

A review of China's overseas economic and trade cooperation zones along the Belt and Road: Progress and prospects

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Abstract: As a new mode for Chinese overseas investment and a growth pole for industrialization and urbanization of the host countries, the overseas economic and trade cooperation zone (OETCZ) or overseas free economic zone (OFEZ) of China plays an important role under the Belt and Road Initiative. With the rising attention on OETCZ, studies regarding OETCZ have also increased. However, there is a lack of studies reviewing this topic's progress, challenges and future directions. This paper employs a systematic review to examine the literature on the OETCZ along the Belt and Road, based on domestic and overseas studies. The results show that domestic studies account for a large proportion of the collected literature, compared to overseas studies. Interdisciplinary research focus includes inductive case studies from a classification perspective, deductive studies based on cultural and institutional perspectives, trade network and bilateral trade relations based on the perspectives of international trade and regional economy, spatial planning studies from urban planning perspective, and overseas comments and earlier studies on Japan's and Singapore's overseas parks from the geopolitical and international political perspectives. Despite diverse research contents and dramatic progress, limitations exist in current OETCZ-related studies, including a lack of exploration of the mechanism, questions and concerns from overseas scholars, sustainable development and other problems. Future studies should broaden and deepen research insights, including the "overseas free economic zones (OFEZ)" as a general designation to cover all other types of OETCZs, studies on the primary conditions of host countries, exploration of the theoretical issues behind China's OETCZ, comparative study of OETCZs such as management structures, profit models, environmental standards and legal systems as well as popular issues questioned internationally.

Keywords: The Belt and Road Initiative (BRI); overseas free economic zone (OFEZ); overseas economic and trade cooperation zone (OETCZ); overseas park; systematic review; perspective

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1 Introduction

Since the Belt and Road Initiative (BRI) was launched in 2013, economic actors involving China, host countries, regions, and even the world, have benefited profoundly from significant economic growth. BRI has been recognized by more and more countries and has become a platform for exploring new models of global economic governance (Liu *et al.*, 2018), regional cooperation and inclusive globalization. By the end of 2021, China has signed official agreements with 147 countries and 32 international organizations on Belt and Road cooperation (Xie, 2022). Meanwhile, the Ministry of Commerce reported that the cumulative investment in overseas economic and trade cooperation zones exceeded \$50.7 billion, paying more than \$6.6 billion in taxes and fees to the host countries and creating nearly 392,000 local jobs. With rising attention to the BRI and its dramatic achievement, the number of academic studies on BRI shows an increasing trend.

As a new trial of foreign direct investment (FDI) under the BRI, overseas economic and trade cooperation zones (OETCZ), including overseas parks, overseas industrial parks, overseas free trade zones, etc., play an essential role in foreign economic and trade growth both in China and host countries. OETCZ refers to overseas industrial parks invested in and constructed in host countries by Chinese-funded enterprises through independent legal entities (Meng, 2003; Lu and Pei, 2019), which is an approach that transfers the successful experience of domestic free economic zones to overseas countries and provides a suitable and convenient investment environment for Chinese and foreign enterprises in host countries (Ma and Lu, 2019). Due to its wide application, this study first uses the concept of “overseas economic and trade cooperation zone (OETCZ)” to cover different types of overseas parks. However, in the later part of this paper, a new concept of “overseas free economic zone (OFEZ)” is put forward for further theoretical studies (Meng, 2003). Moreover, facing the rising trend of trade protectionism in some countries and the influences of COVID-19 and regional conflicts, the OETCZ not only serves as a launching pad for Chinese enterprises to upgrade their status in global value chains, supply chains and industrial chains, but also serves as motive power for industrialization and urbanization in host countries. However, there are some doubts and opposing views on the BRI and OETCZ, such as geopolitical tools, opaque decision-making process, debt traps and environmental protection challenges. Few studies review, discuss and summarize the progress, challenges and future trends of OETCZ-related topics. An up-to-date review of OETCZs can provide an in-depth understanding of China’s BRI and support its future development.

Based on Chinese and English literature, this paper aims to summarize the research progress, limitations and future directions of OETCZ studies along the Belt and Road. It is noted that OETCZ relates to various study topics that cover geography, economy, society, history, finance, culture and so on. This review focuses on relevant geography studies.

2 Research methods

A systematic review is seen as the most efficient and fair way of performing a literature review for existing scientific studies (Haddaway *et al.*, 2015). This study chose a systematic review to analyze the research progress of OETCZs. The procedure of the PRISMA statement form proposed by Moher *et al.* (2010) was adopted, which includes four steps: identification, screening, eligibility and analysis.

First, in the stage of identification, keywords were used to search the academic literature database and identify potentially related studies. Two literature databases, China National Knowledge Infrastructure (CNKI) and Web of Science (WOS), were chosen as search engines because they contain peer-reviewed research articles in multidisciplinary fields. Keywords of “the Belt and Road Initiative” or “Overseas” were applied to filter studies with required geographical locations (foreign regions). For the research contents, the keywords of “free economic zone” (Chinese Pinyin: Zi you jing ji qu) or “free trade zone” (Chinese Pinyin: Zi you jing mao qu, Zi you mao yi qu), “OETCZ” (Chinese Pinyin: Jing wai jing mao he zuo qu) or “overseas industrial park” (Chinese Pinyin: Hai wai gong ye yuan, Jing wai gong ye yuan) or “overseas park” (Chinese Pinyin: Hai wai yuan qu, Jing wai yuan qu, Jing wai he zuo yuan qu) were incorporated into the search criteria. The article type was peer-reviewed research articles, not covering conference papers and abstracts. The range of publication years of research articles was identified as the most up-to-date 12 years (2010–2022).

Second, during the screening process, articles irrelevant to the study focus were removed manually by checking their titles, abstracts and keywords. Third, all the records filtered by the previous two steps were scrutinized, including the entire manuscript, to select the most qualified papers. Finally, necessary information from the relevant papers was extracted, processed and discussed at the final analysis stage.

Apart from the systematic review, this study also employed field surveys and interviews to collect first-hand materials on OETCZs' development and issues. Field surveys and interviews were mainly conducted in Africa, Europe and Asia. The corresponding results were used to discuss the remaining problems in OETCZ-related studies, particularly in future research.

3 Research results

3.1 Literature overview

Following the methods outlined above, 138 Chinese papers and 25 English papers regarding OETCZs were finally filtered during 2010–2022. We found that the number of Chinese studies shows a significantly rising trend from 2010 to 2021 (Figure 1). The increasing trend indicates that China's BRI and its new overseas investment trial-OETCZs, are increasingly important. However, the number of English studies focusing on China's OETCZs is relatively limited, which illustrates that OETCZ-related studies abroad are still in the initial stage. Additionally, regarding discipline categories, most papers were published in journals of geography, economics, urban planning, international and regional trade, environment science and international affairs.

A keyword co-occurrence analysis was conducted to identify major study focuses and common research topics using VOSviewer. The result of the co-occurrence analysis is shown in Figure 2. Node size represents the occurrence frequency of terms that appeared in the literature, and the line thickness shows the strength of the connection between different terms. The results show that the keywords “OETCZ”, “Belt and Road”, and “Overseas industrial park” are those with the highest-three occurrence frequency among the compiled literature. It is noted that “OETCZ” appears most frequently as a keyword in previous studies; the occurrence frequency of “Belt and Road” ranks second, mostly linked to the fields of

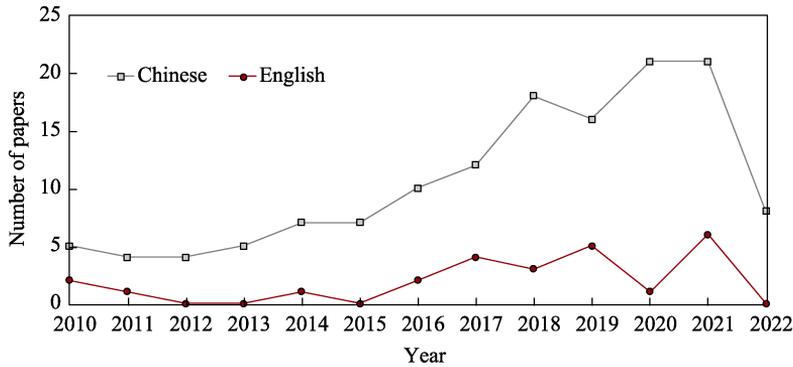


Figure 1 The number of Chinese and English studies focusing on the OETCZ from 2010 to 2022

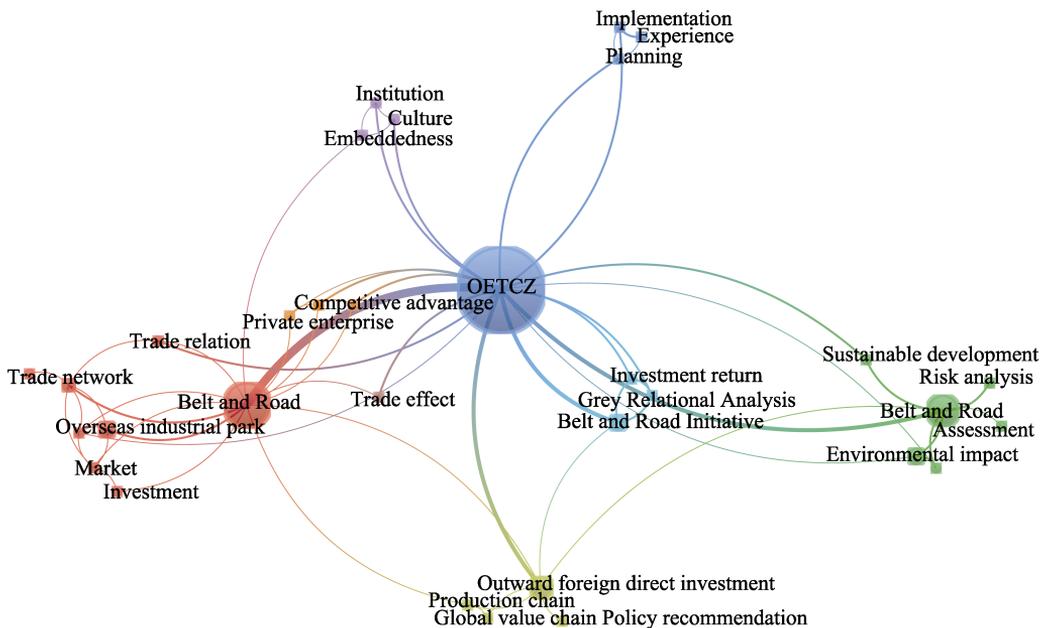


Figure 2 Co-occurrence analysis of keywords in compiled literature from 2010 to 2022

(Note: Keywords are clustered in several groups with different colors, showing the common research topics for OETCZ-related studies. The node size represents the occurrence frequency of each keyword.)

trade effect and sustainability development; “Overseas industrial park” appears third most frequently. In addition, previous studies can be divided into several types: (1) trade effect, (2) the role of institution and culture, (3) overseas investment, (4) spatial planning, and (5) environmental impact.

3.2 Research progress

To analyze the common features and main differences of the total 163 papers both in Chinese and English, an analytical framework needs to be established. This paper uses the interdisciplinary research perspective, including geography, economy, urban planning, international politics and country study as the theoretical basis and method for summarizing and discussing OETCZ-related studies, that is, from the perspective of types and cases, cultural and institutional changes, international trade and regional cooperation, urban planning, crit-

ical perspective of overseas scholars and earlier studies on overseas parks in Singapore and Japan. Within each perspective, the similarities and differences of the papers' contents are summarized and classified for further and in-depth analysis and discussion.

3.2.1 From the classification perspective

The prerequisite for analyzing OETCZs is to distinguish their different types to summarize the primary characteristics and development of the OETCZ. Some scholars from Tianjin Normal University and other academic institutions have explored various classification schemes of overseas economic zones (Zhang, 2013; Meng *et al.*, 2017; 2018; 2019; 2020). Their studies showed that overseas economic zones could be classified according to diverse criteria. The review paper classified overseas industrial parks mainly based on dominant industry and took construction mode and governance structure as auxiliary classification criteria (Meng, 2003) (Table 1).

(1) Classification based on dominant industry

From the industry viewpoint, overseas parks include five types, namely, manufacturing-based, agriculture-based, trade-based, high-tech-based and comprehensive OETCZ (Wuzhati *et al.*, 2017). Processing-and-manufacturing-dominated industrial parks mainly rely on light industries, such as textile, machinery, electronics, chemical engineering and building material industries (Zhang, 2013; Shen *et al.*, 2018). Because of the low level of investment and quick return, this kind of OETCZ is primarily located in regions with

Table 1 Various OETCZ types based on dominant industry, construction mode and governance structure

Classification standard	Category	Characteristics	Example
Dominant industry	Processing-and-manufacturing-dominant OETCZ	Dominant industry: light industry, such as textile, machinery, electronics, chemical engineering	Ethiopia Eastern Industrial Zone
	Agriculture-dominant	Dominant industry: agriculture and related processing and sales	China-Indonesia Julong Agricultural Industry Cooperation Zone
	Business-and-trade-dominant OETCZ	Dominant industry: logistics, storage, transport	Djibouti International Free Trade Zone
	High tech OETCZ	Dominant industry: research and development of new technologies and high-tech products	China-ASEAN Beidou Science and Technology Park
	Comprehensive OETCZ	Combination of two or more of the above industrial parks	China-Belarus Industrial Park
Construction mode	Greenfield construction mode	Beneficial for comprehensive planning, but with high investment and time costs	Longjiang Industrial Park
	Subzone construction mode	Promoting scale effects and productivity	Thai-Chinese Rayong Industrial Zone
	Port-park-city construction mode	Combining logistics, manufacturing and city development	Djibouti International Free Trade Zone
Governance structure	Government-dominant OETCZ	Strong support from government, significant impact on collaboration between countries	Zambia-China Economic and Trade Cooperation Zone
	Park developer-dominant OETCZ	Rich experiences in the construction and operation of the industrial park, transferring successful institutions and policies to local industrial parks	China-Egypt TEDA Suez Economic and Trade Cooperation Zone
	Private enterprise-dominant OETCZ	Various dominant industries, flexible operation mechanisms; most OETCZs are led by private enterprise	Pakistan Haier-Ruba Economic Zone

relatively less economic development and dense populations. A typical example is Longjiang Industrial Park in Vietnam (Meng *et al.*, 2019). A less developed economy brings preferential trade terms for industrial parks in international markets, which benefits China by extending the overseas market and breaking trade barriers. In addition, high local population density is usually accompanied by abundant cheap labor resources, which helps host countries create employment and foreign exchanges. During the past few decades, manufacturing-based OETCZ significantly contributed to local economic growth and expanded job markets (Yao, 2021).

The principal task of the agriculture-dominant industrial park includes developing, purchasing, processing and storing crops and international trade. Chinese enterprises take advantage of the abundant land resources in local regions to achieve mass machine production of various crops, particularly those that need special climate conditions. Now, these industrial parks successfully form a complete industrial chain, including planting, harvesting, processing and selling. The agriculture-dominant industrial parks generally have high investment and demand for land and labor resources, promoting the economic development of host countries and global poverty relief. However, there may be financial strain due to the long payback period for investment. The agriculture-dominant industrial park is strategically essential but has high risk. One typical case of agriculture-dominant OETCZ is Julong Agricultural Industrial Cooperation Zone in Indonesia (Yu, 2020).

Business-and-trade-dominant industrial parks focus on product transportation, storage, delivery, distribution processing and information processing. This kind of OETCZ enjoys free trade policy, is usually located at or near essential ports or channels and serves as a comprehensive transport hub. The Djibouti International Free Trade Zone is an example (Ma, 2020). Located on the west coast of the Gulf of Aden, the Djibouti International Free Trade Zone (DIFTZ) is an important strategic gateway for East African countries, holding the Mandeb Strait. The free trade zone is planned to be the most important trade center and shipping hub in East Africa, focusing on constructing ports, trade and logistics parks and export processing zones.

The high-tech industrial park is dominated by research and development of new technologies and products in host countries. Most high-tech industrial parks are located in host countries with relatively high technology, such as China-ASEAN Beidou Science and Technology Park.

Apart from the above four categories, comprehensive industrial parks emerge because single-function economic and trade zones cannot fulfill the demand for manufacturing and management (Meng, 2003; Shen *et al.*, 2018). Comprehensive industrial parks typically own more than two functions of the above categories for industrial parks. For instance, China-Belarus Industrial Park is Belorussia's typical comprehensive overseas economic and trade zones (Zhao, 2019). Due to the complete and diverse functions, comprehensive industrial parks perform better in large-scale production and build economies of scale (Meng *et al.*, 2017). Hence, the comprehensive type has become a future trend for other overseas economic and trade zones.

(2) Classification based on construction mode, governance structure and locations

From the viewpoint of the construction mode, OETCZs can be divided into several types—greenfield construction mode, subzone construction mode and port-park-city con-

struction mode. The greenfield construction mode is beneficial for comprehensive planning but with high investment and time costs; the subzone mode promotes scale effects and productivity; and the port–park–city mode combines logistics, manufacturing and city development. According to the spatial structure, OETCZs can also be classified as single-zone and multiple-zone modes (Meng *et al.*, 2020; Liang *et al.*, 2021b). The single-zone mode suits small-scale development and construction at the early stage, while the multiple-zone mode is appropriate for large-scale and late-stage construction and development of OETCZs.

Scholars have also classified OETCZ based on other standards. According to the governance structure, the OETCZ can be classified as government-dominant, park developer-dominant and private enterprise-dominant modes. According to the administrative level of management, there are three types—national, provincial and enterprise-leading industrial parks (Wang, 2013). According to the locations, the OETCZ can be classified into continent-based, coastal-based and inland-based typologies, including African OETCZs, Longjiang Industrial Park in South Vietnam and Vientiane Saysettha Development Zone in Laos, a landlocked country.

3.2.2 From the institutional and cultural perspective

Apart from the induction method of studying overseas parks from the perspective of typology and case studies, the deductive method of studying overseas parks from the perspective of culture and institution of geography began to appear and several relevant research papers were published in recent years. Scholars have stated that, despite the dramatic progress of the “going out” policy in China, overseas industrial parks tend to ignore the institutional and cultural differences between China and other countries (Liu and Yao, 2020; Liang *et al.*, 2021a). In recent years, scholars have applied the theory of institution and culture transformation to analyze the mechanism, experiences and challenges of the overseas industrial park, as well as the interactions between foreign capital and local institutional, socioeconomic and cultural environments (Song *et al.*, 2018; Gao *et al.*, 2020; Liu and Yao, 2020; Song *et al.*, 2020; Wang *et al.*, 2020; 2021). These studies provide theoretical evidence for constructing overseas economic and trade zones.

(1) Influencing factors of institution and culture

Researchers have noted that institution and culture are two main influencing factors in developing overseas industrial parks (Liu and Yao, 2020). These two main factors can be represented by the broadness and depth of geographical embeddedness and the side effects of technology. The former refers to the occupying area of the project and its strength of influence on the local environment; the latter refers to the impact of introduced technology on current market equilibrium and socioeconomic structure. Liu and Yao (2020) summarized four types of overseas projects along the Belt and Road—revolutionary project, supportive project, general project and overseas economic and trade zones. Typically, the higher the geographical embeddedness and the more significant side effect the dominant industry has, the more attention must be given to institutional and cultural differences when constructing overseas industrial parks.

Multiscale embeddedness is another enlightening topic when analyzing the construction and development of overseas economic and trade zones from the viewpoint of institution and culture (Gao *et al.*, 2020; Liu and Wang, 2020). Scholars applied the framework of “global-national-local scale embeddedness” to overseas industrial parks (e.g., Letpadaung in

Myanmar, China-Belarus Industrial Park) to reveal the mechanism behind interactions between foreign capital and local institutions and culture. They found that major influencing institutional and cultural factors of smoothly developing overseas industrial parks vary across scales. Many countries along the Belt and Road are characterized by very different political, socioeconomic, and cultural environments; sometimes, collaboration with the disadvantaged local government cannot ensure the stable development of overseas industrial parks. Hence, scholars emphasized the necessity of multiscale embeddedness for overseas economic and trade zones into local socioeconomic environments.

(2) Influencing factors of integrated institution and culture

Additionally, several studies integrated institutional and cultural perspectives into analyzing the role of overseas industrial parks in outward foreign direct investment (OFDI). Zhao (2022) used panel data from China and 64 countries along the Belt and Road to empirically test the impact of institutions on OFDI. The results showed that well-constructed institutions (such as high government efficiency, less corruption, and a robust legal system) correlated positively to China's foreign trade. Chen *et al.* (2020) took Sihanoukville Special Economic Zone as an example to reveal the promotional role of the overseas industrial park in China's outward foreign investment based on the perspectives of institution and culture. They concluded that major institutional and cultural factors for enhancing overseas investment included policy coordination mechanisms, soft and hard environments of investment, information and resource sharing and agglomeration economy (Wang *et al.*, 2021). However, the role of the institution and culture in developing international trade through overseas industrial parks still needs further exploration.

(3) Influencing factors of technology transfer and policy mobility

In addition, some scholars have noted that “technology transferring” often exists in the construction and operation of OETCZs (Wang *et al.*, 2020). The degree of difficulty for technology transfer depends on the institutional and cultural differences between China and host countries and the dependence of technology on the institution and culture. Scholars have suggested that for revolutionary projects, such as the railway, the “technology—institution—culture” comprehensive mode is recommended, which includes improving the legal system, adapting to local culture, upgrading technical standards and management system, and localized management of the industrial chain. In addition to technology transfer, the policy also “moves” from China to host countries when developing OETCZs, which is called “policy mobility” (Song *et al.*, 2020; Liang *et al.*, 2021a). Tax, foreign currency and land use policies are successful policy tools in domestic special economic zones; these policies transfer from China to host countries along the Belt and Road and become localized to adapt to their socioeconomic, institutional and cultural environments. Wang *et al.* (2022) applied case studies and a comparative approach to analyze tailor-made policies for domestic and overseas free economic zones. The results show that policies regarding environmental protection, talent and experience for planning, operation and management can be directly “moved” to OETCZs. In contrast, development mode and cultural policies need modification before applying them to overseas industrial parks, and laws, regulations, promotion and preferential policies need to be completely redesigned. Song *et al.* (2021) utilized three interrelated conceptual lenses—policy mobility, partnerships and actor networks—to discuss the role of multiparticipant partnerships in the policy mobility of the OETCZ. They con-

cluded that partnerships and the roles of actors in policy mobility significantly affect the effectiveness of technology transfer.

Some scholars have attempted to analyze how policies, strategies and their makers promote the construction of an OETCZ from a geo-political perspective. Liu *et al.* (2021) took China–Belarus Industrial Park, jointly developed by China and Belarus, as an example to examine the role of the coupled strategic goals of the two countries and their top leaders in developing this OETCZ in a way that every side expects to benefit.

3.2.3 From an international trade and regional cooperation perspective

One of the advantages of overseas industrial parks is to break the trade barrier and reduce trade friction, promoting regional and global economic cooperation with countries worldwide. From the international trade and regional cooperation perspective, researchers analyzed the role of overseas industrial parks from the following aspects:

(1) Influence on bilateral trade relations

Overseas trade and economic cooperation zones significantly promote bilateral trade relations between China and host countries by affecting the scale of trade and outward foreign direct investment (Meng *et al.*, 2019; Xu and Li, 2020; Yan *et al.*, 2021; Sun, 2022). Xu and Li (2020) examined the “trade effect” of OETCZs on bilateral countries using a dynamic panel data model and mediating effect model. They concluded that OETCZs promote bilateral trade by directly expanding its scale (direct “trade effect”) and facilitating trade cooperation by affecting OFDI (indirect “trade effect”). Some scholars argue that the BRI shows an insignificant influence on the trade of host countries because of the larger scale of China's exports to countries along the BRI (Zhou *et al.*, 2020).

Moreover, many studies have investigated the relationship between OETCZs and China's OFDI (Li and Shen, 2019; Xu and Wang, 2019; Zhi and Chen, 2019; Yang *et al.*, 2020). Scholars agree that OETCZs improve the efficiency and scale of China's OFDI to host countries (Li and Shen, 2019) and enhance the local economic growth of host countries (Meng *et al.*, 2019). The underlying mechanism includes optimizing the institutional environment, enhancing cultural identity and strengthening bilateral investment treaties, effectively reducing the obstacles of local economic, cultural, legal and political backgrounds to foreign investment (Xu and Wang, 2019; Zhi and Chen, 2019; Yang *et al.*, 2020; Zhang *et al.*, 2021).

(2) Trade network between China and countries along the Belt and Road

Scholars have applied traditional economic models (e.g., gravity model, input–output model) and network analysis to explore the characteristics, spatial distribution and influencing factors of the trade network between China and countries along the BRI in aspects of the overall structure, different regions, industries and products (Cheng *et al.*, 2022). Researchers measured the trade facilitation level based on various indices, including logistic efficiency, customs and border management, electronic commerce, regulatory system, infrastructure, and government policy and found that improvements in these indices were beneficial for promoting the integration of regional trade networks (Kong and Dong, 2015; Chen and Liu, 2018; Tang and Gu, 2019). Many studies also proved the rising trend of close trade relations between China and its economic partners but with spatial heterogeneity (Zou and Liu, 2016; Song *et al.*, 2018; Zheng *et al.*, 2019). China is the center of the trade network between countries along the BRI with the closest trade relation to Southeast Asia, while relatively

loosely related to the Middle East (Song *et al.*, 2017; 2018; Wang *et al.*, 2019). The positive economic impacts of international trade between China and other countries show significant spatial inequality. Coastal cities and regions in China gain more economic growth from international trade with countries along the BRI. From the perspective of influencing factors, the trade network structure is usually affected by economic scale, geographical distance, trade agreements, direct investment and other factors. It is noted that the strength and direction of influences vary across geographical locations (Cheng *et al.*, 2022).

In addition to the trade network among BRI surrounding countries, which has been widely examined, the number of studies focusing on production networks is limited. Zheng *et al.* (2020) analyzed the evolution process of the production network along the BRI and the economic boost of the production network in surrounding countries, using input–output analysis, value-added decomposition and network analysis. They found that the regional production network was constantly strengthened during the past decades with changing gravity; China contributes significantly to the local economic growth of countries around the BRI. The positive impact of BRI on the local economy effectively refutes negative international comments on this initiative.

3.2.4 From the urban planning perspective

The BRI not only boosts the economic growth of both China and host countries, economic and trade cooperation between them and enhances China's international influence but also promotes China's planning strategies, guidelines, standards and technology to "go abroad" (Li and Meng, 2020). Some scholars focused on the planning issues of OETCZ, which provides theoretical and practical support for scientific, systematic, and comprehensive OETCZ planning and benefits sustainable development of OETCZs (Wang *et al.*, 2021).

(1) The experience and lessons of OETCZ planning

Due to various cultures, socioeconomic conditions, local planning systems and related laws and regulations along the Belt and Road, OETCZ planning is significantly different from urban planning and its implementation in China (Wang *et al.*, 2021). Summarizing lessons and experiences from existing OETCZs is beneficial for optimizing their planning and supporting the establishment of a corresponding planning system. Scholars summarized categories, technology standards, formulation and management of OETCZ planning (Table 2). Like domestic urban planning, OETCZ planning can be classified as the master plan, detailed plan, land use zoning, conceptual plan and other types, among which master plan and detailed plan are the principal categories. Since OETCZs were usually built by host countries and China, they adopted the planning technology of both countries in most cases (Chen and Wang, 2019). With the improvement of planning theories and technologies in the host countries, the planning technology standards of OETCZs have transferred from directly "copying" Chinese or Western standards to developing site-specific and localized technology standards combined with the advantages of the former. OETCZ plans are normally formulated by planning or design departments of China or by both Chinese and local departments, and both sides are in charge of OETCZ management.

Scholars have also summarized lessons from previous OETCZ planning, including (1) inadaptability to local environments. Some OETCZs adopted China's urban planning system and technology that do not match local policy, culture, geography, aesthetics, etc. Due to the independent status of the OETCZ in space, overseas industrial parks lack communication

with the surroundings and the city. (2) lack of systematic and comprehensive planning system. Uniformed, systematic, professional guides for OETCZ planning (including technology standards) is urgently needed. (3) lack of specification. Most OETCZs applied a general planning system to local planning and construction. However, specified planning indicators are required for land use zoning, public facility planning, infrastructure construction, etc.

Table 2 A summary of OETCZ planning in terms of planning categories, technology standards, formulation and management

Contents	Classifications	Example
Categories	Feasibility study	Russia Ussuriysk Economic and Trade Cooperation Zone
	Land use zoning	PT Indonesian Morowali Industrial Park
	Strategic plan	Malaysia-China Kuantan Industrial Park
	Master plan	Thai-Chinese Rayong Industrial Zone
	Detailed plan	Thai-Chinese Rayong Industrial Zone
	Industrial development plan	Nigeria Lekki Free Trade Zone
	Urban design	Nigeria Lekki Free Trade Zone
Technology standards	Completed "copy"	Cambodia Sihanoukville Special Economic Zone
	Selected mode	China-Belarus Industrial Park
	Case by case	Ethiopia Eastern Industrial Zone
Formulation	China	China-Belarus Industrial Park
	China + host country	Nigeria Lekki Free Trade Zone
Management	China + host country	Applicable to most OETCZs

(2) Case studies of OETCZ planning

Scholars have also analyzed OETCZ planning-related issues based on specific cases. Wang (2019) analyzed the basic situation of regional industrial development and OETCZ development in Southeast and South Asia, systematically introduced industrial park development and planning conditions of key countries in these regions, as well as OETCZ planning-related laws and regulations. The author further summarized and discussed the achievement of OETCZ construction and planning in these regions with important strategic cooperation significance. In addition to comprehensive introduction, discussion, and summary of OETCZ planning cases, some scholars have studied specific planning contents or implementation phases. For instance, Zhao and Tang (2009) investigated the contents and characteristics of detailed plans for the Sihanoukville Special Economic Zone in Cambodia. Shen (2009) and Li (2014) studied the formulation procedure of OETCZ planning in the Federal Democratic Republic of Ethiopia and the Federal Republic of Nigeria. Zhang *et al.* (2015) summarized the common features of formulating OETCZ plans based on the China-Belarus Industrial Park case. Additionally, domestic researchers stated the importance and necessity of building guidelines and technology standards for OETCZ planning, particularly in Africa (Wang *et al.*, 2010). Wang *et al.* (2017) discussed the status of six Sino-African co-built development zones and their difference from China in industrial development. The authors put forward development strategies and suggestions for the planning and construction of OETCZs in Africa. Finally, scholars have compared planning systems between China and host countries from levels, categories, contents, competent department,

implementation, and public engagement, taking China-Belarus Industrial Park as an example (Shi and Wang, 2019).

3.2.5 From overseas experiences and international politics perspectives

With the rising impact of the BRI and its new overseas investment mode (i.e., OETCZs) on regional and even global economy, trade and international relations, more scholars from overseas academic institutions focus on the BRI. Overseas scholars discussed BRI-related issues, including OETCZs, from the following aspects:

(1) Influences on host countries, regions and globe

Most overseas studies on the influences of China's BRI have given attention to its economic impacts, and their study targets are usually infrastructure projects more than OETCZs (Inkpen and Pien, 2006; Bräutigam and Tang, 2012; Fardella and Prodi, 2017; De Soyres *et al.*, 2019; Gong, 2019). World Bank examined the patterns, determinants and economic effects of foreign direct investment (FDI) across the BRI countries and assessed the impacts of BRI on host countries' FDI and economic growth. The main findings include that, first, the BRI fosters economic and trade development of host countries and regions, even non-BRI countries. Second, reduced transportation costs simulate FDI, but the magnitude of the influence varies across transportation modes; third, the economic impact of BRI changes significantly with the development level of host countries over time. DeSoyres *et al.* (2019) studied the effect of transport infrastructure constructed by the BRI on shipment times and trade costs based on global and regional datasets. The BRI significantly reduces shipment times and trade costs for both the BRI economies and the world, which is similar to the World Bank's findings.

Some scholars have further investigated the influence of the BRI on specific regions or countries. Fardella and Prodi (2017) assessed the potential impacts of infrastructure construction along the Belt and Road in Europe, particularly Italy. Their results show that such possible influences vary across regions and industries—Northern and Central European countries and automotive and electronic sectors will gain more benefits. However, the development of ports under the BRI may cause competition for Italy. So, in order to take advantage of BRI opportunities, Italy should continue to increase cooperation with BRI projects. Italy needs to cooperate with and take advantage of BRI opportunities. Gong (2019) explored the impact of the BRI on Southeast Asia and its possible driving factors. The main findings include that China's influence in Southeast Asia will increase but is limited within a specific boundary. Influencing factors are primarily the response of the Association of Southeast Asian Nations toward the BRI and the impact of alternative infrastructure projects led by other major powers, such as Japan, India and the United States, in Southeast Asia. Goodfellow and Huang (2021) explored the influence of China's overseas industrial parks on the urban-industrial nexus, taking Ethiopia and Uganda in Africa as an example. The authors argued that tentative and improvisational relationships between the African government, Chinese enterprises and other local sectors jointly shaped the new urbanism in host cities.

(2) Experiences and lessons from China's OETCZs

The practical impacts of China's BRI on the economic growth of China, countries or regions along the Belt and Road, and even the world is witnessed, analyzed, assessed and agreed upon by overseas scholars. Many studies and reports have summarized the progress,

experiences, challenges and lessons learned from China's OETCZs (World Bank, 2011; Bräutigam and Tang, 2014; Corre, 2018; Maliszewska and Van Der Mensbrugge, 2019). The World Bank released a working paper about the experiences summarized from China's overseas industrial park in Africa in 2011 (World Bank, 2011). This working paper provides an overview of the concept of overseas special economic zones (SEZ), the introduction of China's overseas SEZ in Africa (including development objectives, investment structure, institutional system, current status, issues related to implementation and short- to medium-term plans), lessons learned and potential opportunities for bilateral and tripartite collaboration. The World Bank agreed with the potential of the SEZ to contribute to industrial development and job creation while putting forward some lessons learned, including better aligning policy objectives with the operational realities, improving the software for managing and operating the zones, giving higher priority to learning and knowledge sharing, integrating the zone master plan into regional urban development plans, developing social and environmental impact management strategies and so on.

Furthermore, Fei and Liao (2020) explored the "landing" of Chinese development modes in Ethiopia and the multiple sectors involved in such a process. They argued that the development of overseas industrial zones was contributed by the government, developers, investors and workers through a complex learning and interacting process.

(3) Environmental challenges and other issues brought by the BRI

Despite the remarkable enhancement of regional and global trade, the BRI may bring environmental degradation given the construction, expansion and upgrading of infrastructure in environmentally vulnerable areas (Ascensão *et al.*, 2018; Teo *et al.*, 2019). The Chinese government has already noticed the importance of sustainable development of the BRI and therefore issued "The Belt and Road Ecological and Environmental Cooperation Plan" (MEE, 2017a) and "Guidance on Promoting Green Belt and Road" in 2017 (MEE, 2017b). Studies primarily focused on the spatial distribution and risk analyses of environmental factors in countries along the Belt and Road, the influences of construction projects on local and regional environments, and the impact of global climate change on the BRI. Some scholars have explored the spatial distribution pattern of resources or environmental factors in countries along the Belt and Road, like natural gas, land, minerals, oil and other resources (Tracy *et al.*, 2017). Some studies focused on the comprehensive risk assessment of these countries with the classification of risk levels (Andrić *et al.*, 2019). Some scholars have conducted environmental impact assessments on environmental sensitive areas of the host countries, which are usually caused by constructing infrastructures, such as highways, railways, gas pipelines and power stations. They concluded that the BRI may cause environmental damage, such as air pollution, biodiversity loss, habitat loss, oil spill and the reduced amount and quality of water (Irina and Irina, 2016; Tracy *et al.*, 2017). Scholars have also analyzed the impact of changes in precipitation and temperature caused by global climate change on the socioeconomic development of countries along the route (Hardiman, 2020). In addition to the environmental challenge of overseas industrial parks, some scholars have questioned other issues regarding OETCZs, including nontransparent decision-making, making the zones geopolitical tools and debt traps.

(4) Studies on Singapore and Japan's overseas industrial parks

Due to limited territory, demand for expanding overseas markets and enhancement of in-

ternational influence, Singapore and Japan began developing overseas industrial parks in the 1990s and 1980s, respectively (Guan, 2012; Zhao, 2021). Most overseas industrial parks led by Japan and Singapore are located in East Asia and Southeast Asia, because of its close geographical location, rich and inexpensive labor sources and favorable terms of trade (Zhao, 2021).

In the 1990s, the Singapore government issued the Regional 2000 Programme, which highly encouraged overseas investment. Inspired by this program, government-linked companies constructed tens of overseas industrial parks in China, India, Vietnam, Indonesia and other Asian countries. Correspondingly, studies about Singapore's overseas parks began earlier than those focusing on China's OETCZ, starting in the 1990s. These studies discussed the experience and lessons of Singapore's OETCZ and employed various theories and models to examine or evaluate the development of these overseas parks. From a trade and investment perspective, Phelps and Wu (2009) examined the engagement between states, multinational enterprises (MNEs) and intermediaries in FDI of Singapore's overseas parks in Southeast and East Asia. Yeoh *et al.* (2004) found that the attractiveness of low-cost investment brought by OETCZs was overestimated for companies, and local sociopolitical uncertainties imposed a large overshadow on Singapore's overseas parks. From a policy perspective, scholars discussed the influences of both local-scale and global-scale economic strategies or activities on Singapore's overseas industrial parks, like local entrepreneurship policies (Pereira, 2004a) and extraterritorialization strategy (Phelps, 2007). Among all the overseas industrial parks of Singapore, Sino-Singapore Suzhou Industrial Park (SIP) is regarded as one of the most successful examples and has gained much attention from overseas researchers. Some studies assessed and analyzed the development of SIP with successful experiences and lessons concluded (Wong and Goldblum, 2010), which is helpful for other developing countries (Pereira, 2004b; Zhao and Farole, 2011; Zeng, 2016). Furthermore, researchers took SIP as an example to reveal the evolution of transitional policy transfer, facilitating factors for successful policy transfer and policy implications for other OETCZs (Inkpen and Pien, 2006; Lim and Horesh, 2016; Liu and Wang, 2018, 2021; Miao, 2018).

After the signing of the Plaza Agreement in 1985, labor costs and rent in Japan increased dramatically, and therefore, Japanese enterprises turned their investment targets to surrounding countries, particularly those in Southeast Asia and India. Like Singapore's OETCZ-related studies, those focusing on overseas industrial parks, led by the Japanese government or enterprises primarily discussed their development procedure, construction mode, investment experience, knowledge transfer and so on (Kumar, 2001; Pak and Park, 2005; Jiang, 2019). For instance, Pak and Park (2005) investigated the characteristics of Japanese FDI in two general regions (East and West), taking China and the United States as examples. The authors indicated that internalization theory, the OLI paradigm and a knowledge-based view could explain the geographic preferences of Japan's overseas firms. With the rising number of China's OETCZs along the Belt and Road, competition between overseas industrial parks of Japan and China has emerged (Zhao, 2021). Jiang (2019) examined the development financing that China and Japan have adopted in overseas investments and confirmed their "competitive partnership"; Japan has joined China in focusing on physical infrastructure, industrialization and adapting to the local environments of host countries.

Compared to Japan and Singapore, China shows significant differences in the national in-

stitution, economic development, geographical location and other aspects. However, all three countries are important economies in Asia, they share Confucian culture and expand overseas markets by developing OETCZs. Studies focusing on Japan and Singapore's overseas industrial parks provide valuable guidance, lessons and experience for China to improve the development level of OETCZs along the Belt and Road.

4 Remaining questions and future studies

4.1 Studies on the primary conditions of host countries and their geographical relation

Current OETCZ-related studies lack systematic exploration of the political, economic, social and cultural conditions of the host countries from the perspective of Chinese scholars. Notably, few studies have examined the geographical relations between China and other countries under the current complicated international environment, which relates closely to the successful implementation and sustainable development of OETCZs. Hence, future OETCZ-related studies should give more attention to the fundamental realities of host countries and the geographical relations between major worldwide hotspots.

4.2 Summary and exploration of the theoretical issues behind China's OETCZ

Previous studies discussed China's OETCZ from multiple perspectives, including classification, institution and culture, international trade, outward foreign investment, urban planning, international politics and socioeconomic and environmental influences on host countries, regions and even the world. Despite the diverse research topics, there are still various limitations. First, there is still linguistic and conceptual diffusion about the definition and typology of free economic zones (FEZs). As for overseas free economic zones, there are currently at least 20 different terms concerning the so-called OETCZ, which leads to linguistic uncertainty and conceptual and classificatory confusion (Meng, 2003). Second, the number of sample cases for case studies and category classification needs to be increased to provide sufficient samples for summarizing the characteristics of various OETCZs. Third, OETCZ-related studies from cultural and institutional transformation perspectives are mainly conducted by validating well-developed or improved theories in overseas industrial parks, lacking new viewpoints. Fourth, international trade and investment studies seldomly discuss applications and microcosmic research. Fifth, Chinese theory and experience-based OETCZ planning mode faces the challenge of integrating into the planning systems of the host countries. Last, questions on environmental impacts, geopolitics, nontransparent decision-making, institutional applicability and other issues raised by overseas scholars need to be answered. Hence, future studies should be conducted from the following aspects:

First, the "overseas free economic zone (OFEZ)" should be used as a general designation to cover all other types of OFEZs because it can generalize the dominant characteristics, such as the policy instruments of domestic and host countries, economic and administrative "freedom", geographically restricted zones in host countries, and economic activities. Second, the sample size of the case studies and category classification should be expanded to accurately analyze the characteristics of each OFEZ category and summarize their essential features by comparing them with current theories. Third, studies that further understand cultural and institutional theories in constructing OFEZs are highly encouraged, as these

contribute to theoretical development. Fourth, international trade and investment research should transfer the study focus from macroeconomic development to microscopic studies. For instance, scholars may discuss how OFEZs and host countries utilize international trade and investment agreements (e.g., Regional Comprehensive Economic Partnership) to improve economic development contributed by OFEZs. Fifth, Chinese scholars should discuss how to integrate Chinese planning mode into the host country's planning system and to develop a theoretical planning framework for OFEZs. Finally, it is suggested to learn more about the cutting-edge topics of overseas OETCZ-related studies and strengthen cooperation and communication with overseas scholars and institutions.

4.3 Research on popular issues questioned internationally

China's Belt and Road Initiative and overseas park construction have brought significant benefits to China and the host countries, and have raised questions and challenges from some Western countries, mainly about geopolitical tools, debt traps, opaque decision-making and environmental issues. Many of these issues are based on ideology and the need for a containment strategy against China's rise, often lacking a rigorous scientific basis to support them. Because of the West's grasp of international discourse, these questions have had a negative impact on the Belt and Road and the construction of overseas industrial parks. These questions and challenges should be answered scientifically in academic terms.

4.4 Comparative study and sustainable development of OETCZs

There are both similarities and differences between free economic zones in China and overseas free economic zones (overseas parks), so it is necessary to conduct an in-depth study on the differences between them (Ye *et al.*, 2020). Only through comparative studies can we overcome the challenges brought by the differences and explore the solutions to achieve sustainable development of overseas parks. Such differences mainly include management structures, profit models, environmental standards and legal systems.

The management structure of OFEZ is composed of both Chinese enterprises and host countries (Meng, 2003), so the decision-making mechanism is more complicated than domestic mechanism, which also affects the park development and profit model. For example, the management structure of the China-Belarus Industrial Park is participation by both sides, but the responsibilities are different; Belarus is responsible for the access to investment and construction standards of the park (Zhao, 2019). The different management structures of the OFEZ contribute to different profit models on the Chinese side. Most domestic free economic zones are built by the Chinese government and have corporate tax income in addition to income from leasing land and property. Overseas parks are generally constructed and managed by the Chinese side, and the primary profit model is land rent and property service income. Nevertheless, corporate tax revenue goes to the host country. In addition, to improve the service level and investment facilitation in the host country, OFEZs have to assume some of the local government service functions of the host country, for instance, Si-hanoukville Special Economic Zone set up customs inside the park and Long Jiang Industrial Park in Vietnam established its firefighting institutions. These governmental functions increase the operating cost of OFEZs (Meng *et al.*, 2019; Wang *et al.*, 2022). In addition, infrastructures outside the zones usually have difficulty meeting the needs of the construc-

tion and operation of industrial parks, particularly in Africa.

The number of OFEZs has been increasing, strengthening the relationship between China and overseas countries along the Belt and Road. How to maintain the sustainable development of overseas industrial parks becomes a focus of future research. Notably, a balance between economic growth and environmental protection in host countries is worthy of investigation. China began establishing various types of free economic zones in the late 1970s, when environmental standards were low, making investment access and operating costs relatively low. Nevertheless, since the 21st century, environmental standards, carbon peaking, and carbon neutrality goals have raised investment access and operating costs in overseas zones, leading to lower profit margins for companies.

The legal dispute is another typical issue that arose from developing OFEZs. As the legal systems differ between China and the host countries, Chinese investors are unfamiliar with the legal procedures and issues of host countries, which easily generates legal disputes and affects the sustainable development of overseas industrial parks. In addition to the Gwadar Port in Pakistan, the most typical example is the legal dispute between the Djibouti government and Dubai World about the Doha Ray multipurpose port, which brings economic loss to the construction and development of the Djibouti International Free Trade Zone (Ma, 2020). The port where the free trade zone is located was first leased and developed by Dubai World; however, due to the delay in construction, the Djibouti Port Authority took back the port and subleased it to Chinese companies such as China Merchants Group for development and construction. Dubai sued the Djibouti government in a London court, and this legal case has not yet been concluded.

Furthermore, changes in the expiration date of land-use rights (from 99 years to 45 years) are a potential influencing factor for the sustainable development of the OFEZs. To support the sustainable development of China's OFEZs, future studies may conduct in-depth investigations on profit models of OFEZs, comprehensive environmental impact assessments of constructing and operating OFEZs, the contribution of OFEZ and its international trade network to carbon emission and so on.

5 Conclusions

This paper summarized the main research progress of studies about China's OETCZ along the Belt and Road and discussed limitations and future directions. Previous OETCZ-related studies have the following characteristics: (1) the number of Chinese studies is relatively large compared to papers published in English; "OETCZ" and "Belt and Road" appear most frequently as keywords in the literature; (2) research contents are based on interdisciplinary perspectives, including geography, economy, urban planning, international politics and country study, such as studies classifying different OETCZ types, applying institutional and cultural theory to analyze OETCZs, quantifying the trade effects of OETCZs, assessing the economic and environmental impacts of OETCZs on host countries, regions and even the world, discussing the development of a theoretical planning framework for OETCZ, summarizing lessons and experiences from Singapore-, Japan- and China's OETCZs for other countries and regions. Despite the diversity of research contents, most studies lack an in-depth exploration of theoretical issues such as underlying mechanisms, which is extremely important for better understanding the OETCZ and promoting its future sustainable

development. Additionally, specific problems during the development of OETCZs, such as the profit model, environmental impact, comparative study, urban planning integration and so on, should realistically be further investigated to help provide practical and feasible solutions. Questions raised by overseas scholars should be considered and answered carefully to clarify the objectives and positive influences of OETCZs. In future studies, it is recommended to continue broadening research perspectives of OETCZ studies, improving mechanism assessment and extracting general conclusions applicable to OETCZs with various geographical, socioeconomic and cultural conditions.

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