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Policy Intervention Strategies in Waterfront Areas and Their Promotion of Economic Growth in Tangshan

Chen MA¹, Norhafizah Abdul RAHMAN², Zulkefle AYOB³

Abstract

This article takes Tangshan, Hebei Province as an example to explore in depth the strategy of promoting urban economic growth through waterfront development, and focuses on analyzing the important role of social policy intervention in this process. In order to gain a more comprehensive understanding of the current situation and development potential of the waterfront area, we conducted qualitative and case studies, and conducted in-depth research on 211 residents living near the waterfront. The article proposes four important strategies to promote the economic development of waterfront areas and emphasizes the key role of social policy intervention. Firstly, based on the living habits and development needs of residents, targeted commercial and retail development policies should be formulated to improve the utilization rate and economic vitality of waterfront areas; Secondly, by setting waterfront activity spaces suitable for different age groups, the social function and attractiveness of the waterfront area can be enhanced; Thirdly, optimize infrastructure construction, enhance the overall environment and public service level of waterfront areas, thereby enhancing their

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attractiveness and competitiveness; The fourth is to deeply integrate regional culture into the construction of waterfront areas, further promoting the economic and social development of waterfront areas.

Keywords: waterfront area; developing economic growth; strategic impact; policy intervention; social culture; social function; social development.

Introduction

Research Background

Waterfront areas are zones in a city or region that are adjacent to rivers, lakes, oceans or other bodies of water. These zones usually have a unique landscape and ecological environment and are therefore of great value in urban planning, property development, leisure and tourism. Characteristics of waterfront areas include landscape advantages, ecological environment, recreational functions, economic value and transport hubs (Li and Zhou 2024). In China, with the acceleration of urbanisation and the improvement of people's demand for quality of life, the development of waterfront areas can effectively promote regional economic development, and therefore the development and protection of this area are receiving more and more attention. Urban waterfront development can be traced back to the mid-20th century (Guo *et al.*, 2020). The redevelopment and redevelopment movement of urban waterfronts was pioneered in North America in the late 1950s and early 1960s, aiming to promote the economic development and revitalisation of cities and revitalise urban centres (Yu *et al.*, 2020). This movement then gradually spread to Europe, and by the 1980s, the revitalisation of urban waterfronts had spread almost globally (Griffiths *et al.*, 2020). This process reflects the historical changes in urban development, the evolution of people's pursuit of urban space, and the quality of urban life.

Since 1990, many cities in China have also begun to focus on developing waterfront areas, and several large-scale waterfront development projects have appeared. Many first-tier coastal cities have held large-scale international bidding activities, begun implementing them, and gained valuable experience (Fan *et al.*, 2021). Urban waterfronts are essential to urban development and embody a city's vitality. It can regulate the local microclimate, improve the living environment, provide people with more places for recreation, and play an essential role in reflecting the city's cultural connotation and enriching citizens' cultural life. Urban waterfront space is an essential place for people to live and relax (Fan *et al.*, 2023). It is also a crucial part of urban open space, which has significant value in improving the quality of the urban environment, enriching the urban landscape, and promoting urban social and economic development. In addition, the waterfront area is continuous, forming ecological corridors and green networks by connecting the green spaces in the city, creating conditions for biological migration and

strengthening exchanges between species (Fu *et al.*, 2022). The natural environment of the urban waterfront area is also conducive to the harmonious coexistence of humans and the environment. Hebei Province is in the north of China. The terrain mainly consists of plains and mountains, and the climate belongs to the temperate monsoon climate, with four distinct seasons: hot and humid in summer and cold and dry in winter (Chauffert *et al.*, 2020). River distribution is mainly divided into the Haihe River system, Luanhe River system, Liaohe River system, coastal small water system, and Northwest inland water system, with more rivers, an excellent geographical advantage for developing waterfront areas. Many cities in Hebei Province are endeavouring to develop and improve waterfront areas along rivers to promote sustainable urban development and enhance residents' quality of life (Huang *et al.*, 2021). For example, Handan City, located at the confluence of the Bushe River and the Handan Canal, has been promoting the development of waterfront areas, working to protect water resources, improve the riverbank environment, and planning to build waterfront parks and waterfront pedestrian streets to provide places for recreation and cultural activities (Wang, 2021).

There are specific gaps in the development of waterfront areas in Hebei Province compared to the southeastern coastal areas. Firstly, water pollution and environmental damage are the main problems facing waterfront areas in Hebei Province at present, especially in areas with rapid industrial and urbanisation development, where improper treatment of discharges, wastewater and rubbish negatively affects water ecosystems and ecological environments (Yu and Yu, 2024); Secondly, the waterfront landscape planning is unreasonable, which leads to ecological imbalance near the waterfront, severe water pollution, plant species; thirdly, the local cultural background and historical lineage are often ignored in the planning and design of the waterfront, resulting in a lack of recognisability and regional characteristics of the waterfront landscape, which not only makes it lose its due regional characteristics, but also violates the principle of sustainable development (Zhang *et al.*, 2024); lastly, in the public participation, waterfront planning projects are often jointly carried out by the government and relevant design institutions, lacking in-depth understanding of the actual needs and expectations of residents around the waterfront, which also leads to the lack of high usage after completion, participation, waterfront planning projects are often completed by the government and relevant design institutions, lack of in-depth understanding of the actual needs and expectations of the residents around the waterfront area, which also leads to the waterfront area is not highly used after the completion of the waterfront area (Lu *et al.*, 2023).

Tangshan is in the eastern Hebei province, in a warm temperate zone with a semi-humid monsoon climate. The city waterfront system is a major urban renovation and ecological construction project. The whole project system surrounds the central area with a length of about 57 kilometres, and the construction of the waterfront system is of great significance for improving the overall ecological environment, promoting urban renovation and developing the economy of Tangshan (Li *et al.*,

2023). As an important part of the region, the Tangshan Waterfront District has played a key role in urban transformation and ecological civilisation in recent years. With the in-depth implementation of the city's development strategy, the waterfront area has gradually become a comprehensive development area integrating ecology, culture, leisure and commerce. Through continuous environmental management and ecological restoration, the natural landscape of the waterfront area has been significantly improved, and both water and air quality have been enhanced (Stevens, 2020). However, there are specific problems in the actual planning and construction of these urban waterfront areas, which leads to the region's economy failing to achieve growth through the development of waterfront areas. For example, the harmonious relationship with the city may be neglected in the development process, resulting in the impairment of the waterfront's hydrophilic and public space qualities. In addition, excessive development intensity may cause the waterfront to become crowded and exceed the carrying capacity of the environment.



Figure 1. Status of the Tangshan Waterfront

Therefore, this paper will take Tangshan as an example to summarise the problems of waterfront development, combine the questionnaire survey with the residents around the waterfront to obtain their views on the environment, facilities and infrastructure of the area, and propose a waterfront development strategy that can promote the economic development of Tangshan in conjunction with the field study (Üzümcüoğlu and Polay, 2023). The article will evaluate the policy of promoting economic development in the urban waterfront area from the aspects of regional culture, residents' lives and leisure activities.

Analysis of Relevant Elements

Many aspects affect economic development, such as economic policies, market mechanisms, demographics, and innovative technologies. However, with the urban waterfront, the economic development will be affected by different factors, including the land utilisation rate of the waterfront, government policies related

to the development of the waterfront, geographic and climatic conditions, urban planning policies, and social culture (Zaki and Hegazy, 2023). These factors work together and affect economic growth. At the same time, the development of the waterfront area can promote the characteristic development of the regional economy.

Urban Planning Policies. Urban planning policies play a vital role in urban development. For example, Malaysia has introduced various schemes and policies to ensure good transport planning for sustainable public transport development (Zhang *et al.*, 2023). Waterfronts impact the development of urban planning policies, which should be considered in urban planning to favour the development of waterfronts. In addition, urban planning policies affect the planning of public spaces and facilities on the waterfront, such as parks, plazas, waterfront trails, cultural facilities, and recreational facilities, which are essential for enhancing the quality of living on the waterfront and attracting tourists.

Waterfront Development Policies. The location and form of the waterfront district influence the formulation of relevant policies, and these policies also influence the overall layout, architectural style and public space design of the waterfront district's surroundings. Proper planning can enhance the aesthetics and functionality of the waterfront and attract more visitors and residents (Wang *et al.*, 2022). Waterfront development policies can encourage public participation in the waterfront planning and decision-making process to ensure that waterfront development meets the needs and desires of the local community, which can help to enhance the community's sense of identity and belonging to the waterfront.

Waterfront Land Use Rates. Waterfront development can increase the land use value of the area, and rational land planning can create more public areas, provide better walking and cycling paths, and increase the attractiveness and hydrophilicity of the waterfront. In addition, land use determines the social function of the waterfront, and effective land use can promote the waterfront as a place for recreation, entertainment and socialising and enhance the vitality and cohesion of the community.

Geoclimatic Conditions. Waterfronts influence the city's local climate, regulating regional temperature and humidity. Warmer climatic conditions are often favourable for recreational and tourism activities on the waterfront, promoting outdoor recreation and water sports; wind direction and speed can have a significant impact on waterfront amenities, building layout and landscaping; specific climatic conditions may favour the survival of certain plants and animals, which can affect the ecological value and biodiversity of waterfronts; and appropriate landscaping design and greening strategies can enhance the waterfront's environmental quality and aesthetic value.

Social Culture. Urban culture is often expressed in the form of historic districts and waterfronts. The urban historic district is one place that possesses a strong character and urban identity. Waterfronts are often venues for various cultural

activities and festivals, such as music festivals and art exhibitions, which enrich local cultural life and attract tourists. The development of waterfront areas needs to consider the cultural background and values of the local community to enhance the community's sense of identity and belonging. Many waterfront areas carry rich historical and cultural heritage, and socio-cultural influences require the protection of this cultural heritage during the development process and the inheritance of local cultural traditions. The design of public spaces in waterfront areas needs to consider the local cultural habits and social needs to promote community interaction and public life.

Methodology

Introduction to Research Methods

This study focuses on the waterfront area of Tangshan, Hebei Province, northern China. It is a historical witness to urban development and a key area for future urban renewal and renovation, carrying rich cultural and ecological values. This article will adopt a qualitative research method, focusing on analyzing the current situation of waterfront areas and the expectations of residents, and using qualitative research methods such as interviews to provide necessary theoretical basis for the development policies and current situation of waterfront areas. The research methodology section provides a detailed analysis of the research strategies used in this study, with the aim of ensuring their credibility and scientific validity. The mixing or mixing of data provides a more important understanding of a problem or problem than it itself. The data was obtained using a network based non scale questionnaire at the beginning of the study. By collecting data on these variables, the impact of changes in these factors on the study of waterfront development models can be determined for quantitative analysis.

Research Strategy Analysis

Firstly, the study involves web research. This approach allows for collected empirical data that can be analysed to verify research hypotheses and obtain reliable data information. Secondly, a web-based questionnaire was used to collect data. Questionnaires were utilised as the primary tool for data collection, enabling the gathering of participants' views and opinions on specific issues. Questionnaires efficiently collect data from many subjects, ensuring broad coverage of information. The study employed a cluster sampling strategy, carefully selecting a specific number of participants from the target population to ensure that the sample accurately represents the diverse segments. This sampling method enhances the generalizability of the research findings. Regarding data analysis, statistical analysis methods were employed to process and interpret the collected

data. Through these methods, correlations and trends in the data can be examined, facilitating the use of appropriate statistical tools to draw meaningful conclusions. In the actual process of questionnaire distribution, the main use of contacting the community staff, requesting cooperation and consent to distribute the questionnaire in the community group, has been issued gifts to stimulate the residents to fill out the questionnaire enthusiasm. The whole questionnaire collection process lasted 6 days and finally received 211 valid samples. Finally, qualitative research will comprehensively summarise and analyse the data in conjunction with case studies to summarise and draw conclusions. The study’s on-site observations of the Tangshan waterfront areas will include surveys of residents. These questionnaires will explore various aspects, such as their living experiences in waterfront areas, work schedules, and leisure activities.

The questionnaire is structured around four principal modules: an inquiry into the demographic and background information of the respondents, an assessment of the current state of the waterfront areas, a probe into the citizens’ expectations for urban development, and a survey of their aspirations for the future development of the waterfront regions. Each module comprises a meticulously curated set of 7 to 10 questions, tailored to address specific data requirements. The questionnaire also considers the investigation of factors related to the development of the waterfront area that affect it, which facilitates the achievement of the objectives of this study. The compilation of these questions results in a comprehensive questionnaire that is designed to capture a nuanced understanding of the respondents’ perspectives. The configuration of the questions is delineated in Figure 2.

<p>Module 1: Basic Information</p> <ul style="list-style-type: none">• Gender• Age• Occupation• Incomes• Living Habits• Hobbies and Interests• Region of Life• Number of visits to the waterfront per month	<p>Module 2: Status of the Waterfront Area</p> <ul style="list-style-type: none">• Waterfront Location• Acreage• Greening situation• Flow of People• Surrounding infrastructure• Waterfront Park(YES/NO)• Number of neighbouring shopping areas• Popular participation in design and construction(YES/NO)• Reflects regional culture(YES/NO)
<p>Module 3: Expectations for city building</p> <ul style="list-style-type: none">• Traffic Condition• Convenient Living• Place of Entertainment• Business Centre• Greening the Environment• Drinking Water Safety• Residential Safety	<p>Module 4: Expectations for Development In the Waterfront Areas</p> <ul style="list-style-type: none">• Greening situation• Water Quality• Space for Activities• Design Characteristics• Acreage• Infrastructure• Traffic Condition• Free and Open to the Public(YES/NO)• Amusement Facilities• Neighbourhood Business

Figure 2. Questionnaire Design

The present investigation employs an array of qualitative research methodologies to extrapolate meaningful inferences. It entails a purposive sampling technique to survey the inhabitants residing in the proximity of the Tangshan waterfront zone, thereby generating valid qualitative data. Additionally, the research instrument involves the distribution of questionnaires to the residents, which are subsequently utilized to acquire empirical data. Following a comprehensive analysis of the existing developmental status and the challenges inherent in the Tangshan waterfront area, the study synthesizes the findings to propose a suite of strategic interventions and measures. By optimizing industrial structure, enhancing innovation capabilities, and attracting investment, we aim to promote the rapid economic development of waterfront areas. Ensure the coordination between economic development and environmental protection, and achieve a win-win situation of economic and ecological benefits. Encourage the development of industries such as coastal tourism, marine economy, and high-end manufacturing to form a diversified economic structure. Strengthen environmental supervision, implement pollution control and ecological restoration projects, and protect the natural environment of waterfront areas. Improve the living conditions of residents, provide public services such as education and medical care, and enhance the social cohesion of waterfront areas. Establish a cross departmental collaboration mechanism, clarify the division of responsibilities, and ensure the smooth implementation of policies. Develop financial support policies to attract social capital to participate in the development and construction of waterfront areas. Establish a monitoring and evaluation system for policy implementation effectiveness, and adjust policy direction and implementation efforts in a timely manner. These recommendations are specifically aimed at leveraging the development of the waterfront to catalyse economic growth within the city.

Results and Discussion

Data Analysis

In this study, data were collected from residents living near the waterfront in Hebei Province using a network research method with a sample size of 211, with the primary aim being to understand people's living conditions and expectations in terms of development near the waterfront, to better guide the direction of the future development of urban waterfronts. The issues addressed in this study included the construction of parks and shopping centres in the vicinity of the waterfront, whether the design of the waterfront reflects the cultural character of the area, the rate of use of the waterfront, the audience and the residents' expectations for the development of the waterfront. These questions are based on the study's '1.2 Analysis of Relevant Elements', which aims to identify how these factors have influenced the development of the Waterfront Strategy from the actual

research. These findings were analysed qualitatively and quantitatively through the Statistical Package for Social Science (SPSS) and analysed and summarised relevant opinions on the waterfront to promote the city’s economic development.

In the item “Has a waterfront park been constructed on this waterfront area? (See Table 1)”, 63.5%(N=134) of the respondents answered “Yes”, indicating that many people believe that there is a park planned near the waterfront area where they live, 10% (N=21) answered “No” that there are no parks planned near the waterfront. According to the author’s field research in Tangshan, Hebei Province, some of the so-called waterfront parks (See Figure 3) need to be well-planned, but only in the barge to carry out infrastructure construction, where residents can carry out simple recreational activities. Therefore, the residents’ understanding of waterfront parks is different, and the government should further develop the construction of waterfront parks from the perspective of improving infrastructure.

Table 1: Has a waterfront park been constructed on this waterfront area?

Options	N	Percent (%)	Cumulative Percent (%)
Yes	134	63.5	63.5
No	31	14.7	78.2
In Planning	21	10.0	88.2
Not Known	25	11.8	100.0
Total	211	100.0	

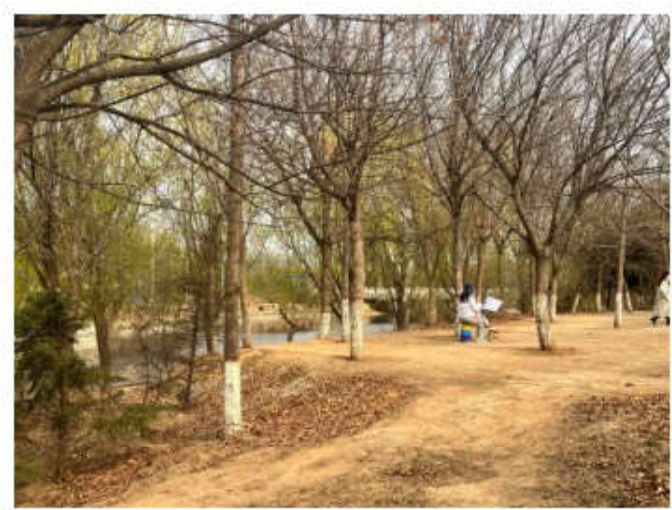


Figure 3: Residents Recreate near the Riverbank

In the “Expectations for the waterfront and surrounding space (See Table 2)” survey, 39.0% (N=82) would like to see more leisure and recreation facilities along the waterfront, which is the highest percentage of responses. 27.6% (N=58) want more arts and cultural activities, ranking second. Therefore, it is easy to see that while promoting the development of the waterfront area and building more waterfront parks, it is essential to take into full consideration the demands of residents by increasing the number of leisure and recreational facilities and organising various artistic activities.

Table 2: Expectations for the waterfront and surrounding space.

Options	N	Percent (%)
Increase leisure and recreation facilities	82	39.0
Increase arts and cultural activities	58	27.6
Install more outdoor fitness space	47	22.4
Install a larger in-person water park	15	7.1
Increase science education sites	8	3.8
Total	210	100.0

In the item “Does the design of this waterfront area sufficiently incorporate and reflect the cultural characteristics of the region? (See Table 3)” 45% (N=95) felt that local culture was only reflected in the design of individual infrastructure, while 36.5% (N=77) felt that the design of the waterfront area sufficiently incorporates and reflects local culture. Therefore, in the design and planning of the waterfront area, the cultural characteristics should not be reflected only through the modelling design of the infrastructure. However, the cultural connotation should be deeply excavated and reflected from different angles.

Table 3: Does the design of this waterfront area sufficiently incorporate and reflect the cultural characteristics of the region?

Options	N	Percent (%)	Cumulative Percent (%)
Fully reflected	77	36.5	36.5
Only in the styling of individual infrastructure	95	45.0	81.5
Not reflected	18	8.5	90.0
Not known	21	10.0	100.0
Total	211	100.0	

In the items “Are there any shopping centres near this waterfront area? (See Table 4)” and “If there are shopping centres, how many are there? (See Table 5)”, 52.13% (N=110) answered “Yes”, 15.6% (N=33) and 10% (N=21) answered “In planning” and “Not known”.41.2% (N=87) of the sample answered 1-2 shopping districts, with “In planning”, “No shopping centre”, and “Not known” accounting for a total of 43.1% (N=93) of the total sample. Therefore, it can be observed that more than half of the people think that there is a business centre near the waterfront where they live, while the other half think that there is no business centre or do not know about it. It can be analysed that the prevalence rate of the business district near the waterfront in Hebei Province is about 50%. Full use of the advantages of the waterfront area to build more business districts or promote more flexible forms of business development can achieve the mutual promotion and development of the waterfront areas.

Table 4: Are there any shopping centres near this waterfront area?

Options	N	Percent (%)	Cumulative Percent (%)
Yes	110	52.1	52.1
No	47	22.3	74.4
In planning	33	15.6	90.0
Not know	21	10.0	100.0
Total	211	100.0	

Table 5: If there are shopping centres, how many are there?

Options	N	Percent (%)	Cumulative Percent (%)
1-2	87	41.2	41.2
3	20	9.5	50.7
4+	13	6.2	56.9
In planning	22	10.4	67.3
No shopping centre	41	19.4	86.7
Not know	28	13.3	100.0
Total	211	100.0	

In the survey “Expectations for the business centre around the waterfront area: (See Table 6)”, 35.1% (N=74) of the residents hoped that 1-2 large-scale business centres could be built, and 31.3% (N=66) hoped that 3-5 small and medium-sized business centres could be distributed in multiple locations, with 66.4% of the total sample. Therefore, most residents want to build more shopping centres near the waterfront area, which can satisfy entertainment and living consumption.

Table 6: Expectations for the business centre around the waterfront area

Options	N	Present (%)
1-2 large shopping districts	74	35.1
3-5 small and medium-sized shopping districts distributed in multiple locations	66	31.3
Regular art exhibitions and festival bazaars	42	19.9
Abundant retail choices	19	9.0
Opening of artisans' stores to support cultural promotion	10	4.7
Total	211	100.0

In the survey, “What are the groups of people in the region who frequent the waterfront?” The proportion of “Retirees” is the highest, 27.27% (N=162), and the proportion of “Tourists” and “Commuters” is similar, 21.55% (N=128) and 21.38% (N=127) respectively. The elderly prefer recreation and consumption activities near the waterfront, while tourists and commuters mainly focus on exercise and sightseeing experiences (See Figure 4).

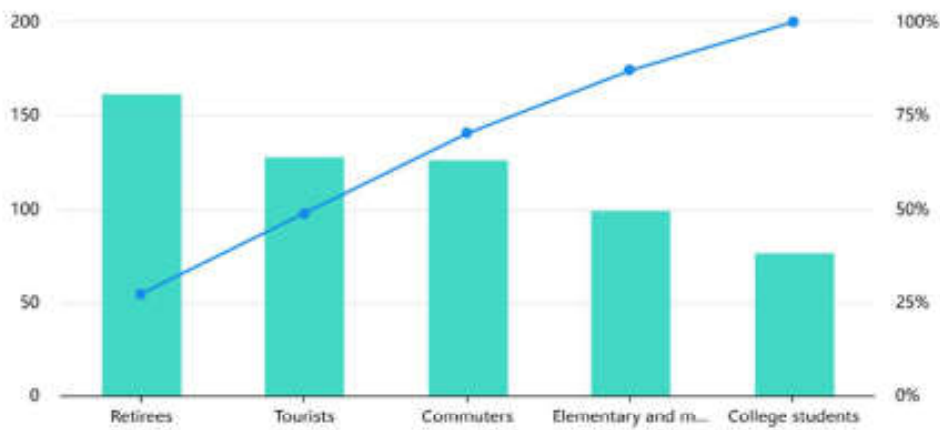


Figure 4. What are the groups of people in the region who frequent the waterfront?

Case Studies

Hebei Province is in northern China, it is close to the coast, so there is abundant annual precipitation, which leads to many rivers in Hebei Province. However, only a few waterfront areas have carried out complete planning, such as the Nanhu Park waterfront area in Tangshan, which pays attention to culture, ecology and economy at the same time in its development and is an excellent reference example

for the development of waterfront areas. However, with the accelerated process of urbanisation and growing economic development, the status quo of Tangshan's waterfront is facing several challenges and problems.

The urban planning and construction of the Tangshan waterfront area exhibit a degree of confusion and lack of coherence. Historically, the area's architectural styles and planning layouts have not been uniform, leading to a disjointed urban landscape and a chaotic city image. Furthermore, the presence of unauthorized structures and planning blind spots in certain regions has negatively impacted the overall quality of the city.

An urgent need to enhance environmental protection and ecological construction in the Tangshan waterfront area. As urbanization accelerates, the environmental quality and ecological integrity of the region have been compromised to some extent. Issues such as water pollution, air pollution, and waste accumulation are becoming increasingly prevalent, posing significant impacts on the quality of life and health of the residents. Consequently, the Tangshan waterfront area must intensify its efforts in environmental conservation and ecological development to foster the sustainable progress and construction of the city.

The economic development and industrial structure of the Tangshan Waterfront District urgently require optimization and upgrading. Currently, the region's economy is predominantly driven by traditional industries and lacks the support of high-tech industries and modern service industries, resulting in a lack of economic growth momentum and a monolithic industrial structure. To achieve sustainable economic development and comprehensive urban construction, the Tangshan Waterfront District needs to increase support for high-tech industries and modern service industries, attract more high-quality enterprises and projects, and promote the optimization and upgrading of its industrial structures. Existing problems in the Tangshan Waterfront are shown in Figure 5.



Figure 5. Tangshan Waterfront Existing Problems

Tangshan waterfront as an important urban development area, faces many challenges and problems. Only by increasing urban planning and construction,

strengthening environmental protection and ecological construction, and optimising economic development and industrial structure can the sustainable development and construction of the Tangshan waterfront be realised and make greater contributions to the prosperity and progress of the city.

Conclusion

This study analyzes the waterfront areas of Tangshan, Hebei Province, and explores the paths and strategies to promote urban economic growth by developing waterfront features. The strategies for developing waterfront characteristics to promote urban economic growth have been summarized as follows: (1) Increase the popularity of the shopping district near the waterfront area and arrange the comprehensive commercial centre and scattered commercial centre according to the residents' living habits and reasonably so that it can be convenient and satisfy the living needs of the residents near the waterfront area in an all-round way; (2). Establishing the corresponding infrastructure for the people who frequently visit the waterfront area, such as barrier-free facilities for the elderly or jogging paths for the young; (3). Improve the infrastructure near the waterfront, plan a well-equipped waterfront park with abundant greenery, and increase recreational programmes and cultural activities; (4). Deeply understand the region's social culture, from traditional regional culture to the living habits of urban residents, from various perspectives and incorporate them into the waterfront planning project.

Establishing commercial centres of different scales near the waterfront to provide more convenient living conditions for the surrounding residents while constantly improving the infrastructure construction of the waterfront, thereby increasing the usage rate of the waterfront, promoting the level of consumption, and promoting economic development.

This study thoroughly analyses the waterfront areas in Hebei Province and draws relevant research conclusions. The findings suggest that waterfront planning should prioritise how to meet the needs of nearby residents and then, through careful planning and strategic implementation, make waterfronts an essential link in promoting diversified urban economic growth.

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