

RESEARCH ON THE PROTECTION AND DEVELOPMENT OF HISTORICAL AND CULTURAL RESOURCES IN THE YELLOW RIVER BASIN FROM THE PERSPECTIVE OF ECOLOGICAL CIVILIZATION

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ABSTRACT

In building the ecological civilization of the Yellow River basin, it is of extraordinary importance to preserve and develop the historical and cultural resources of the Yellow River basin to ensure the economic and cultural prosperity of its surroundings. Based on the need to better protect and develop the historical and cultural resources of the Yellow River Basin, we have developed a research system for the conservation and development of the natural and cultural resources of the Yellow River Basin. It covers both the conservation of the natural resources and the development of the cultural heritage of the Yellow River Basin. The assessment results show that in the Yellow River travel assessment score, the score in 2018 was 67.12, and in 2021 the score rises to 76.23, an increase of 13.57%. In the exploitation of the natural and historical resources of the Yellow River Basin, the scores of related travel, books, and transportation have improved significantly. Yellow River-related history books scored only 63.21 in 2018 for books and increased by 16.04% to 73.35 in 2021. In the transportation sector in the Yellow River Basin, the score was 65.37 in 2018, rising to 75 in 2021.

KEYWORDS

Historical and cultural resources protection; historical and cultural resources development; ecological civilization construction; Yellow River Basin; intangible culture

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1. INTRODUCTION

The ecological environment is the basis of our survival [1, 2]. Ecosystems are difficult to repair when damaged because they are irreplaceable [3]. The development model that follows the law of natural development with equal emphasis on the economy and environment is the most valuable [4, 5]. Therefore, the protection of ecological civilization deserves high priority and we must follow a green and sustainable development path. [6]. In carrying out the construction of ecological civilization, his core issue is to correctly deal with the relationship between man and nature and promote the harmonious development of man and nature [7, 8]. The hallmark of a new stage in the development of human civilization is ecological civilization. Ecological civilization is a symptom of the harmonious development of man and nature. The sum of material and spiritual results achieved as a result of this objective law [9]. The construction of ecological civilization is related to the high-quality development and modernization of China's economy [10, 11]. Environmental protection and economic development go hand in hand and will generate transformative forces. In the construction of ecological civilization, there are numerous watersheds within China. The ecological civilization construction of watersheds is crucial to the construction of ecological civilization in China.

In China, the major watersheds include the Yangtze River basin [12, 13], and the Yellow River basin [14, 15]. The Yellow River basin, the second largest basin in China, has a good vegetation cover in most of its upstream parts. The upper main streams have many canyons and are rich in hydraulic energy resources [16]. Below the gorges are the river plain, irrigated and accessible to shipping. In the middle reaches, there are also abundant hydro-energy resources. The banks are loess plateaus with little vegetation and severe soil erosion, which is the main source of flood sediment in the Yellow River [17, 18]. In the lower reaches, most of the dikes are built on both banks, and the sediment accumulation makes the riverbed generally 3-5m above the ground level on both banks, and as much as 10m, so it is called a hanging river [19]. In China's 5,000-year-long history corridor, numerous cultures and historical civilizations have been born in the Yellow River basin. Because of the very harsh natural conditions and climate change in the Yellow River Basin, the Yellow River Basin civilization is quite different from other ancient civilizations. Therefore, when carrying out ecological construction in the Yellow River Basin, it is necessary to focus on the protection and development of historical and cultural resources.

Many scholars all over the world have conducted relevant studies on ecological civilization construction and historical and cultural resource protection and development in watersheds [20-27]. Zhu, Li [28] conducted ecological civilization prospect prediction based on a factor map distributed algorithm. They constructed an evaluation index set based on the connotation of the ecological civilization construction evaluation system and established a factor graph distributed ecological civilization construction evaluation model. They collected relevant data from 15 Chinese cities at different levels and standardized the input learning matrix. Their findings suggest that China's economic development needs further transformation and

the corresponding resource output rate needs to be improved. Shen B [29] discussed the attractiveness of an urban ecological environment to Chinese job seekers. They studied the relationship between the urban ecological environment and labor mobility decisions from a micro-individual perspective. They found that job seekers were more willing to move to cities with better ecological environments during job transactions, and their study illustrated the importance of ecological civilization construction. Wang D [30] established an integrated model of urban ecological civilization and its barrier factors evaluation system. They constructed an extended index system of ecological civilization to reflect the interaction between humans and nature. And they combined the index variable weighting method, similarity to the ideal solution ranking technical model and barrier degree model to evaluate and diagnose regional differences and barrier factors. Liu T [31] believed that how to cope with the contradiction between the protection and development of ancient villages and towns in the process of new urbanization and rural revitalization is the key point in the protection and development of historical and cultural resources. They argued that the planning of tourist destinations in new urbanization can be carried out in an orderly manner within the framework of landscape information chain theory. Bonazza A [32] developed an interaction matrix to collect data on their needs and to identify the main gaps in data and information. In addition, they provided recommendations on implementing infrastructure solutions to improve access to data and information on Copernicus services for cultural heritage users. Their research shows that when conducting ecological civilization, it is important to consider the planning of construction, economic development, etc. In addition, in conducting the conservation and development of historical and cultural resources, it is necessary not to be uniform, but to combine local characteristics to form a distinctive cultural landscape.

In addition, due to the superior climate, fertile soil and other excellent geographical conditions of the Yellow River basin, it led to the socio-economic development of China in early China. In previous research work, people tend to consider purely ecological civilization construction without considering the impact of the preservation and development of historical and cultural resources in the Yellow River Basin on the economic and cultural prosperity around the Yellow River Basin. Therefore, in the study of this paper, we have established a research system for the protection and development of historical and cultural resources in the Yellow River Basin. The research mainly contains two aspects ecological construction and historical and cultural resources protection and historical and cultural resources development in the Yellow River Basin. We systematically analyzed and discussed these two aspects, and systematically evaluated the historical and cultural resources protection, and historical and cultural resources development by scoring. We hope that our research can bring new hope to the ecological construction and historical and cultural resources protection and development of the Yellow River basin.

2. HISTORICAL AND CULTURAL RESOURCES OF THE YELLOW RIVER BASIN

Yellow River Basin historical and cultural resources can be divided into naturalized Yellow River Basin historical and cultural resources and socialized Yellow River Basin historical and cultural resources, materialized Yellow River Basin historical and cultural resources and immaterialized Yellow River Basin historical and cultural resources in terms of their properties and existence forms [21-23]. The so-called naturalized Yellow River Basin historical and cultural resources are the elements that widely exist in nature and can be used by human beings; the socialized Yellow River Basin historical and cultural resources are the elements created by human beings themselves through labor and can serve the survival and development of human beings. Materialized Yellow River Basin history and cultural resources are embodied in kind and can be seen, and touched, in the tangible existence of the Yellow River Basin history and cultural resources. The non-materialized Yellow River basin history and cultural resources are the Yellow River basin history and cultural resources that can be used by humans but exist in non-physical forms, such as Yellow River history knowledge, Yellow River history concept, Yellow River history creativity, etc. Naturalized Yellow River historical and cultural resources are generally materialized Yellow River historical and cultural resources, while socialized Yellow River historical and cultural resources include both materialized Yellow River historical and cultural resources and related human resources as well as immaterialized Yellow River historical and cultural resources.

2.1. PROTECTION OF HISTORICAL AND CULTURAL RESOURCES IN THE YELLOW RIVER BASIN

The conservation of the natural historical resources and cultural heritage of the Yellow River Basin consists of two aspects: governmental conservation measures and technical remedial measures. The governmental conservation measures mainly enhance the relevant policies promulgated by the Yellow River Basin Historical and Cultural Resources Conservation Bureau and local government organizations in the Yellow River Basin to protect the historical and cultural resources of the Yellow River Basin. Further establishment of the Yellow River Basin Historical and Cultural Resources Protection Site. Technical remedy mainly refers to the adoption of various measures and techniques to prevent historical and cultural resources. Specifically, the current protection of historical and cultural resources in the Yellow River Basin involves firstly the relevant policies and regulations of China on the protection of historical and cultural resources in the Yellow River Basin. Secondly, the Yellow River's historical archaeology, museums, ruins relics and ancient modern architectural relics protection, ancient books protection, intangible cultural heritage protection, oral history and culture of the Yellow River basin, etc. Finally, there are related legends of river management figures, promotion of the importance of the history and culture of

the Yellow River Basin, and protection of the environment management related to the Yellow River Basin.

The protection of the intangible Yellow River Basin historical and cultural resources mainly includes its governmental organizational structure, related policies on the protection of the Yellow River Basin historical and cultural resources, the main body of the protection of the Yellow River Basin historical and cultural resources, and the main body of the protection and transmission of the intangible Yellow River Basin historical and cultural heritage. The current organizational structure of the government for the conservation of intangible historical and cultural resources of the Yellow River Basin is mainly a joint domestic and foreign UNESCO and Chinese civil organizations. The main bodies of the heritage conservation of the intangible Yellow River Basin are government departments, universities, research teams, public cultural institutions and supporting organizations such as civil society organizations, and the public. The Yellow River Basin's historical and cultural intangible heritage bearers are the main body of the Yellow River Basin's intangible historical and cultural resources heritage protection and transmission, and therefore the most important aspect of the Yellow River Basin's intangible historical and cultural heritage protection is the identification of intangible cultural heritage bearers. The adoption of economic support, recognition and awards to support the protection of the intangible Yellow River historical and cultural heritage inheritors plays an important role in the protection of the inheritance of the intangible Yellow River historical and cultural resources. The principles of heritage protection of intangible Yellow River historical and cultural resources are mainly people-oriented, living and innovative, sustainable development, and holistic principles, etc.

2.2. HISTORICAL AND CULTURAL DEVELOPMENT OF THE YELLOW RIVER BASIN

The rise of the history and culture of the Yellow River Basin in China has also contributed to the popularity of books related to the history and culture of the Yellow River Basin among many consumers. The publication of books on the natural history of the Yellow River Basin is an important part of the development of the natural history of the Yellow River Basin, based on which we can better understand the trends in the ecological resources of the Yellow River Basin region. In contrast to sightseeing, reading books on the natural history of the Yellow River makes it easier to understand the historical mysteries and folklore of the Yellow River region. Although the older generations have handed down much of the history and culture of the Yellow River Basin, the historical and cultural illustrations provide a deeper understanding of the historical origins of the Yellow River Basin.

3. EVALUATION SYSTEM

3.1. CONSERVATION AND SYSTEM DEVELOPMENT OF HISTORICAL AND CULTURAL RESOURCES IN THE YELLOW RIVER BASIN

This section constructs a structural model for the evaluation of the conservation and development of historical and cultural resources in the Yellow River Basin as shown in Figure 1, consisting of two primary indicators and five secondary indicators.

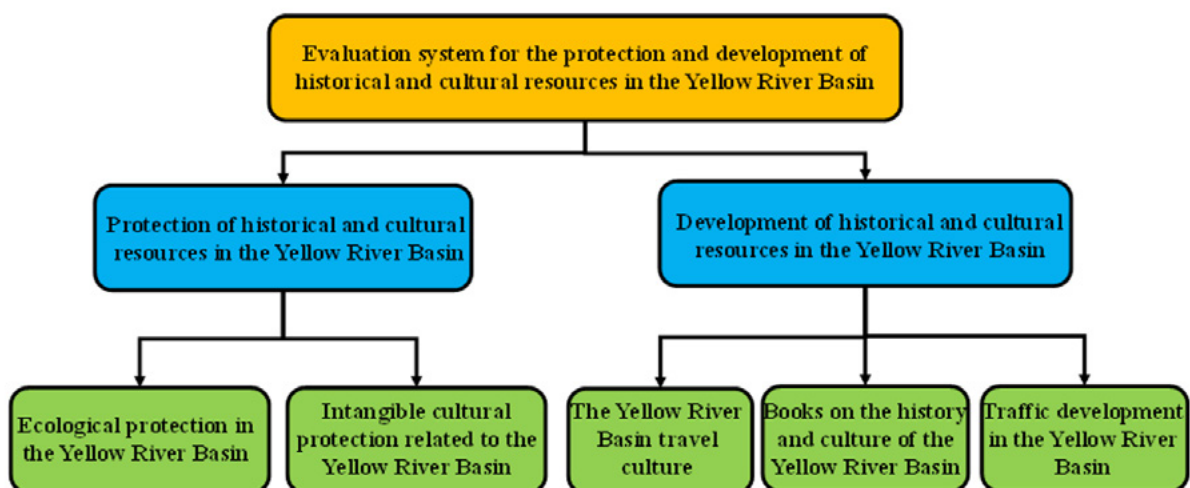


Figure 1. Evaluation system for the protection and development of historical and cultural resources in the Yellow River Basin

1. Protection of historical and cultural resources in the Yellow River Basin: An objective reflection of the degree of protection of historical and cultural resources in the Yellow River Basin, mainly including
 - C1 Ecological protection of the Yellow River Basin: Geological research and environmental protection of the area where the Yellow River Basin is located.
 - C2 Intangible culture protection related to the Yellow River Basin: Display of the non-traditional culture of the Yellow River Basin, as well as the overall presentation of cultural forms such as Huanghuang culture, Hailuo culture, Guanzhong culture, and Qilu culture.
2. Development of historical and cultural resources of the Yellow River Basin: A reflection of the development status of historical and cultural resources of the Yellow River Basin, mainly including
 - C3 Yellow River Basin travel culture: presenting to visitors the deep historical and cultural atmosphere of the Yellow River Basin.

- C4 Yellow River Basin history and culture-related books: record related Yellow River Basin history mysteries.
- C5 Transportation development in the Yellow River Basin: including the convenience of transportation in the Yellow River Basin.

To ensure the reasonableness of the conclusions obtained by the hierarchical analysis method, the three judgment matrices obtained need to be tested for consistency. Therefore, the three judgment matrices will be tested using the consistency test formula, and the specific calculation process is as follows.

$$CR = \frac{CI}{RI} \quad (1)$$

$$CI = \frac{\lambda_{\max} - n}{n - 1} \quad (2)$$

Where, CR is the random consistency ratio; CI is the judgment matrix consistency index; RI is the average random consistency index; n is the order of the judgment matrix, and λ_{\max} is the maximum eigenvalue of each matrix.

3.2. PSR MODEL

As a classical model of a dynamic analytical process, the PSR model not only reflects the pressure and impact on the ecological environment under human activities and behavior, but also facilitates people to visualize the changes in the natural ecology and motivates people to protect the ecological environment in various ways, to achieve a harmonious relationship between man and nature as well as the sustainable development of human society." The 'Pressure (P)', 'State (S)' and 'Response (R)' indicators. The "Pressure (P)" indicator reflects the negative impact of human activities and behavior on the natural environment during the interaction between human society and the natural environment, i.e. the "pressure" exerted by humans on the natural environment; the "State (S)" indicator reflects the changes in the natural environment over some time in response to the negative impact of human activities, i.e. the "state" of the natural environment; the "Response (R)" indicator reflects the remedial measures and actions taken by human beings to improve the carrying capacity of the environment and ecological environment in the face of the negative impact of human activities on the environment and the "state" of the natural environment, i.e. the "response" made by human society.

The questionnaire of these five indicators was sent to the panel members for consultation, and then the panel members submitted their opinions by letter in an anonymous manner. After several iterations of solicitation and feedback, the opinions of expert group members gradually converged and agreed, and finally a collective judgment result with a high accuracy rate was obtained.

4. ANALYSIS AND DISCUSSION

The Yellow River is not only a magnificent natural river but is also a long-standing culture of the river. The long history of Chinese civilization over thousands of years has been nurtured by the Yellow River and the Yangtze River together. They have not only given birth to the great Chinese nation but also to the glorious Chinese culture. Among the historical and cultural resources under the Yellow River Basin, the Yellow River culture is mainly agrarian and has characteristics such as pluralism and integration. In Table 2, we can observe the richness and diversity of the cultures of the Yellow River basin, and so in analyzing its ecological civilization, we need to take into account its many different features.

4.1. PROTECTION OF HISTORICAL AND CULTURAL RESOURCES IN THE YELLOW RIVER BASIN

There are many historical and cultural aspects of the Yellow River, and in the protection of cultural resources in the Yellow River basin, we mainly consider two aspects: the ecological protection of the Yellow River basin and the protection of intangible culture related to the Yellow River basin. The ecological protection of the Yellow River basin includes regional geological research and environmental protection. The protection of intangible culture related to the Yellow River Basin includes the protection of non-heritage culture and the overall presentation of cultural forms such as Huanghuang culture, Hailu culture, Guanzhong culture, and Qilu culture. We scored the protection and development of historical and cultural resources in the Yellow River basin by distributing questionnaires. The scores were used to calculate the assessment accordingly. The survey of the perceived value questionnaire of historical and cultural tourists in the Yellow River basin started on September 10, 2018, and the formal survey began on October 11, 2018, during which two surveys were conducted, as shown in Table 1. 200 questionnaires were distributed on October 20, 2018, and 181 questionnaires were returned, of which 155 were valid; on December 11, 2018, 300 questionnaires were distributed and 286 were returned, with 155 valid questionnaires. A total of 500 questionnaires were distributed and 467 questionnaires were collected in the 2 surveys, of which 441 were valid, with an efficiency rate of 88.2%.

Table 1. Questionnaire survey on the perceived value of historical and cultural tourists in the Yellow River Basin

Survey time	Distribution of questionnaires	Receive the questionnaire	Valid questionnaire
October 20, 2018	200	181	155
December 11, 2018	300	286	259
Total	500	467	441

We analyzed and processed the scores of C1, and C2 in the questionnaire to obtain the scores of ecological conservation in the Yellow River Basin and intangible cultural conservation related to the Yellow River Basin. We analyzed the scores and predicted the data of historical and cultural resource conservation in the coming years. As shown in Figure 2, in 2018, the scores of ecological conservation and intangible cultural conservation in the Yellow River Basin were 65.32 and 67.82, respectively. This indicates that the protection of historical and cultural resources in the Yellow River basin in 2018 is not sufficient and does not satisfy local people and tourists. In the process of carrying out the construction of ecological civilization, the related ecological protection of the Yellow River basin and the related intangible cultural protection of the Yellow River basin show signs of climbing up. This shows that China is paying more and more attention to the protection of historical and cultural resources while carrying out the construction of ecological civilization. In 2021, the scores of ecological protection of the Yellow River Basin and intangible cultural protection related to the Yellow River Basin increased to 73.52 and 77.39. Compared with 65.32,67.82 points in 2018, the scores increased by 12.55% and 14.11% year-on-year. In addition, it is worth mentioning that we have also predicted the ecological protection of the river basin from 2023 to 2025, and the score of intangible culture protection related to the Yellow River basin. According to the prediction results, the ecological protection score of the Yellow River basin increased to 79.85, 80.23, and 85.22 points between 2023 and 2025, respectively. Compared with 2018, it increased by 22.24%,22.82%,30.46%. This indicates that the ecological protection of the Yellow River basin has been further improved. The score of intangible culture protection related to the Yellow River Basin will be 83.65, 87.56, 89.5, compared with 2018, up 23.34%, 29.11 %, 32.01%, which indicates that while ecological protection, intangible culture related to the Yellow River Basin has also been improved accordingly, and China is more and more attentive to the protection of historical and cultural resources in the Yellow River Basin.

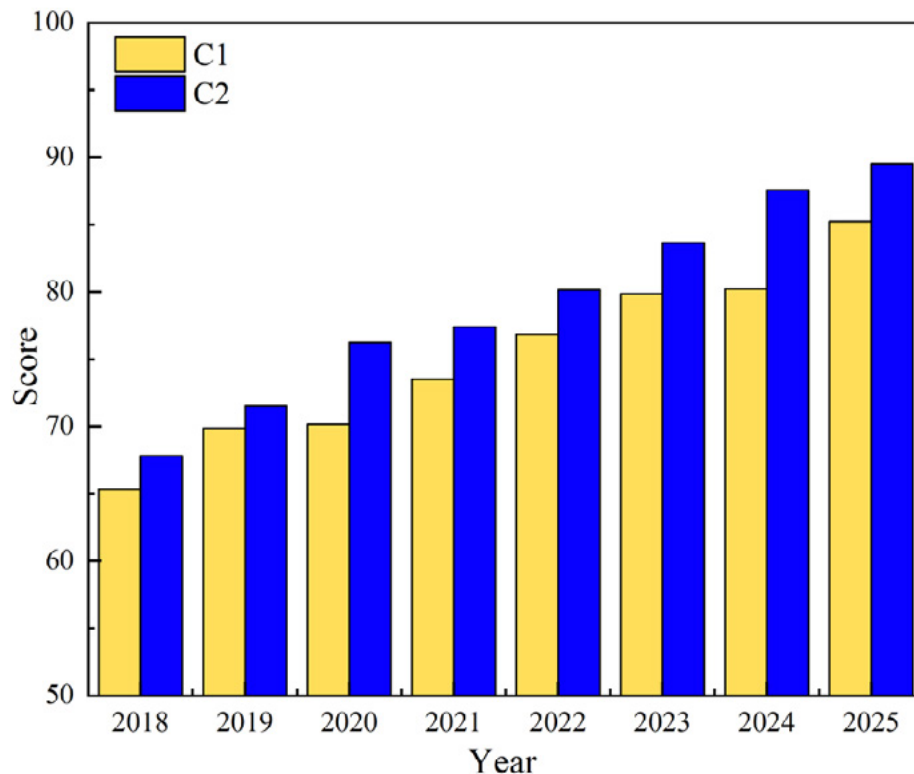


Figure 2. Trend and prediction of corresponding score changes for the protection of historical and cultural resources in the Yellow River Basin

4.2. DEVELOPMENT OF HISTORICAL AND CULTURAL RESOURCES IN THE YELLOW RIVER BASIN

The development of historical and cultural resources in the Yellow River Basin, in short, means using various methods to make full use of the historical and cultural resources in the Yellow River Basin to make them effective and gain benefits. In fact, in history, the development of historical and cultural resources has existed for a long time, mainly for government, social education, and intellectual enlightenment, as well as to learn or preach and exchange historical and cultural knowledge as a form of recreation. At present, the development of historical and cultural resources is mainly based on the development of cultural tourism and cultural relics exposition industry. In our study, we mainly evaluate three aspects of the Yellow River travel, related history books and the development of transportation within the Yellow River basin. Travel culture of the Yellow River basin: presenting tourists with a deep historical and cultural atmosphere of the Yellow River basin. Books related to the history and culture of the Yellow River Basin, recording the historical mysteries related to the Yellow River Basin. Transportation development in the Yellow River Basin, which includes the accessibility of transportation within the Yellow River Basin. In the questionnaire, the related score results are shown in Figure 3. In Figure 3, we can see that the scores in the three aspects of travel on the Yellow River, related history books and transportation development within the Yellow River basin have a large increase. In the

Yellow River travel, the score in 2018 was 67.12, and in 2021 the score increased to 76.23, up 13.57%. In addition, by forecasting the Yellow River travel score, the associated score increases to 83.69, 89.69, and 90.53 between 2023 and 2025. Compared to 2018, the predicted Yellow River travel scores increased by 24.69%, 33.18% as well as 34.88%. The score on the Yellow River-related history book aspect is then slightly lower than the travel aspect. In 2018, the score for books was only 63.21, in 2021, the score increased by 16.04% to 73.35. In the subsequent projections, the scores obtained were 80.66, 83.52 and 85.86, with an increase of 27.61%, 32.13% and 35.83% compared to 2018. This indicates that the development of historical books of the Yellow River is steadily progressing. In the area of transportation within the Yellow River basin, the score was 65.37 in 2018, rising to 75 in 2021. In the predicted years 2023 to 2025, the scores are 81.15, 85.36, and 89.53, with an increase of 24.14%, 30.58%, and 36.96% compared to 2018. This indicates a significant increase in the development of historical and cultural resources in the Yellow River basin, related to travel, books and transportation.

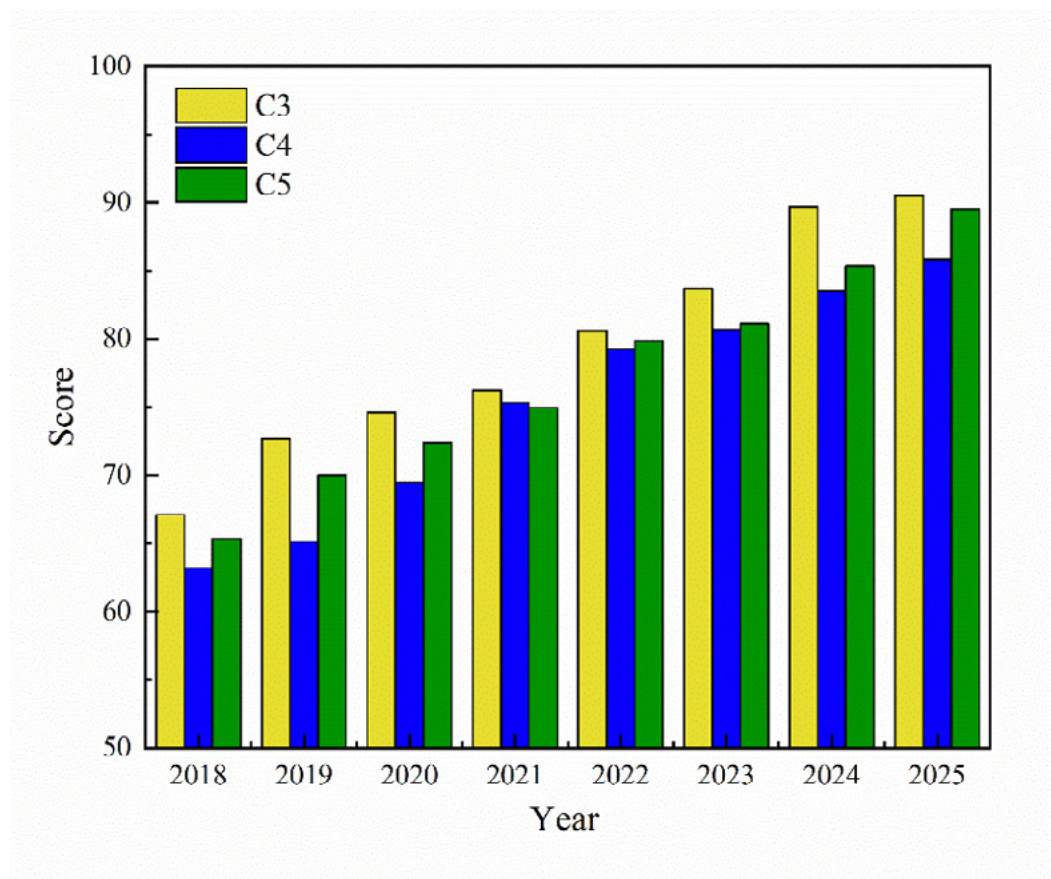


Figure 3. Trend and forecast of corresponding score changes in the development of historical and cultural resources in the Yellow River Basin

5. CONCLUSION

The Yellow River is the mother river of the Chinese nation, and the Yellow River culture rooted in the Yellow River basin is the most representative and influential main

culture in Chinese civilization. In our research, we have established a research system for the protection and development of historical and cultural resources in the Yellow River Basin, which mainly contains three aspects: ecological construction and historical and cultural resources protection in the Yellow River Basin, and historical and cultural resources development. And the following conclusions are drawn.

1. By analyzing the scores of C1 and C2 in the questionnaire, in 2018, the scores of ecological protection of the Yellow River Basin and intangible cultural protection related to the Yellow River Basin are 65.32 and 67.82 respectively. In 2021, the scores of ecological protection of the Yellow River Basin and intangible cultural protection related to the Yellow River Basin increased to 73.52 and 77.39 respectively. This indicates that China is paying more attention to the protection of historical and cultural resources while building ecological civilization.
2. This paper focuses on three aspects of travel on the Yellow River, related historical books, and transportation development within the Yellow River basin. In Yellow River travel, the score was 67.12 in 2018 and increased to 76.23 in 2021, an increase of 13.57%. In the development of historical and cultural resources of the Yellow River basin, the scores of related travel, books and transportation have improved significantly. Yellow River-related history books scored only 63.21 in 2018 for books and in 2021, the score increased by 16.04% to 73.35; in the field of transportation within the Yellow River basin, the score was 65.37 in 2018 and increased to 75 in 2021.
3. This paper predicts five aspects of the Yellow River Basin: ecological conservation, intangible cultural conservation related to the Yellow River Basin, travel on the Yellow River, related historical books and transportation development within the Yellow River Basin from 2023 to 2025, and the scores of the Yellow River Basin all increase significantly in the coming years. By 2025, the scores related to ecological conservation in the Yellow River Basin and intangible cultural conservation in the Yellow River Basin are predicted to increase by 30.46% and 32.41%. The scores for Yellow River travel, related history books and transportation development in the Yellow River basin are predicted to increase by 34.88%, 35.83% and 36.96%.

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