in terms of technical standard system, diplomatic relations with China, and fund-raising capacity, it is preliminarily analyzed that Southeast Asia, South Asia, Central Asia, West Asia, Africa and South America can be the main markets for commercial railways projects. Southeast Asia, South Asia, and Central Asia are adjacent to China, and the project construction is easier to obtain direct domestic support. The West Asia region is relatively developed, and the project economic benefits are better. Africa and South America are closely related to China in foreign trade, and both regions have proposed magnificent railways planning. However, infrastructure condition is poor with unsound economic basis and this area has strategic materials such as oil, iron ore, and grain that are lacking in China. Chinese enterprises can take into account the layout of resource and energy production bases, industrial agglomeration areas and economic and social development needs, deeply tap local needs and potentials, and actively participate newly-built railway construction and conventional railway maintenance and renovation projects[6].

Among developed European and American countries, the United States has the largest railway network in the world. The existing railways are mainly freight transport, while passenger transport, especially high-speed railways, is relatively lagging behind. However, under the background of Sino-US trade frictions, railway projects tend to be

politically inclined with huge difficulty for Chinese enterprises to participate. High-speed railways in Europe are relatively developed. Germany, France, Italy, Spain and other countries already have high-speed railway lines in operation, forming relatively complete European high-speed railway standards. At present, some European countries are actively promoting the layout of high-speed rail. Chinese enterprises should actively carry out research and development of high-end products that meet the standards, strengthen product customization, personalization and adaptability, and focus on energy conservation and environmental protection to meet high-end market demand.

Different from domestic projects, overseas railway projects are affected by various environmental factors such as local politics, economy, society, market, law, etc. At the same time, the project is less concerned at the government level than the demonstration railway project, the project construction risk is more, and the organization and coordination is more difficult. When Chinese enterprises compete for commercial projects, they should make adequate preparations for project preliminary work, project organization and management, and international talent training. ① Catch up with inter-governmental cooperation in a timely manner. Since China proposed the "Belt and Road" Initiative, national leaders have attached great importance to and strongly supported it. Many cooperation agreements have been signed at the national level. Chinese enterprises have firmly grasped the opportunities for cooperation and development between China and other countries in the world. It is necessary to integrate enterprise development into the national strategy, and take advantage of government cooperation to promote the implementation of the project; ② In the early stage of the project, preparatory work such as market research and intelligence collection must be done, and key factors such as foreign policy orientation, access thresholds and barriers, and potential competitors must be systematically studied. Project opportunities, feasibility and potential risks, shall be timely evaluated to lay a solid foundation for the smooth development of subsequent projects, and avoid blind investment or potential risks; ③ Do a good job in contract negotiation and claim. Contract is the main legal document basis for project risk management, through which the respective responsibilities, rights and obligations of both parties can be clearly defined, so as to avoid differences in the understanding of the contract between the two parties in the later stage, fully protect the interests of the Chinese enterprise; ④ Emphasize inter-enterprise collaboration, focus on the upstream and downstream of the project-related industry chain, and actively unite domestic and foreign outstanding enterprises to go overseas, cooperate with each other, complement each other's advantages, share resources, and risks to achieve win-win situation; ⑤ Do a good job in project cost management, actively adopt localization measures, control project costs, achieve intensive management, and improve project benefits; ⑥ Do a good job in training and reserve international talents. The serious lack of international talents has become one of the bottlenecks for China's railways to "go global", and it is necessary to strengthen talents training through clarifying training scale, quality requirements and training paths of international talents.

5 Conclusions

China high-speed rail going global strategy is generally carried out along two lines. One is a cross-border high-speed rail line starting from China, such as the "Eurasian high-speed rail". Through the connection and interoperability of high-speed rail lines, it is conducive to economic and trade exchanges between China and neighboring countries. The second is to help other countries build overseas high-speed rail, which can expand the high-speed rail business overseas. At present, China's high-speed railways have exported to over 10 countries in continents, including Asia, Europe, Africa, and North and South America. This study deeply analyzed the characteristics of overseas railway projects from different dimensions such as location characteristics and strategic positioning, and proposed overseas layout strategies for different strategic positioning projects, in order to provide guidance for the top-level design of China railway "going global" and better play the role of railway in infrastructure connectivity in "Belt and Road Initiative".

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