

Research on the Interactive Mechanism and Collaborative Development Path of Ecological Culture and Public Environmental Awareness in Anshan City

Yingli Dong, Xiaolin Zhu

School of Business Administration, University of Science and Technology Liaoning, Anshan
114051, China

Abstract

With the increasing attention to urban ecological culture and public environmental awareness, this paper takes Anshan City as the research object, based on the theory of knowledge, attitude, intention and behavior, using questionnaire survey and statistical analysis methods, explores the interaction mechanism and synergistic path between ecological culture and public environmental awareness in the background of old industrial cities. Further analysis shows that in terms of cultural cognition, the public only stay on the surface of Qianshan, Angang and other symbols, and have insufficient understanding of the deep connotation and daily association. In the process of behavior transformation, multiple factors such as inconvenient environmental protection facilities and lack of incentives cause the gap between knowledge and practice; At the communication level, short video platforms are the main platform but the content is shallow, and offline channels do not form coordination; The resource transformation mode is single and not embedded in daily micro-practices. In view of the dilemma, the study proposes four practical paths: deepening the cognitive connotation of ecological culture, building the dual drive of incentive and facilitation, promoting the dissemination of local stories, and activating the collaboration between communities and enterprises.

Keywords

Urban Ecological Culture; Public Environmental Awareness; Interactive Mechanism.

1. Introduction

China has actively yet prudently promoted the "dual carbon" work, vigorously promoted the energy revolution, promoted the green and low-carbon transformation and development of industries, advocated a green lifestyle, and promoted the comprehensive green transformation of economic and social development. In June 2025, the Ministry of Ecology and Environment, the Ministry of Culture and Tourism, the Chinese Literature Federation and the Chinese Writers Association jointly issued the Guiding Opinions on Further Strengthening the Construction of Ecological Culture, which made comprehensive and systematic deployment of the construction of ecological culture and defined the objectives, directions and key tasks of the construction of ecological culture. It provides an action plan and path guidance for comprehensively promoting the construction of ecological culture in the new era and new journey. During the 15th Five Year Plan period, we will guide the work of pollution control and ecological protection in the next five years, and continue to promote the construction of ecological civilization. By holding environmental protection activities and popularizing ecological knowledge, Anshan city has made the concept of ecological civilization deeply rooted in people's hearts, and the public's awareness and participation in environmental protection have been significantly improved. This organic combination of ecological culture and public awareness not only provides a strong

driving force for the green development of the city, but also promotes the harmonious coexistence between man and nature. The coordinated development of urban ecological construction and public awareness has created Anshan's double background of "industry + ecology" and become an important support for the sustainable development of Anshan City[1].

2. Related Concepts and Theories

Ecological culture was introduced into China in the 1980s. It was first mentioned by scholar Mouchang Yu in his book *Ecological Culture Is a New Culture*, and he believed that ecological culture is a state of sustainable use of ecological system and resources. City is the core carrier of human civilization, and ecological culture is an important embodiment of urban culture[2]. Environmental awareness originates from the concept of environmental literacy first proposed by Roth, an American scholar, in 1968. It is an important part of civic values and civic quality. It refers to the degree to which people are aware of environmental problems and support the solution of these problems, or people make personal efforts to solve these problems [3][4].

This paper is based on the theory of knowledge, attitude, intention and behavior, which is a general summary of the process of mental activities in the field of modern psychology and education, emphasizing the transformation process from cognition, emotion, will to behavior [5][6]. This paper will carry out an empirical analysis of public environmental awareness in Anshan City from four dimensions: cognitive dimension, emotional attitude dimension, behavioral intention and environmental protection behavior. The cognitive dimension focuses on the public's understanding of Anshan's local ecological problems and ecological cultural connotation. The emotional attitude dimension focuses on the public's value identification of environmental protection and the emotional connection with local ecological culture. The behavioral intention dimension focuses on the intensity of the public's willingness to participate in environmental protection practices and disseminate ecological culture. The environmental protection behavior dimension is based on the actual performance of the public's daily environmental protection actions and ecological and cultural activities[7][8][9].

3. Basic Research Information

This article focuses on the interactive mechanism and collaborative development path between Anshan's ecological culture and public environmental awareness. It adopts a questionnaire survey method, with questions designed on demographics, urban ecological culture, public environmental awareness, and the integration of ecological culture and public environmental awareness. A total of 304 questionnaires were collected. Based on the research and data analysis of Anshan's ecological resource endowment, industrial transformation background, and current status of public environmental awareness, behavioral transformation faces multiple practical obstacles such as facilities and incentives.

3.1. Current Status of Ecological Culture Construction in Anshan City

In the survey questionnaire, regarding the public impression of Anshan's ecological culture, from the most to the least, the scenic spots such as Qianshan and Yufo Yuan, the ecological transformation of industrial relics such as Ansteel Industrial Heritage Park and Mengtai Park, and the environmental protection publicity in the establishment activities of "civilized city". Regarding the channels through which the public learns about ecological cultural information, the largest number of people learn about it through short video platforms such as Tiktok and Kwai, while the number of people who learn about it through community bulletin boards/notices and daily conversations with family, friends, and neighbors is relatively small. The most distinctive and worthy of inheritance and promotion in Anshan's ecological culture are the traditional "unity of man and nature" ideology embodied in natural resources such as

Qianshan, and the modern governance culture embodied in the systematic ecological restoration projects led by the government.

3.2. Current Status of Public Environmental Awareness in Anshan City

In the cognitive dimension, the Anshan public presents the characteristics of fragmentation and shallowness. In the emotional attitude dimension, most of them showed positive attitudes, but the Anshan public was more sensitive to paying higher fees for environmental protection products or services. In terms of behavioral intentions and practical actions, the public showed positive behaviors that are easy to achieve, but low acceptance of investment in installing home solar PV panels, probably due to low acceptance of new low-carbon technologies, and consideration of costs.

3.3. Interactive Relationship between Ecological Culture and Public Environmental Awareness

3.3.1. Reliability and Validity Analysis

The reliability and validity of the scale items in the ecological culture and residents' public awareness items in the questionnaire were tested. Cronbach's α coefficient of the scale of ecological culture familiarity, participation in ecological culture activities, cognitive dimension of public awareness, emotional attitude dimension and behavioral intention to environmental protection behavior was above 0.8. The overall Cronbach's α coefficient is 0.93, indicating that the scale has good internal consistency[10]. The KMO value of the scale items in this paper is between 0.78 and 0.88, indicating good validity, and the scale can be used for the following tests[11].

Table 1. Reliability and validity of the scale

Variable	number of terms	Cronbach's α coefficient	KMO value	Cronbach's alpha coefficient(overall)	KMO value (overall)
Familiarity with ecological culture	4	0.88	0.80	0.93	0.88
Participate in ecological and cultural activities	5	0.90	0.85		
Cognitive dimension	5	0.91	0.88		
Emotional attitude dimension	5	0.81	0.83		
Behavioral intention	5	0.86	0.86		
Environmental behavior	4	0.79	0.78		

3.3.2. Correlation Analysis

Table 2. Correlation Analysis

Variable	Familiarity with ecological culture	Participate in ecological and cultural activities	Cognitive dimension	Emotional attitude dimension	Behavioral intention	Environmental behavior
Familiarity with ecological culture	1					
Participate in ecological and cultural activities	0.83**	1				
Cognitive dimension	0.84**	0.87**	1			
Emotional attitude dimension	0.58**	0.59**	0.63**	1		
Behavioral intention	0.62**	0.71**	0.74**	0.73**	1	
Environmental behavior	0.63**	0.65**	0.70**	0.73**	0.68**	1

Note: * * indicates $p < 0.01$, significantly correlated at the 1% level

Based on the above analysis, the questionnaire has reliability and internal consistency, and the correlation analysis shows that the familiarity with ecological culture, participation in ecological culture activities, the cognitive dimension of public awareness, the emotional attitude dimension, behavioral intention and environmental protection behavior are positively correlated, with a positive synergistic effect.

3.3.3. Preliminary Judgment on the Interaction Mechanism between Ecological Culture and Public Awareness

This paper conducts research based on the theory of knowledge, attitude, intention and behavior. Ecological culture consolidates the "knowledge" of public environmental awareness by transmitting local ecological knowledge and shaping cognitive values of ecological culture; deepens the "emotion" of public environmental awareness by strengthening emotional identification with industrial ecological transformation and natural landscapes; promotes the "intention" of public continuous participation by providing practical scenarios and group atmosphere; ultimately facilitates the transformation from cognition to participation in ecological cultural activities and actual environmental protection behaviors. At the same time, it also nurtures the dissemination and development of ecological culture through public environmental protection behaviors, thus fully presenting the interactive mechanism between the two.

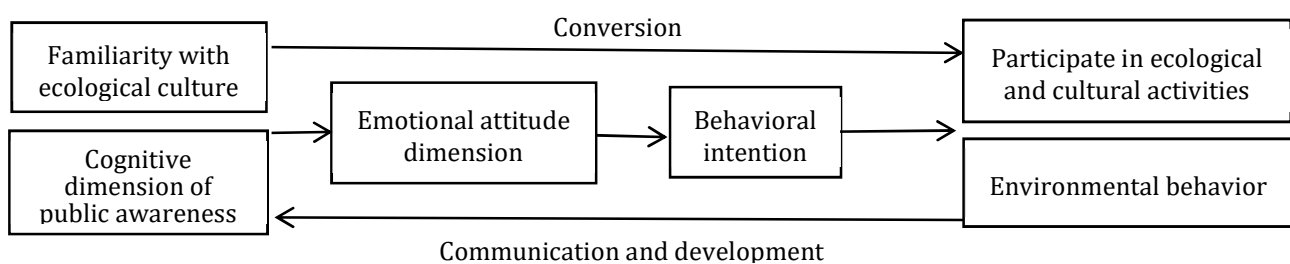


Figure 1. Interactive mechanism between ecological culture and public awareness

3.3.4. Structural Equation Modeling

Table 3. Path coefficients of structural equation modeling

Path relationship			Standardization coefficient	Standard error	t	P	Significance
Participate in ecological and cultural activities	<---	Familiarity with ecological culture	0.38	0.11	2.28	0.02	√
Participate in ecological and cultural activities	<---	Cognitive dimension	0.50	0.15	2.64	0.01	√
Participate in ecological and cultural activities	<---	Emotional attitude dimension	-0.19	0.12	-2.28	0.02	√
Participate in ecological and cultural activities	<---	Behavioral intention	0.31	0.12	2.63	0.01	√
Environmental behavior	<---	Behavioral intention	-0.27	0.18	-1.24	0.22	×
Environmental behavior	<---	Emotional attitude dimension	0.72	0.19	4.75	0.00	√
Environmental behavior	<---	Cognitive dimension	0.86	0.22	2.58	0.01	√
Environmental behavior	<---	Familiarity with ecological culture	-0.35	0.16	-1.35	0.18	×

Based on the preliminary judgment of the interactive mechanism between ecological culture and public awareness in Anshan City, Make the assumption that the familiarity of ecological culture, the cognitive dimension of public awareness, the emotional attitude dimension and the behavioral intention have an impact on the participation in ecological environmental protection activities and environmental protection behaviors, and then build a structural equation model to verify whether the assumption is true[12]. According to the path coefficients of the structural equation model, familiarity with ecological culture, public awareness, cognitive dimension, emotional attitude dimension and behavioral intention all have a significant impact on participation in ecological environmental protection activities and environmental behaviors. In addition, the emotional attitude dimension and the public awareness and cognition dimension have a significantly positive impact on environmental protection behavior, but the effect of behavioral intention and the familiarity with ecological culture on environmental protection behavior is not significant, which may be due to the gap between intention and behavior, and the public's familiarity with ecological culture cannot directly affect their environmental protection behavior.

4. Main Problems

4.1. Lack of In-depth Interpretation and Daily Relevance of Ecological Culture

As the public's first impression of Anshan's ecological culture is mainly formed by a few iconic symbols such as Qianshan and the industrial sites of Ansteel, it can be seen that the existing core resources have a high reputation. However, the public's cognition of them tends to be fragmented and superficial. Most citizens only understand the symbols from the perspective of tourism and sightseeing, and know very little about the connotation of industrial civilization transformation, local traditional ecological wisdom, and systematic environmental governance that these symbols represent.

From the survey results, it is evident that citizens generally lack basic understanding of ecological symbols directly related to their daily living environment, such as the governance stories of urban rivers like Yangliu River and the ecological implications of city trees and flowers. This indicates that the connotation of ecological culture has not been naturally integrated into citizens' daily perception system, and the foundation of cultural identity is still weak. Echoing this, public participation is mostly limited to sightseeing and visiting, with low participation rates in activities that require active action, such as garbage classification and tree planting and adoption. There is also a lack of clear willingness to purchase new energy vehicles and invest in household photovoltaic panels. Therefore, there is indeed a disconnect between ecological culture construction and public daily actions.

4.2. Public Environmental Protection Behavior Faces Multiple Practical Constraints

Based on existing research data, it is clear that the public in Anshan has a positive emotional attachment towards environmental protection and generally accepts the idea that individuals should take responsibility for environmental protection. However, their understanding of environmental protection is marked by fragmentation and superficiality. Most citizens lack sufficient knowledge about the specific standards for garbage classification, the prominent environmental issues in Anshan, and the relevant governance progress. Consequently, environmental protection behavior itself is prone to deviation and difficult to sustain. More importantly, there are various practical obstacles between intention and action.

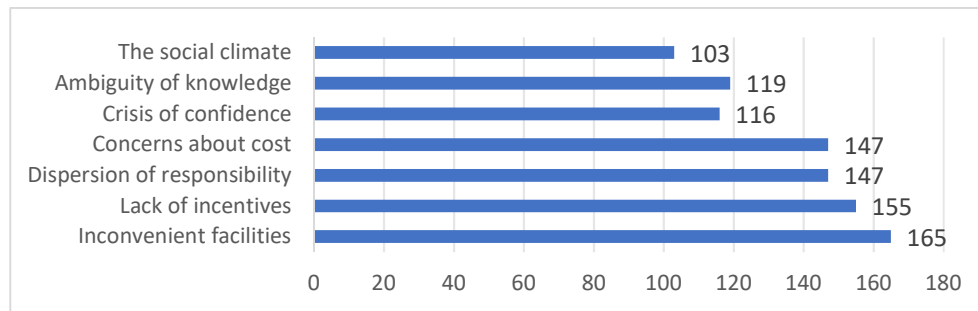


Figure 2. Main Factors Hindering the Transformation of Behaviors

The questionnaire data clearly reveals the main factors hindering behavioral transformation. Ranked by the number of respondents, these factors are: insufficient or inconvenient environmental protection facilities, lack of effective economic or spiritual incentives, the belief that responsibility lies with the government and enterprises rather than individuals, and concerns that the behavior will increase economic or time costs. Additionally, lack of trust in governance effectiveness, vague relevant knowledge, and social pressure brought about by conformity also constitute important constraints. These obstacles are intertwined, making it easy for even environmentally conscious citizens to show a significant decline in willingness when practicing environmental behaviors that require high costs, technical thresholds, or long-term persistence.

4.3. Insufficient Matching between Media Communication Channels and Content

New media platforms, especially short video platforms such as Tiktok and Kwai, have become the primary channel for the public to obtain information about Anshan's ecological culture. This reflects positive changes in the dissemination of ecological culture, but the matching degree between the content and the characteristics of new media channels needs to be improved.

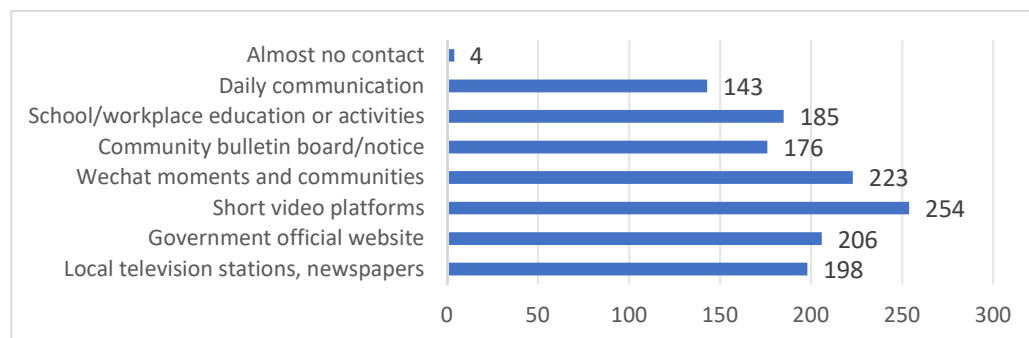


Figure 3. Channels for the Public in Anshan to Acquire Information about Ecological Culture

Due to the current content of ecological culture communication mostly stays at the level of simple display of landscape pictures and slogan publicity, the excavation of the complex process of Anshan from an industrial city to an ecological city and the local vivid story is very weak, so the online traffic is not naturally and fully transformed into the public's practical understanding and emotional identity of ecological culture. The offline close communication channels such as community billboards and neighborhood exchanges have not formed a real and effective collaborative linkage with online communication, so the ecological and cultural information lost its due influence when it reached the "last kilometer" of public life.

4.4. Cultural Resources Are Not Effectively Embedded in the Daily Life of the Public

Anshan has unique ecological and cultural resources integrating industrial heritage and natural landscape, but its value transformation is currently more concentrated in the construction of scenic spots and parks for visitors. How to translate these grand cultural themes into micro practices that citizens can easily participate in, feel and get timely feedback in daily scenarios such as community, family and commuting is the key challenge facing us. In the questionnaire survey, the public's enthusiasm for substantive environmental protection practice activities is not high. Part of the reason is that the existing activity design is not closely related to individual life, and the lack of a sustained and attractive incentive mechanism, which makes the public feel that their micro actions have little to do with the city's macro ecological and cultural construction, so that the participation is low and fails to form a benign diffusion effect.

5. Countermeasures and Suggestions

This chapter combs the ideas to solve the problem. First of all, in the aspect of deepening ecological cognition, we should take the initiative to transform the value of cultural symbols into ecological cognition, and take the Angang industrial site and Qianshan Scenic Spot as the carrier to systematically tap the ecological transformation story and environmental governance data behind it, thus naturally leading to the integration of industrial civilization and ecological civilization. Secondly, in the aspect of promoting behavior transformation, design a support system that pays equal attention to incentives and convenience, promote the standardization of waste classification facilities in the way of community pilot, and promote the simple green behavior points exchange mechanism. Third, in the aspect of improving communication efficiency, we should encourage the creation of content reflecting the environmental protection practice of ordinary people in Anshan, so that the community publicity column truly plays the dual role of information publicity and value transmission, and online emotional resonance and offline action call promote each other. Fourth, in the construction of the participation network, it focuses on activating the grassroots self-government capacity and enhancing the transparency of environmental governance.

Due to the clear understanding of the problems encountered in the collaborative development of ecological and cultural construction and public environmental awareness in Anshan City, and to achieve the effective transformation from cognition to action, this paper proposes countermeasures and suggestions based on reality, focusing on effectiveness and step-by-step implementation.

5.1. Deepening the Cognitive Connotation of Ecological Culture

Because the public's cognition of Anshan ecological culture focuses on Qianshan, Angang and other surface symbols, to solve this problem, we should start from the characteristics of Anshan industrial city transformation and the daily life scenes of the citizens, and deepen the interpretation of cultural connotation and practice.

On the one hand, with the creation of ecological and cultural core IP and brand activities as the starting point, the three resources of Angang Steel, the Environmental Protection Bureau and the cultural and Tourism Bureau are organically linked. With the real transformation cases of Angang Steel wastewater recycling and mine reclamation as the carrier, the old workers and environmental protection engineers are invited to tell the story of technical research and environmental management on site, and never use the way of simple landscape display. Qianshan tourist center is equipped with ecological symbol interpretation wall, supporting links to produce excellent short audio or video, and the content is not empty preaching, but in the form of scanning code to listen to the story to connect the ecological meaning of city trees

and city flowers, Yangliu River governance data, and civil life three, and compare the changes of residents' living environment before and after the governance.

On the other hand, the ecological culture is integrated into the daily scenes of the citizens, and the governance story trail is built along the Bank of Yangliu river. The water quality data of each year and the specific cases of citizens participating in the governance are displayed in the form of time cards, so that the citizens can understand the relationship between ecological changes and themselves. In the interpretation of Qianshan Scenic Spot, it describes its function as an urban ecological barrier and the specific measures to protect rare species. The story and science are integrated, and the static landscape becomes an ecological textbook that can be read and understood. The Municipal Education Bureau can organize local teachers and relevant experts, based on relevant materials, to prepare Anshan ecological and cultural local readings suitable for primary and secondary school students, as extracurricular auxiliary textbooks, and subtly implant local ecological knowledge in young people's minds.

5.2. Take Measures to Address the Knowledge Practice Gap

The core of promoting the transformation of public environmental protection behavior is to directly respond to the specific obstacles in the action. The primary task is to focus on the prominent problem of inconvenient garbage classification facilities, led by the city's urban management department, and carry out standardized transformation pilot projects in a number of typical communities. The transformation needs to be based on the actual living habits of residents, reasonable layout of points, ensure that the signs are clear, and supporting facilities for the convenience of the people, establish and strictly implement the open schedule of clearing and transportation, so as to ensure the effectiveness of residents' participation with the reliability of management.

Secondly, because the lack of incentives is a common problem, it is advisable to first adopt flexible community incentives, and implement a concise and feasible green behavior record and exchange mechanism in the pilot community, that is, the community confirms and records residents' garbage classification, resource recovery and other behaviors. The accumulated records can be exchanged for small discounts or actual goods in the local small businesses signed with the community, so as to give community residents, especially the middle-aged and elderly groups clear and positive feedback, and effectively mobilize their participation enthusiasm. After the environmental protection behavior incentive is mature, a larger regional pilot can be carried out to gradually promote the formation of a social atmosphere of national environmental protection.

In view of the safety anxiety that the non motor vehicle lane is occupied in green travel, the traffic police detachment of the Municipal Public Security Bureau should include it in the key law enforcement category, through the combination of technical monitoring and normal patrol, strictly correct the illegal occupation, and publicize typical cases, so as to implement the protection of non motor vehicle road rights and eliminate the public's safety concerns. By improving the system of public environmental protection supervisors, recruiting and training local citizens to supervise the operation of enterprise sewage and environmental protection facilities, the supervisors can upload evidence through small procedures and feed back the processing results to the Environmental Protection Bureau. At the same time, they will give points to those who have achieved remarkable results in supervision, so that the citizens can realize that they are not only environmental protection beneficiaries, but also participants, and break the single recognition of responsibility in the government and enterprises.

5.3. Improve the Efficiency of Ecological Culture Communication

From propaganda thinking to communication thinking, to build emotional connection with localized and story based content. Therefore, the root cause of the low efficiency of new media

communication is the shallow content, and the offline channels are not coordinated. Therefore, the first thing to do is to use Anshan local stories to effectively improve the communication effectiveness. Online communication should jump out of the error of simple landscape display, build Anshan ecological story content matrix in a planned way on the short video platform, focus on mining the story of the characters in the industrial transformation, and present it in the form of video, never replace the narrative content with landscape pictures. At the same time, the Anshan ecological memory collection activity was launched, and the citizens were invited to record the changes of the environment at the door of their home in the way of photography and short videos, so that the citizens could really become the main body of communication and avoid the one-way publicity of the government.

Offline communication needs to be complementary with online communication, rather than independent. Display excellent works contributed by citizens on the community bulletin board, rather than repeating online content. Each subdistrict community needs to regulate the use of the billboard, set up a fixed community ecological information plate, use the neighborhood communication scene, set up a story sharing link in the community environmental protection activities, let the participating citizens tell their environmental protection experience, and then through online platform clips, form a closed-loop of offline experience to online diffusion. At the same time, ecological and cultural festivals and environmental protection fairs are regularly held in the Industrial Heritage Park, local enterprises are invited to show environmental protection products, and citizens participate in the transformation of old things, the recycling and recycling of old things. The content of the activity is live broadcast through the short video platform, attracting the attention of the citizens who are not present, and converting online traffic into actual participation willingness.

5.4. Activate the Intrinsic Motivation of Communities and Enterprises

The key to building a regular participation network is to stimulate grassroots autonomy and promote enterprise environmental information disclosure. The municipal civil affairs department can include the cultivation of environmental protection volunteer teams and the development of environmental protection micro-practical projects into the main indicators of community selection, encourage each community to set up environmental protection volunteer groups spontaneously organized by residents, and the subdistrict office or community committee can provide support in various ways such as small activity subsidies and linking social resources. Let the team independently plan a variety of small and micro projects such as corridor landscaping, corner garden co-construction and environmental protection knowledge sharing. More importantly, the government should act as a supporter, so that residents can get a sense of subjectivity and achievement when solving small environmental problems around them.

At the enterprise level, the city's ecological environment bureau should institutionalize the requirements of key emission units, especially large state-owned enterprises such as Angang Steel, to regularly issue concise and easy to understand environmental information report summaries to the society. The report should include key information such as pollutant discharge up to standard and the operation effect of environmental protection facilities. The release form should be active and diverse, not only through the official website, but also through the establishment of information bulletins in the surrounding communities of the plant, and regularly held open day activities of environmental protection facilities for residents and media. Organize the citizens' representatives to visit the pollution control facilities in an orderly manner, and the enterprise technicians explain the operation principle and emission reduction effect on site. This active and transparent communication is a pragmatic way to break information barriers, enhance social understanding and build an environmental governance community.

Because it is a long-term and systematic work to promote the deep integration of Anshan ecological culture and public environmental awareness, the government function should change from the leading construction to the guiding service, and then solve the specific problems, mobilize the main body of all parties, and achieve practical results in various ways. The ecological value should be implemented from the concept recognition to the action habit in a hierarchical and planned way, and from the policy requirements to the social fashion.

Acknowledgments

The major research project of Philosophy and Social Science in Anshan City in 2025: Research on the interactive mechanism and collaborative development path of ecological culture and public environmental awareness in Anshan City(Project No. : as20251015)stage research results.

References

- [1] Four departments including the Ministry of Ecology and Environment: Promote green office and large-scale carbon neutrality activities, and incorporate the concept of green production into the scope of corporate culture construction. *Resource Regeneration*, 2025 (05): 34-37.
- [2] Mouchang Yu. Ecological culture is a new culture. *Changbai Journal*, 2005 (1): 99-104.
- [3] Dunlap, R. E. , Jones, R. E.. Environmental concern: Conceptual and measurement issues. *Handbook of environmental sociology*, 2002,3(6), 482-524.
- [4] Chengmei Qiu, Jian Su, Lijuan Zhou. Changes in Public Environmental Awareness and Influencing Factors in China: An Empirical Study Based on CSS2013 and CSS2019 [J]. *Resources and Environment in Arid Regions*, 2023, 37 (05): 37-44.
- [5] Yuanyuan Fu. Research on the Cultivation of Moral Ability of Adolescents in the New Era [D]. Hebei Normal University, 2011.
- [6] Jingzhe Zhao. Driving factors and empirical research on carbon emissions from urban consumer food consumption [D]. University of Science and Technology Liaoning, 2024.
- [7] Arundati, Rahajeng, H. Tri Sutiono, and I. Agus Suryono. Effect of ecological awareness, personal norms and ecological attitude to conservation behavior. *Proceedings on Engineering Sciences*, 1951, 2.2 : 187-196.
- [8] Jaska, Ewa. Ecological awareness of the society and sustainable development. *Roczniki Naukowe Stowarzyszenia Ekonomistów Rolnictwa i Agrobiznesu*, 2009,11.6.
- [9] Tang, Wang, and Mohamed Azman. Enhancing environmental awareness through public awareness programs. *Journal of Energy and Environmental Policy Options*. 2009, 7.2 : 10-16.
- [10] Cronbach, L. J. .Coefficient alpha and the internal structure of tests. *Psychometrika*, 1951, 16(3), 297-334.
- [11] Wuyi Zeng, Bingyi Huang. Reliability and validity analysis of survey questionnaires [J]. *Forum on Statistics and Information*, 2005, (06):13-17.
- [12] Shibo Xin, Yan Chen, Chen Zhang. A review of the application research results of structural equation modeling theory [J]. *Industrial Technology and Economics*, 2014, 33 (05): 61-71.