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Public perceptions of challenges facing inclusive governance of hot spring landscapes in China

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Recognizing the ecological and cultural significance of hot springs, the Chinese government has adopted protective legislation. However, these measures are being undermined by local governments' failure to adopt Inclusive Landscape Governance (ILG). Therefore, this research aims to provide an understanding of public views on the challenges facing the implementation of inclusive governance for the protection and management of hot spring landscapes in Linyi City, China. Inclusive governance requires the participation of multiple public stakeholders—including residents, local business owners, and tourists—in decision-making processes. This qualitative study employed semi-structured interviews to gather insights from public stakeholders in Linyi City, China. A coding process was used to analyze the interviews, and the data were examined to identify challenges to inclusive governance. The analysis revealed eight challenges: lack of shared responsibility, ineffective planning and management, complex relationships and trust, knowledge variability and limited awareness, differing levels of interest and need, policy deficiencies, development concerns, and limited public participation. By identifying these challenges, this research contributes to the development of more effective strategies for inclusive governance, ultimately promoting the sustainable management of hot springs.

KEYWORDS

inclusive governance, landscape governance, landscape protection, public interview, public stakeholders, public communication, nature challenges

1 Introduction

Inclusive Landscape Governance (ILG) encompasses a set of policies, regulations, and decision-making processes within both the public and institutional spheres that shape landscape management (De Graaf et al., 2017). Kusters et al. (2020) emphasize that ILG constitutes a fundamental process through which ecosystem conservation is ensured within multi-functional landscapes. Landscapes are often sites of overlapping land claims and conflicting interests (Wang and Lin, 2021). This makes inclusive governance particularly challenging, especially in multifunctional landscapes where green features and water resources coexist (Kozar et al., 2014). ILG entails a form of public governance in which all stakeholders have the opportunity to participate in and influence governance structures and decision-making processes. This framework aims to facilitate the equitable sharing of policy outcomes, governance benefits, and social resources, while preserving the rights and

interests of all stakeholders (Scott, 2011). ILG therefore involves developing and implementing institutional decision-making procedures grounded in core societal values, fostering collaboration among diverse stakeholders to pursue their sometimes divergent interests in collectively promoting sustainable landscapes (De Graaf et al., 2017).

The concept of ILG holds significant intrinsic value. Inclusive decision-making processes, in principle, give individuals a voice and the fundamental freedoms needed to achieve their goals and pursue solutions (Menocal, 2020). Participating in and influencing one's own development through transparent, non-discriminatory processes, expressing oneself without fear and speaking out against perceived injustices are essential actions that demonstrate the value of ILG (Stiglitz et al., 2009). Its essence lies in engaging all societal groups, including marginalized minorities, to ensure that the needs of all parties are met and their rights are respected (De Graaf et al., 2017). Through the rights and freedoms conferred by inclusive processes, such as open participation in decision-making, citizens can expect inclusive, participatory, and representative decision-making (Menocal, 2017). In this way, ILG can strengthen social cohesion by establishing the foundations of shared identities and values (Menocal, 2020). Some stakeholders view ILG as an intrinsically valuable end, while others take a pragmatic approach, viewing it as a means to achieving more inclusive development outcomes (Menocal, 2017). Achieving inclusive decision-making in landscape management goes hand in hand with integrated landscape management, both of which work together to support the overall goals of sustainable development (Kusters et al., 2020).

The inclusive theory of ILG can be effectively linked to public participation and landscape design processes by integrating diverse stakeholder perspectives and using participatory tools to improve decision-making and governance outcomes (Ros-Tonen et al., 2021). ILG emphasizes the importance of incorporating multiple and effective knowledge systems to articulate public demands, integrate diverse interests, and legitimize the voices of marginalized groups, thereby ensuring equitable and sustainable landscape management processes (Best et al., 2021; Bremer et al., 2016). The ILG approach also highlights the role of sensing and interpreting public preferences, supports bottom-up policy and rule-making, and advocates for integrating sensory experiences into decision-making processes (Clark et al., 2025). Additionally, it underscores the importance of co-design frameworks that connect ILG levels via collaboration among various actors to achieve meaningful and sustainable landscape design (Cruz et al., 2023). Overall, the inclusive theory of ILG offers a comprehensive framework for weaving public participation into landscape design processes, ensuring that stakeholders' diverse values and knowledge systems are acknowledged and integrated into sustainable landscape management practices (Figure 1).

1.1 Characteristics of inclusive landscape governance through public participation

ILG focuses on and prioritizes public participation, with the goal of ensuring that public perspectives are considered in decision-making processes to achieve decisions that benefit the public interest

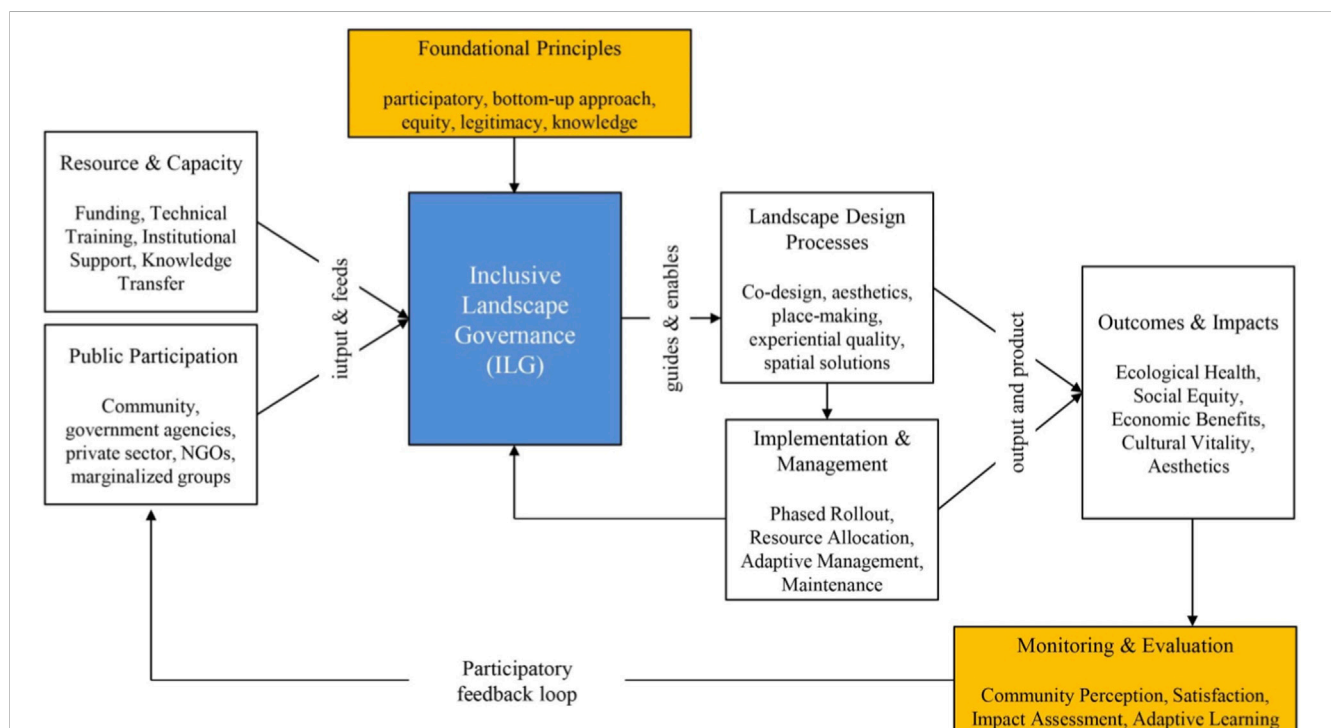


FIGURE 1
A diagram illustrating the relationship between ILG, public participation, and landscape design processes.

(Calderon and Butler, 2020). Inclusive governance requires engaging the public in governance processes in ways that enable them to understand and participate in relevant decision-making processes (Menocal, 2020). Young (2000), in her work *Inclusion and Democracy*, argued that under government leadership, individuals express their demands through dialogue, consultation, negotiation, and collaboration, participating in the governance process to achieve shared social governance. However, decisions that shape the future of landscapes often favor the most powerful decision-makers, which can produce outcomes that are harmful to the public (Ros-Tonen et al., 2018; Ros-Tonen et al., 2021). Decision-making processes must therefore be structured and implemented to ensure fair and meaningful contributions from all sectors of the public, including marginalized and vulnerable groups, who can influence decisions made by both public and private actors regarding landscape use and management (Kusters et al., 2020).

ILG emphasizes public participation in decision-making, following the logic of “dialogue—collaboration—consensus—decision” (Carlsson and Berkes, 2005). It requires public buy-in, democratic decision-making in public affairs, and participation in decision-making processes (Best et al., 2021; Bremer et al., 2016). Furthermore, it requires transparency and accountability to ensure that decision-making representatives can be held accountable for the resources, processes, and outcomes entrusted to them (Kusters et al., 2018). It also relies on a culture of dialogue and collaborative decision-making within the framework of ILG, based on trust and interdependence between the public and decision-makers (Arts et al., 2017). Meaningful dialogue and collaboration on immediate objectives is expected to foster the trust needed to achieve more ambitious goals (Siangulube et al., 2023). Based on this foundation, a culture of dialogue and collaboration is expected to foster collective action for participation and the consensus-building necessary for decision-making to address complex landscape challenges (Bailey and Buck, 2016).

ILG through public participation is a model that ensures the equitable distribution of development benefits, promotes stable social performance, and supports inclusive social development (Eizagirre et al., 2017). In managing landscapes that provide multiple benefits, inclusive governance is fully compatible with sustainable decision-making. This approach highlights the importance of balancing the capture of these benefits with the protection of the ecological health of the landscape (Kusters et al., 2020). Effectively protecting stakeholder rights and interests requires carefully examining both the underlying principles of sustainability and their significance. This examination should include the development and implementation of policies and regulations that explicitly promote sustainable practices. Collins et al. (2020) emphasized the critical role of adapting benefit-sharing mechanisms to improve inclusiveness and overall effectiveness. This underscores the need to ensure that the public receives a share of the benefits, thus establishing the foundation for long-term success. Ultimately, scholars agree on the characteristics of landscape management in inclusive governance through public participation: multi-party public engagement, public participation in decision-making and public benefit sharing (Guimarães et al., 2016).

1.2 Factors influencing inclusive landscape governance through public participation

ILG requires careful consideration of the various factors influencing stakeholder participation and decision-making. Expanding the scope of stakeholder factors can be beneficial in this context (Sharpe et al., 2021). However, it is essential to consider the factors influencing public participation in landscape conservation, given their significant impact on decision-making processes and the implementation of subsequent conservation initiatives (Hölting et al., 2020). Therefore, it is essential to understand and acknowledge these factors when engaging the public and incorporating their perspectives into decision-making processes. Recognizing these factors enables decision-makers to navigate the complexities of public opinion more skillfully. This, in turn, promotes a more inclusive and streamlined approach to decision-making, ultimately leading to more effective outcomes (de Castro-Pardo et al., 2019).

These factors begin with the beliefs and values of the public, which significantly influence their attitudes and priorities in relation to landscape governance (Hölting et al., 2020; Sharpe et al., 2021). The interests and needs of the public may also lead to conflicts or collaborations in landscape governance. Understanding these diverse priorities—whether they lean toward economic development or conservation—is essential for finding common ground and facilitating compromise (Olander, 2007; Sharpe et al., 2021). Factors such as public knowledge and experience can also influence public perception and understanding of landscape issues. Promoting knowledge sharing and capacity-building initiatives can help bridge these gaps and contribute meaningfully to governance processes (Githiora-Murimi et al., 2022).

Furthermore, trust and relationships between the public and decision-makers are essential for effective and ILG. Trust fosters collaboration, communication, and shared understanding, leading to more collaborative and sustainable decision-making processes (De Vente et al., 2016; Reed et al., 2018). Moreover, power imbalances can distort decision-making processes and marginalize certain groups, undermining inclusivity. Efforts to address power imbalances and ensure equitable representation and participation are essential for promoting inclusive governance (de Castro-Pardo et al., 2019). Other influential factors, including legislation, regulatory frameworks, political directives, and prevailing societal norms, also play an important role in shaping public perception and behavior in the context of landscape governance (Githiora-Murimi et al., 2022; Sharpe et al., 2021). In conclusion, it is clear that numerous factors shape public perceptions of landscape conservation. These factors include value and belief systems, the identification of personal and collective interests and needs, the level of available knowledge and expertise, the degree of trust and established relationships, and the dynamics of power distribution (Li et al., 2024a; Li et al., 2024b).

1.3 Aim of the study

ILG is emerging as an appropriate landscape management strategy that involves developing and implementing institutionalized decision-making procedures based on core community values (Li et al., 2024a; Li et al., 2024b). ILG requires

public engagement in governance processes to enable the public to understand and participate in decision-making (Kusters et al., 2020). However, many decisions are still made without public participation, hindering the achievement of ILG. Furthermore, the complexities of achieving inclusive governance become particularly evident in landscapes characterized by multifunctional land use. This is particularly true in cases where green landscape elements and water resources coexist, such as hot spring landscapes. In such cases, it is essential to understand public perspectives on the factors hindering the achievement of inclusive governance. This research addresses a critical knowledge gap: the lack of understanding of specific barriers hindering the implementation of inclusive governance for hot spring landscape management in China. The aim of this study is to capture public views on the challenges facing the achievement of inclusive governance for the protection and management of hot spring landscapes in Linyi City, China.

2 Materials and methods

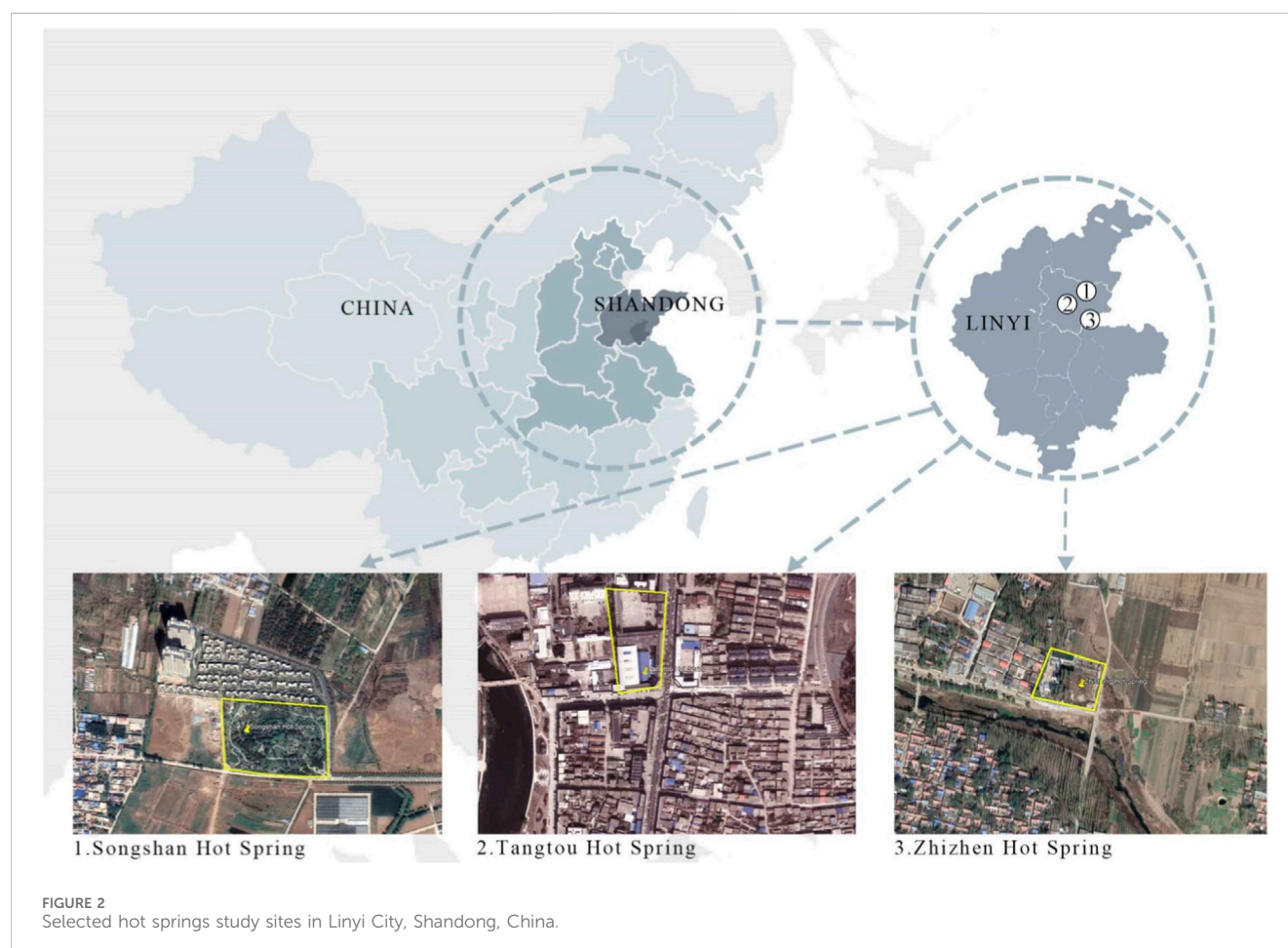
2.1 Study area

The scope of this study covers hot spring landscapes in China, focusing on Linyi City, the largest county-level city in southern

Shandong Province. In 2011, Linyi became the largest county-level city in Shandong in terms of both area and population. That same year, it was designated by China's Ministry of Land and Resources as the "Hot Springs City of China" (Li et al., 2024a). Linyi is renowned for its cultural heritage and natural scenery, owing to its location on the Yishu Fault Zone, which produces abundant hot spring water. This unique geological feature shapes the hot springs landscape and distinguishes Linyi City as a notable destination. Linyi is also recognized as a distinguished cultural and tourist destination in China. Characterized by an abundance of parks and hot springs, it has earned its status as one of the country's healthy cities. These attributes make Linyi City attractive to both tourists and investors, particularly those focusing on hot spring development. This study focuses on three of the city's many hot springs: Zhisheng, Songshan, and Tangtou Hot Springs (Figure 2).

2.2 Data collection

This study explores public perceptions of inclusive governance challenges in hot spring areas in China using semi-structured interviews. This method enabled the collection of data on multiple aspects of public opinions and individual experiences, allowing exploration of different dimensions of the subject at hand. Semi-structured interviews foster a less rigid, more



conversational atmosphere that may encourage participants to share more openly. They also allow for exploration of interviewees' inner thoughts and genuine opinions (Copeland, 2011). This method offers flexibility, allowing both the interviewer and the interviewee to share their honest opinions and feelings (Janssens et al., 2019). At the same time, it ensures a degree of standardization, as researchers typically use a semi-structured interview guide to ensure consistent coverage of key topics. Semi-structured interviews are well suited to capturing nuances, perspectives, and contextual factors that quantitative methods may overlook. They were therefore chosen for this study, as they combine specific questions with flexibility in responses (Li et al., 2024a). The interview process began in August 2023, with investigators interviewing public respondents located within a 1.5 km radius of the selected study sites. Respondents were contacted in person in the areas surrounding the selected case study sites and invited to participate, with the research objective and their right to anonymity explained. To mitigate potential interviewer bias, a standardized interview protocol was used, leading questions were avoided, and participants were encouraged to express their views freely. The interviews were conducted in Chinese, transcribed, and then translated into English. To ensure the reliability of the translation, the translated texts were reviewed and checked to reduce the possibility of misinterpretation.

Regarding sample sizes for public interviews, Dworkin (2012) suggests that 25–30 participants are sufficient to achieve saturation in qualitative research. Accordingly, 30 respondents were recruited to participate in the interviews on public perceptions of the impacts of limited inclusivity in hot spring landscape management. This sample size provided diverse viewpoints and supported thematic saturation. The sample included three demographic groups representing the local population: business owners (six participants, two per location), local residents (15 participants, five per location), and tourists (nine participants, three per location) visiting the study areas. Respondent demographics are presented in Table 1.

The interview was organized into two sections. The first covered demographic information such as age, education, and gender, while the second focused on factors influencing inclusive governance in the protection of hot spring landscapes. A set of questions was developed to explore the public's experiences with ongoing development and policies and their effects on daily life. Table 2 presents the questions directed to public respondents, categorized by factors related to ILG. In addition, Supplementary Material (Supplementary Table A1) shows the answers of the public users' interview.

2.3 Data analysis

This qualitative study used a coding process to analyze public interviews and identify challenges to the inclusive governance of hot spring landscapes in China. Qualitative coding helps researchers organize and condense data into smaller, more manageable units for analysis and interpretation. It also facilitates the discovery of underlying meanings, perspectives, and factors within the data (Deterding and Waters, 2021). Coding enhances the validity and reliability of qualitative research by providing a systematic and

transparent method of analysis, ensuring consistency in interpretation and reducing potential bias (Mohajan and Mohajan, 2022). This study uses qualitative coding to identify challenges hindering the implementation of inclusive governance in Chinese hot spring landscapes.

Qualitative coding was conducted using QualCoder 3.7 (<https://qualcoder.wordpress.com/page/2/>), a free, open-source Python-based program that helps code and analyze text and data. QualCoder is designed for qualitative data analysis. The process involved several steps: creating a new project and importing the interview data; coding by identifying sentences or themes related to challenges; grouping these into categories, each representing a challenge code; applying these challenge codes to highlight text segments that reflect challenges hindering the implementation of inclusive governance of hot spring landscapes in China; and finally exporting the results (including counts and reporting) to tables for interpretation. This structured process makes QualCoder a practical tool for thematic analysis, enabling systematic organization and interpretation of interviews.

3 Results

3.1 Interview results

In-depth individual interviews were conducted in Chinese with members of the public in Linyi to capture their views on the hot spring landscape. Each interview lasted approximately 1 h and was audio-recorded and transcribed for analysis. Researchers also documented initial impressions, recurring themes, and noteworthy comments. The transcripts were then coded into six predefined categories: values and beliefs, interests and needs, knowledge and expertise, trust and relationships, power dynamics, and other influences.

3.1.1 Public values and beliefs

The public strongly believes in the need to safeguard hot spring landscapes, emphasizing the importance of incorporating sustainable designs from the outset to avoid ineffective protective efforts. A common perspective is that the government and developers should take the lead in conservation measures, while public involvement and monitoring are seen as essential for success. From the public's standpoint, economic benefits for developers, political achievements for government officials, and community benefits for local residents justify shared responsibility. Environmental protection is recognized as a collective responsibility shared among the government, developers, and the local community. For example, ZR4 explained in his interview:

"In my opinion, everything natural must be protected. Therefore, hot springs need protection and development. When it comes to the protection of hot springs, the ultimate beneficiaries are human beings themselves. In order to determine who holds primary responsibility for the protection of hot springs, we must first analyze the main beneficiary. If we simply look at the economic beneficiaries, firstly, the developers themselves will be able to gain economic benefits; secondly, the government officials leading the

TABLE 1 Demographic characteristics of participants.

Category	Code	Age	Gender	Site	Subtotal	Total
Businesses/operators	ZB1	59	Male	Zhisheng hot spring	2	6
	ZB2	41	Male			
	SB1	39	Male	Songshan hot spring	2	
	SB2	46	Female			
	TB1	42	Male	Tangtou hot spring	2	
	TB2	40	Male			
Local communities/residents	ZR1	23	Female	Zhisheng hot spring	5	15
	ZR2	44	Male			
	ZR3	50	Male			
	ZR4	32	Male			
	ZR5	39	Female			
	SR1	33	Male	Songshan hot spring	5	
	SR2	40	Male			
	SR3	60	Male			
	SR4	45	Male			
	SR5	27	Female			
	TR1	27	Female	Tangtou hot spring	5	
	TR2	29	Male			
	TR3	55	Male			
	TR4	29	Female			
	TR5	52	Male			
Tourists	ZT1	29	Female	Zhisheng hot spring	3	9
	ZT2	35	Female			
	ZT3	39	Female			
	ST1	37	Male	Songshan hot spring	3	
	ST2	34	Female			
	ST3	60	Female			
	TT1	37	Female	Tangtou hot spring	3	
	TT2	33	Male			
	TT3	40	Male			

development of the hot springs will gain political achievements; and lastly, the residents around the hot springs will be able to gain benefits from the services provided to hot springs tourists. Therefore, the developers, the government, and the residents around the hot springs should be responsible for the protection of the hot springs.”

The public agrees that hot spring landscape development is necessary but requires effective government planning. The government is seen as a regulatory authority that assigns developers with both rights and responsibilities to protect and exploit hot spring landscapes. The public supports the issuance of government-level conservation policies to ensure sustainable use and maximize added value after development. While some members of the public call for large-scale development, they also emphasize the importance of systematic government-led conservation. Others express concerns about the impact of development, highlighting the potential negative consequences for local communities, job opportunities, and land issues. Ultimately, despite these concerns, many members of the participants perceived that hot spring landscape development offers more benefits than drawbacks. For example, TT1 explained in his interview:

TABLE 2 Public interview questions.

Factors	Questions
Values or beliefs	• Who do you believe is responsible for protecting natural hot spring landscapes?
	• Do you think hot spring landscapes should undergo development?
	• What do you perceive as the advantages and disadvantages of the current development of the hot spring landscape locations?
Interests and needs	• Is there a level of interest you have in participating in efforts to protect hot spring landscapes, be it through actions or discussions?
	• What makes it hard for local people to have a say in how the hot springs are protected and run?
	• In your opinion, what actions would be helpful to safeguard the hot springs for the future?
Knowledge and expertise	• Have you ever traveled to hot spring resorts?
	• Have you ever visited the source of hot springs?
	• Are you engaged in any activities related to hot spring landscapes?
	• Are you familiar with the development of hot springs in Tangtou, Songshan, and Zhisheng?
Trust and relationships	• Do you think the locals are afforded sufficient opportunities for broader public participation in protecting the hot spring landscape?
	• What are the problems that the locals face with regard to the development of natural hot spring landscapes?
Power dynamics	• How well do you think the current laws and regulations are working to protect and manage the hot springs?
	• How do you rate local authorities' management of hot spring landscapes?
Other influences	• In your opinion, what are the main things that could threaten the hot springs given their location in a city?
	• As development continues around the hot springs, what do you think the impact would be on the local community, the economic activity in the area, and the natural environment of the hot springs themselves?

“I think hot spring landscapes need protection, and protection should come from the government level by introducing guiding policies and regulations, etc. The developer is the one who implements the protection policies and regulations, with the community participating in monitoring developers.”

SR5 agreed, saying:

“As a local, I feel that the responsibility for protection mainly lies with the government and developers. I believe that developing part of the hot spring landscapes can allow more people to enjoy the hot springs after development. This approach can lead to more inclusive and systematic protection.”

In summary, public values and beliefs regarding the management of Linyi’s hot springs center on the shared responsibility held by the government, developers, and the public. The need for sustainable development, effective planning, and inclusive conservation measures is a recurring theme in public discourse on the barriers to achieving inclusive governance of hot spring landscapes in China.

3.1.2 Public interests and needs

Public interests and needs related to the hot spring landscape vary, reflecting the diversity of perspectives and roles within the community. Some individuals, particularly those focused on design, show limited interest in direct conservation activities, instead focusing on contributing their expertise to the planning of hot spring-related projects. ZB1 explained this in his interview:

“I do not have a significant interest in participating in hot spring landscape conservation activities. Since my main focus is on design, my role involves designing the architecture of the landscape and thoroughly exploring the cultural aspects associated with hot springs. However, if there were planning projects related to hot springs, I would be enthusiastic about participating.”

Others are more actively engaged in protecting the hot spring landscape, often through cultural tourism associations, and emphasize the importance of encouraging wider public participation in conservation efforts. Professionals in the hot spring sector also express a strong interest in conservation, viewing it as a potential opportunity for career advancement. They highlight the need to develop these activities into social endeavors, creating a sense of collective responsibility for preserving the hot spring landscape:

“I am involved in numerous activities to protect the hot spring landscape, particularly within the associations related to cultural tourism in this area. When it comes to protecting the hot spring landscape, it is important to find ways to promote it so that people can become more proactive in its preservation.” (ZB2)

Local residents, particularly those directly involved in developing hot spring landscapes, are showing growing interest in conservation activities. This interest reflects both their awareness of limited resources and their desire to expand community participation. They emphasize the importance of collective efforts in ensuring sustainable development. Some

residents express willingness to participate in conservation activities under government guidance but emphasize the need for stronger management, better coordination between departments, and stricter supervision of development projects to prevent uncontrolled development. However, there are divergent views, with some expressing a reluctance to participate in conservation activities; these participants argue that such matters should be left to experts and that the general public lacks the knowledge and authority to contribute effectively. ST3 explained:

“I am interested in participating in activities about protecting hot spring landscapes. However, in the current development status quo, efforts need to be strengthened in terms of management, with departments coordinating with each other. Furthermore, it is necessary to supervise and manage the development enterprises to prevent uncontrolled development.”

ZR1 argued that public involvement was not desirable, saying:

“I’m not interested, and I do not want to get involved. This kind of thing should be left to the experts who really know what they’re doing, not us ordinary people.”

In summary, public concerns and needs regarding the management of Linyi’s hot spring landscape range from active participation to disinterest, highlighting the importance of targeted education, coordinated efforts, engagement between the public and experts, and government guidance in raising management awareness.

3.1.3 Public knowledge and expertise

The public’s knowledge and experience with hot spring landscapes vary, reflecting different levels of familiarity with natural resources and hot spring development. Professionals in spa design and management demonstrate a high level of expertise, having visited numerous hot springs domestically and abroad while also having actively participated in events and projects related to hot spring landscapes. Some have contributed to the architectural design of hot spring resorts and show an integrated understanding of the cultural and natural dimensions of hot springs. Their experience encompasses the supervision of construction projects such as hot spring resort development, reflecting a practical understanding of the engineering considerations particular to hot spring landscapes. As ZB1 explained:

“I am the designer of a spa resort and have visited numerous spa resorts, exploring various hot springs in our region and beyond. I have personally visited the sources of hot springs in our area and many other places. Additionally, I have actively participated in annual events organized by hot spring resorts.”

Also, ZB3 explained this in his interview, saying:

“I am familiar with the hot spring landscape. I was engaged in engineering management in the development company of Guantang Hot Spring. Now I have come to the Songshan hot spring to participate in the construction work of the Songshan Hot Spring Resort.”

Some local residents understand the reasons behind the exploitation of hot springs and emphasize the importance of the natural landscape in attracting tourists. However, local residents and tourists hold differing views. Some are familiar with hot spring landscapes through their local upbringing, while others express skepticism about the landscape and its waters. The level of interest in participating in conservation activities also varies, with some expressing willingness to participate under the guidance of competent authorities. Although local residents have varying degrees of knowledge about hot springs, many hold insights into their historical development and cultural significance. As SR2 explained:

“I used to work as a leader in the village and am familiar with Songshan Hot Spring. I know well how the source water of the hot springs arises, and I have represented the village in participating in some activities related to the hot spring landscape in the past.”

ST3 showed limited knowledge about the origins of the hot springs, stating:

“I have traveled to hot spring resorts and enjoyed hot spring baths. However, most of these hot springs are artificially developed, and there are not many genuinely natural hot spring landscapes.”

In summary, public knowledge and experience regarding hot spring landscape management in Linyi City range from knowledgeable professionals to those with limited awareness, underscoring the need for targeted educational initiatives to support community participation in management efforts.

3.1.4 Public perspectives on trust and relationships

Public trust in and relationships with hot spring landscapes are multifaceted, shaped by the interactions between government agencies, developers, and local residents. The responsibility for conservation is seen as falling primarily on government agencies and developers, with limited opportunity for public engagement. The lack of opportunities for local residents to participate in hot spring landscape protection highlights a gap between the community and conservation efforts. ZB1 explained this in his interview:

“Essentially, the developers were granted complete responsibility and rights concerning the hot springs in Zhisheng, with the government primarily serving as a guide, in my understanding. Regarding public participation, I do not think there was any, and the opinions of local residents were not taken into account. Issues arose for local residents in their living arrangements, as some moved to live near the resort after spring water was diverted from the village to the resort.”

Calls for broader public engagement emphasize the need for collaboration among government, developers, and local residents. Widespread mistrust exists between local residents and developers, fueled by perceptions that developers prioritize land value over genuine development. Proposals to strengthen

relationships and trust include engaging all stakeholders, with emphasis placed on the responsibility of both government and developers. Public awareness and education are also essential, with proposals to involve non-profit associations and social organizations that include experts and volunteers to ensure effective and unbiased protection. Ultimately, local residents expressed dissatisfaction with the lack of public engagement, asserting that their views were not considered, which led to numerous problems. SR2 elaborated:

“At present, I do not believe that local people have sufficient opportunities to participate more broadly in protecting the hot spring landscape. Nevertheless, I encourage them to actively engage in protection efforts. The primary issue faced by local residents is their lack of trust in developers. This distrust stems from developers coming to develop the land, but in reality, they do not develop it; instead, they wait for the value of the land to increase and then sell it.”

Also, SR3 explained this in his interview, saying:

“The local population lacks awareness and specific means and knowledge to protect the hot spring landscape. Local residents need training in protection awareness. The main issue is the lack of our involvement and knowledge in the protection process, even though protecting it will help us, local people, reap benefits in the long term.”

In summary, public trust and relationships with other stakeholders involved in hot spring landscape management in Linyi City is complex, marked by concerns about developer ethics, limited opportunities for public participation, and the need for inclusive education and collaboration to ensure effective management.

3.1.5 Public views on power dynamics

Power dynamics related to hot spring landscapes are shaped by public views on policies and management approaches. Government policies play a significant role in the protection and management of hot spring landscapes. Some individuals express general agreement with current conservation and management policies, acknowledging the effectiveness of consolidated, top-down arrangements. However, critiques point to instances of mismanagement, policies being influenced by developers, and perceived implementation problems, leading to calls to build policies from the bottom up, based on public views:

“I basically agree with the current conservation and management policy. After all, government management is still more effective. However, the government also has some policies that are more flexible, depending on the developer’s situation.” (SB1)

TB2 explained this in his interview, saying:

“I generally agree with the policies; after all, they are all top-down, unified arrangements by the government and certainly some of the policies that have been discussed by experts from all

sides. As a developer, we follow market trends and appreciate the policies given to us by the government.”

Hot spring industry stakeholders, such as developers, express concerns about the lack of clarity in, and effectiveness of, government policies. While developers agree with some policies, they highlight problems stemming from poor project management and emphasize the impact of decisions made by operating teams on development outcomes.

Though both local residents and hot spring professionals often lack accurate knowledge of conservation policies, they acknowledge the importance of government intervention. Some interviewees express dissatisfaction with the lack of specific policies or methods for managing hot spring landscapes. Their concerns highlight the potential for overexploitation and inadequate protection caused by limited concession grants or weak policy implementation. As ZB2 explained:

“Zhisheng hot springs is operating legally and reasonably; however, government policies have caused numerous problems. The biggest problem that Zhisheng Hot Springs is facing is poor management. The management operating team has made many ill-advised decisions, and these decisions have resulted in increasingly poor development.”

Also, SR4 explained this in his interview, saying:

“I am not aware of any policies or methods for protecting and managing hot spring landscapes, but as far as I know, there are no protective measures other than the governments limited franchising. The current policy tends to lead to over-exploitation and insufficient protection.”

In summary, power dynamics in hot spring landscape management are shaped by the interaction between government policies, developer actions, and public perceptions. Authority is exercised through government regulations and legislation, but policy is effective only when developers’ actions are aligned with that policy. These dynamics appear skewed in favor of the government and developers.

3.1.6 Other influences on public perspectives

The public’s perspectives on protecting hot spring landscapes are diverse. Socio-economic impacts are seen as crucial, with the development of hot spring landscapes viewed as a way to boost local economies, create job opportunities, and stimulate tourism. Responsible development is seen as positively impacting the natural environment, enhancing greenery and aligning with modern design standards. Health-related factors also play a significant role, with hot springs attracting consumers seeking physical therapy and rehabilitation. Hot springs’ recreational and therapeutic aspects are deemed valuable, particularly in addressing the needs of an aging population. However, concerns are raised about the chaotic development of this resource resulting from a surge in tourism. ZB2 explained this in his interview, saying:

“Many consumers who visit hot spring resorts come for physical therapy and rehabilitation purposes. For me, the primary factor that may affect the protection of natural hot spring landscapes is

health-related. Moreover, hot springs have a certain recreational effect and are a valuable resource in the face of an aging population. There has also been investment in the tourism sector. However, with the development of tourism, this resource has been utilized in a chaotic manner.”

The environmental impact of hot spring development is recognized, and inclusive approaches are deemed necessary to mitigate negative impacts. Emphasis is placed on promoting sustainable development by balancing economic gains with conservation measures. From the public's perspective, the development of hot spring landscapes must maintain equilibrium between economic growth and environmental protection. Challenges arise when development is perceived as excessive, potentially compromising the authenticity and appeal of the landscape. Concerns include potential environmental issues such as landscape loss, water pollution, and ecological damage. As ZR4 explained:

“The hot spring landscape should be developed so that the economy improves quickly and the income of local people also increases. Also, many foreign tourists come to play and boost the local economy. However, it is not easy to preserve the natural environment, and I feel that if the development is too much, it is not good for the natural environment. After excessive development, it is not the original hot spring landscape; it will be all man-made and unattractive, losing its natural appeal.”

In summary, public perspectives on hot spring landscape protection are complex, reflecting the need to balance economic development, health benefits, and environmental conservation. Sustainable development that balances these competing interests is essential to addressing the challenges and opportunities associated with hot spring landscapes in Linyi City, China.

3.2 Coding analysis of challenges to inclusive landscape governance

Through a qualitative coding approach using QualCoder software, thematic analysis of public interview responses

identified 53 coded statements representing challenges to inclusive governance. These statements were grouped into eight key challenges (Figure 3). This process captured public views on the most significant barriers to inclusive governance of the hot spring landscape in Linyi, China. This study reveals that, from the public's perspective, the main challenges include lack of shared responsibility, ineffective planning and management, complex relationships and trust, knowledge variability and limited awareness, differing levels of interest and need, policy deficiencies, development concerns, and limited public participation (Table 3; Figure 4).

QualCoder sentence count analysis showed that the public identified limited participation and development concerns as the most significant challenges to inclusive governance. Specifically, they viewed their lack of involvement in governance and excessive tourism development as the two greatest obstacles to inclusive governance of the hot spring landscape in Linyi, China. In contrast, the lack of shared responsibility was seen as the least significant challenge, with respondents explaining that primary responsibility lies with the government, which they believe has greater expertise. Nonetheless, they emphasized the importance of shared responsibility among the government, developers, and the local community.

4 Discussion

Public opinion in China regarding the challenges of implementing inclusive governance for the hot spring landscape is marked by significant and varied perspectives. Public values related to management emphasize shared responsibility. Public participation and monitoring are seen as critical to its success. Additionally, shared responsibility is viewed as necessary among the government, developers, and the local community. This study uncovered a consensus that the government should lead protection and management measures while sharing responsibility with developers and the local community. This approach aligns with the principles of ILG, which promote shared-responsibility governance frameworks that empower local communities, foster

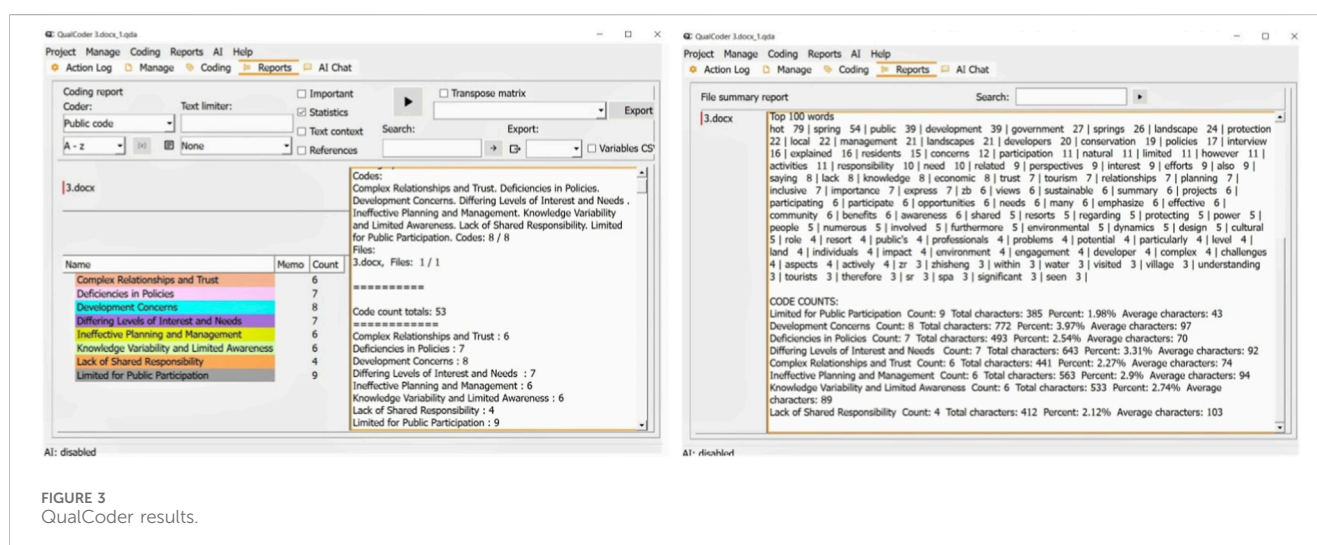


TABLE 3 Coding analysis of public insights into challenges facing inclusive landscape governance.

No.	Sentence coding	Challenges coding	Count
1	<ul style="list-style-type: none"> • The lack of shared responsibility directly affects conservation measures. • Public participation and monitoring are critical to the success of shared responsibility. • Shared responsibility is needed between government, developers, and the local community. • Public values related to management emphasize shared responsibility. 	Lack of shared responsibility	4
2	<ul style="list-style-type: none"> • Integrate sustainable design and planning from the outset to avoid ineffective conservation efforts. • Development is essential, but it must be coupled with effective government planning and management. • Planning and management at the government level are essential to ensure sustainable use. • Public discourse emphasizes the need for sustainable development, effective planning, and inclusive conservation measures. • Public criticism highlights numerous instances of poor planning and management. • Some projects suffer from poor planning and management. 	Ineffective planning and management	6
3	<ul style="list-style-type: none"> • There is a gap in the relationship between the community and government conservation efforts. • Strengthening the relationship between the government, developers, and local residents is necessary to increase trust. • A lack of trust persists between local residents and developers. • Nonprofits and social organizations must be involved to increase trust. • Relationships and trust among the public are complex. • Concerns remain about the ethics and trustworthiness of developers. 	Complex relationships and trust	6
4	<ul style="list-style-type: none"> • Individuals vary in their level of familiarity with and knowledge of hot spring landscapes. • The opinions and knowledge of local residents and tourists vary greatly. • Some are familiar with hot spring landscapes, while others express doubts about the nature of these landscapes and their waters. • There are varying levels of knowledge and limited awareness of participating in environmental conservation. • Knowledge ranges from highly knowledgeable professionals to individuals with limited awareness. • Public awareness and education are critical. 	Knowledge variability and limited awareness	6
5	<ul style="list-style-type: none"> • Public interests, needs, visions, and roles within a community vary. • Some show limited interest, while others show broad interest in conservation activities. • Eagerness to participate varies, often depending on individuals' expertise or specialization. • Levels of participation in conservation activities vary across groups. • Opinions about participation in conservation efforts vary. • Some believe that conservation should be left to experts, arguing that the general public lacks the knowledge necessary to contribute effectively. • Public opinions range from active participation to complete indifference. 	Differing levels of interest and needs	7
6	<ul style="list-style-type: none"> • The flexibility of policies often depends on the developer's position. • Policies should be developed from the bottom up, based on public input. • Concerns and criticisms have been raised about the lack of clarity and effectiveness of government policies. • Many stakeholders lack accurate knowledge of conservation policies. • There are shortcomings in specific policies or approaches to landscape management. • Policies are only effective when developer actions are aligned. • Policy dynamics appear to be skewed primarily in favor of the government and developers. 	Deficiencies in policies	7
7	<ul style="list-style-type: none"> • There are concerns about the overall impact of development, particularly overdevelopment. • Strengthen oversight of development projects to prevent uncontrolled growth. • Haphazard development of hot spring resources is a concern. • Everyone is aware of the negative environmental impact of hot spring development. • There are concerns about imbalances between developmental gains and conservation. • Balancing economic development and environmental protection is a public concern. • Concerns about overdevelopment diminishing the authenticity and attractiveness of the natural landscape. • Public demands for sustainable development and a balance between growth and conservation. 	Development concerns	8
8	<ul style="list-style-type: none"> • The importance of encouraging active public participation in conservation efforts. • The need to expand community participation. • Involving both the public and experts is essential. • Increasing community involvement in management efforts is essential. • Public participation is often limited. • Local residents lack sufficient opportunities to participate. • There are calls to expand public participation. • The lack of public participation remains a challenge. • Opportunities for public participation are limited. 	Limited public participation	9

a sense of ownership and stewardship, and ensure their voices are heard in landscape design and management; this is consistent with the findings of [Maphosa et al. \(2025\)](#).

Furthermore, there is an acknowledgment of the need for development linked to effective government planning. Emphasis

is also placed on sustainable planning and design to avoid ineffective management efforts. The public has noted that poor planning and development hinder the inclusive governance of hot spring landscape management. In line with ILG theory, multi-stakeholder engagement and adaptive governance frameworks are

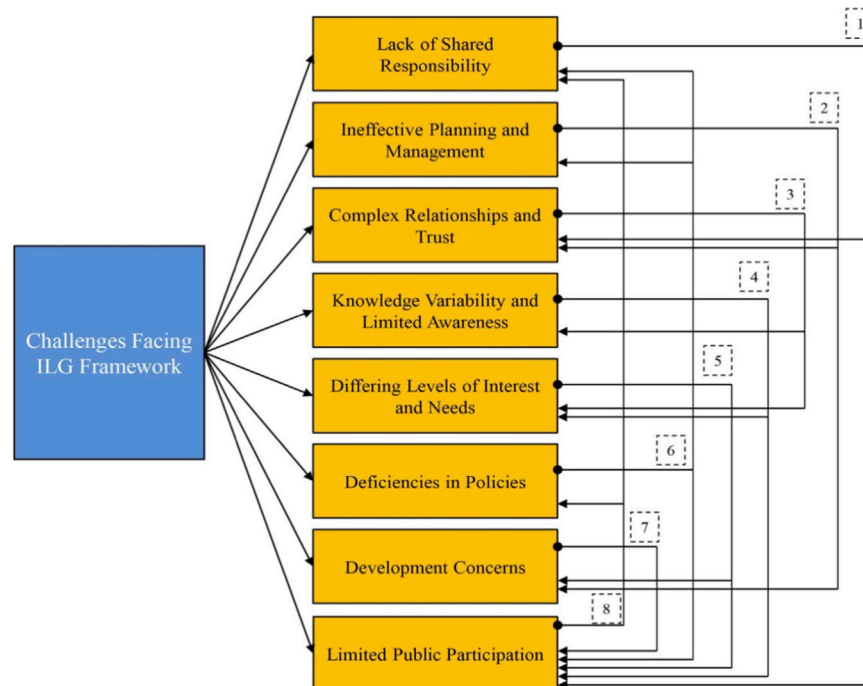


FIGURE 4
Challenges facing inclusive landscape governance framework.

essential for addressing challenges related to ineffective planning and management in landscape planning and design; this finding consistent with [Kusters et al. \(2020\)](#). In addition, complex relationships and lack of trust between the public and developers are evident. Lack of trust between local residents and developers stems from perceptions that developers prioritize land value over genuine development and continue to exploit natural resources in unsustainable ways. A gap also exists between community and government efforts, with concerns about the ethics and trustworthiness of developers. To address these gaps, trust plays a crucial role in enabling collaboration among diverse stakeholders to collectively shape ILG outcomes. Transparent design decisions and open stakeholder dialogue help align interests and strengthen trust throughout the collaborative design process; these results are consistent with the findings of [Holladay and Powell \(2013\)](#).

Knowledge variability, limited awareness, and differing levels of interest and need are evident among the public. As a result, protection responsibilities are often viewed as falling primarily on government authorities and developers. This may be due to varying levels of engagement, with some members of the public enthusiastically participating in conservation activities, while others show little interest. Contrasting viewpoints also exist, with some individuals expressing disinterest and arguing that such matters should be left to experts. This shows distinct variation in the levels of knowledge and expertise within the public, ranging from highly informed professionals in design and management to limited awareness among locals and tourists. [O'Faircheallaigh \(2010\)](#) notes that the benefits of public participation are often taken for granted; however, inconsistencies arise when selecting public participants based on their interests and experience. This suggests that decision-making is affected by individuals' interests

and experiences; this is consistent with the findings of [Shortall and Kharrazi \(2017\)](#) and [Abu Bakar \(2020\)](#). Collectively, these challenges underscore the importance of integrating diverse knowledge systems, public participation tools, and inclusive decision-making processes to address the variability in knowledge, awareness, and interests, thereby strengthening the linkage between these challenges and ILG theory.

There is a strong general belief in the urgent need to protect hot spring landscapes, along with recognition of the important role played by government policies. However, some public criticisms highlight policy shortcomings, excessive flexibility, the need for bottom-up approaches, and calls for the development of more comprehensive policies that align with public opinion. The deficiencies of current policies appear to lie in their focus on the perspectives of government and developers, while the public remains excluded from the decision-making process. For this reason, the importance of ILG becomes clear in the need for integrated, participatory, and rights-based legal frameworks for landscape management and design. Such frameworks help address policy gaps that currently exclude the public from decision-making and instead promote inclusion and shared responsibility; these findings are consistent with [Best et al. \(2021\)](#). Additionally, local residents express a growing interest in conservation but highlight the need for stronger management and supervision to prevent uncontrolled development. Concerns persist about imbalances between economic gain and conservation, with balancing development and environmental protection identified as a key public concern. ILG plays a key role in addressing development challenges by promoting fair and sustainable governance approaches that balance environmentally responsible planning with development needs. Therefore, sustainable development

emerges as essential for addressing the multifaceted challenges associated with development. Liu et al. (2024) and Mundher et al. (2023) confirm that sustainable development is crucial with the rapid urbanization; only by integrating economic, environmental, social, cultural, and aesthetic dimensions can we protect natural landscapes.

Ultimately, this study emphasized that the main challenge is that decision-making is carried out primarily by government agencies, with limited mechanisms for involving the public, which reduces potential benefits. Increasing community participation in management efforts is essential to ensure that decisions in inclusive governance are not unilateral on public issues. Although the principles of comprehensive environmental governance recognize the need for cooperation and participation in processes serving the public interest, there remains a need to broaden the scope of community participation. This is consistent with Siangulube et al. (2023), who recommend establishing “innovative participatory platforms” that encourage the public to engage in genuine negotiation processes leading to satisfactory outcomes. There are ILG calls for broader public participation, with suggestions to involve non-profit associations and social organizations, highlighting the need for comprehensive education and collaboration. Li et al. (2024b) and Mundher et al. (2022) likewise emphasize the importance of local communities and social organizations participating in landscape issues and being actively involved in landscape management decisions.

5 Limitations and future work

While this study offers valuable insights, some limitations point to avenues for future research. First, the participant pool may not reflect the full range of public opinion in Linyi City. Broader data collection methods, such as combining surveys with interviews, could help achieve a more representative sample. Second, the findings are specific to Linyi City in China and may not be generalizable beyond the Chinese context. Future research could explore similar challenges in other regions with different social, political, and environmental contexts to allow for broader comparisons. Third, spatial analysis techniques such as buffer zones, land-use conflict mapping, and infrastructure overlays can strengthen the connection between governance decisions and landscape design outcomes. Finally, this study offers a snapshot of the current situation. Future research could follow up to establish how implemented changes address the identified challenges, either by revisiting the same participants or applying different methodologies at a later stage.

6 Conclusion

This study examined public perceptions of the challenges hindering the implementation of comprehensive governance strategies for hot spring conservation in Linyi City, China. It identified eight key challenges. A lack of shared responsibility emerges, as the government is expected to lead but must also coordinate with developers and local communities. Ineffective planning and management undermine conservation efforts when development

fails to plan for sustainability. Knowledge mismatches and limited awareness complicate participation, with some individuals actively engaging while others defer to experts, leading to inconsistent involvement. Complex relationships and trust issues persist, fuelled by perceptions that developers prioritize profits over conservation. Differing levels of public interest and needs further contribute to unequal participation. Policy shortcomings reflect top-down approaches that exclude local voices and align more closely with government and developer priorities. Persistent development concerns highlight the tensions between economic growth and environmental protection. Ultimately, limited public participation remains the most pressing obstacle, with calls for innovative platforms, stronger civil society engagement, and genuine negotiation processes to ensure truly inclusive governance of the hot spring landscape. These findings highlight the need for a shift toward more inclusive governance in Linyi City and suggest that addressing these challenges would enable stakeholders to work together to protect the unique hot spring landscape. This study provides valuable insights for researchers, policymakers, environmentalists, tourists, residents, and business owners, informing more sustainable conservation practices for natural resources in general and for hot spring landscapes in particular.

Data availability statement

The original contributions presented in the study are included in the article/[Supplementary Material](#), further inquiries can be directed to the corresponding author.

Author contributions

YL: Conceptualization, Data curation, Methodology, Project administration, Writing – review and editing. YY: Data curation, Investigation, Project administration, Writing – original draft. NA: Conceptualization, Supervision, Writing – review and editing. RM: Formal Analysis, Methodology, Software, Visualization, Writing – original draft. GY: Data curation, Methodology, Writing – original draft.

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Conflict of interest

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Supplementary material

The Supplementary Material for this article can be found online at: <https://www.frontiersin.org/articles/10.3389/fenvs.2025.1727982/full#supplementary-material>

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