Feasibility and Importance of Geological Exploration Enterprises' Involvement in National Spatial Planning within the Context of Ecological Civilization

Maohua Yan*

China Institute of Geo-Environment Monitoring, Beijing 100081, China

*E-mail: ymaohua2023@163.com

Abstract. Within the framework of ecological civilization, the participation of geological exploration enterprises in national spatial planning is both feasible and imperative. Leveraging their technological prowess and dependable data, these enterprises can effectively drive rational land utilization, resource development, and environmental conservation. Through advanced geological exploration techniques and specialized equipment, geological exploration enterprises can acquire crucial geological information, providing essential data on resource distribution for spatial planning. Moreover, their expertise in geological environmental assessment and risk evaluation equips them to offer recommendations for ecological conservation during the planning process. These enterprises also contribute scientific groundwork for optimizing land utilization and industrial layout through resource surveys and assessments, ultimately achieving sustainable resource utilization. Nevertheless, their involvement in planning encounters various challenges, necessitating increased policy support, favorable policy environments, and institutional safeguards established by the government. Furthermore, establishing close collaboration mechanisms between geological exploration enterprises and planning departments is vital for facilitating information sharing and synergistic efforts, ensuring the scientific rigor, meticulousness, and efficiency of the planning process. Geological exploration enterprises should continuously enhance their technical capabilities and professional expertise, emphasize talent development and technological innovation, and adapt to the intricate and ever-changing demands of the planning domain.

Keywords: Ecological civilization, geological exploration enterprises, national spatial planning, strategic transformation

1 Introduction

In the context of ecological civilization construction, geological exploration enterprises rely on their advanced geological exploration techniques and equipment to provide accurate exploration data and resource distribution for national spatial planning. Leveraging their professional capabilities in geological environmental assessment, risk warning, and resource surveys, these enterprises offer recommendations for ecological

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environment protection in national spatial planning. Meanwhile, they strive to explore effective pathways in seeking government support, conducting public-private collaborations, and enhancing their technological capabilities, aiming to enhance the depth and breadth of their participation in national spatial planning. This provides scientific assurance and technological support for ecological civilization construction and sustainable development.

2 Technological Equipment Aspect

Geological exploration enterprises' utilization of advanced geological exploration technologies and specialized equipment enables them to supply accurate exploration data, ensuring reliable geological information for land spatial planning. Geological exploration encompasses various methods, including the collection of geological samples, measurement of geological parameters, geophysical surveys, and hydrogeological investigations, all of which facilitate comprehensive examination and analysis of land's geological structures, characteristics, and groundwater resources [1-5]. By capitalizing on their state-of-the-art technologies and equipment, geological exploration enterprises can acquire high-quality exploration data, thereby providing precise geological information for planning decisions [6-8]. This information assists planners in comprehending the physical attributes, geological structures, and underground resource conditions of land, ultimately guiding the rational utilization of land and the scientific development of resources [9-10].

The key geological information obtained through geological exploration plays an integral guiding role in land spatial planning [11-16]. Through the process of geological exploration, these enterprises can acquire crucial data pertaining to land's geological structures, characteristics, groundwater resources, and mineral resources. Such data furnishes planners with scientific foundations for making informed decisions regarding land suitability, stability, and resource potential [17-19]. Consequently, it facilitates the formulation of rational strategies for land use, resource development plans, and environmental protection measures. For example, in the context of land use planning, geological exploration data can provide insights into the geological characteristics of land and assessments of its stability, thereby assisting planning authorities in determining suitable construction projects and land utilization methods. Similarly, in the domain of resource development, geological exploration data can offer valuable information regarding the distribution, reserves, and conditions for mining mineral resources, thereby supporting the scientific development and sustainable utilization of resources [20-25].

In conclusion, geological exploration enterprises, relying on their exceptional geological exploration technologies and specialized equipment, are capable of supplying accurate exploration data and scientific technical support. As a crucial means of understanding the internal structure and distribution of resources within land, geological exploration enables these enterprises to acquire pivotal geological information, encompassing geological structures, underground water resources, and mineral resources. Such data holds significant significance and application value in various aspects of land

spatial planning, including land utilization, resource development, and environmental protection [26-28].

3 Geological Survey Aspect

Geological environmental assessment entails a comprehensive study and evaluation of the geological characteristics of land, encompassing factors such as land resource potential and geological hazard risks. Its objective is to determine the appropriate utilization and protection scope for the land. This assessment requires the integrated application of theories and methodologies from disciplines such as geology, earth science, and environmental science. It involves the collection of extensive geological data and subsequent analysis, interpretation, and comprehensive evaluation. Geological exploration enterprises, leveraging their professional knowledge and technical capabilities in geological surveying, exploration, and research, are equipped to provide scientific assessments of land resources. These assessments aid planning decision-makers in formulating sound land use planning strategies and conducting suitability evaluations for land spatial planning.

Simultaneously, geological hazard risk assessment represents a significant task for geological exploration enterprises. Geological hazards, resulting from internal or external factors of the Earth, such as earthquakes, mudslides, and landslides, exert substantial impacts on land use and the ecological environment. Through research on geological structures, geological processes, and historical geological hazard events, geological exploration enterprises can assess the geological hazard risks faced by land and provide corresponding risk warning recommendations. This enables planning decision-makers to avoid potential geological hazard risk areas during land use planning, ensuring the safety of the ecological environment and fostering sustainable development.

Consequently, geological exploration enterprises assume a crucial role in participating in land spatial planning within the framework of ecological civilization. Geological environmental assessment and risk warning constitute key domains in which they possess professional capabilities. Their scientifically conducted environmental assessment reports and risk warning recommendations serve as reliable foundations for planning decision-making.

4 Resource Survey Aspect

Resource survey plays a pivotal role in the initial stages of planning by conducting meticulous investigations and assessments of internal land resources. Its primary objective is to accurately determine the types, distribution patterns, and reserves of resources, thereby providing reliable data support for planning decision-making. Geological exploration enterprises, with their professional expertise and extensive experience, effectively carry out resource surveys and assessments, furnishing comprehensive and precise resource information for planning purposes. This optimization of land

use and industrial layout contributes to the achievement of sustainable resource utilization.

Geological exploration enterprises employ interdisciplinary knowledge and technical methodologies in resource survey and assessment, encompassing fields such as geology, geophysics, and geochemistry. By utilizing advanced instruments, equipment, and techniques such as geological exploration, remote sensing technology, and geochemical analysis, these enterprises amass substantial geological and resource data. Through systematic analysis and interpretation, these data enable accurate evaluations of the abundance, distribution patterns, and exploitable potential of land resources.

The resource survey and assessment conducted by geological exploration enterprises offer comprehensive and accurate resource information for planning, establishing a scientific foundation for land use and industrial layout. Thorough investigation of land resources allows for the identification of resource advantages and characteristics in diverse regions, providing valuable references for planning decision-makers to devise sound land use plans. Furthermore, resource surveys facilitate the identification of potential mineral resources, water resources, energy resources, and more, thereby offering scientific guidance for industrial layout and resource allocation in land spatial planning.

Thus, through their involvement in land spatial planning, geological exploration enterprises, via resource survey and assessment, provide comprehensive and precise resource information to optimize land use and industrial layout, consequently achieving sustainable resource utilization. Leveraging their professional capabilities and extensive experience, these enterprises become indispensable participants in the planning process, propelling the scientific development of land spatial planning and the construction of ecological civilization.

5 Strategies and Recommendations

In the realm of policy formulation, it is imperative to bolster support for geological exploration enterprises and create an enabling policy environment with institutional safeguards to facilitate their involvement in planning. This entails developing pertinent laws, regulations, and policy measures that clearly delineate the roles and responsibilities of geological exploration enterprises in the planning process. Moreover, it is crucial to provide them with the requisite resources and financial backing to incentivize their active participation in planning endeavors.

Regarding government-enterprise cooperation, establishing a close-knit collaborative mechanism between geological exploration enterprises and planning departments is essential for ensuring seamless information sharing and synergistic work. This necessitates the establishment of robust communication channels and collaborative platforms to facilitate effective coordination and cooperation between the two parties, thereby ensuring the scientific rigor and efficiency of the planning process. Additionally, efforts should be directed towards enhancing data sharing and promoting technical exchanges to elevate the quality and standard of planning work.

In terms of technological advancement, geological exploration enterprises need to continually augment their technical prowess and professional capabilities to meet the intricate and ever-evolving demands of planning. Emphasis should be placed on talent cultivation and recruitment, bolstering the development and training of technical teams, and nurturing professionals equipped with comprehensive skill sets and innovative mindsets. Furthermore, geological exploration enterprises should increase their investments in technological innovation and research and development, driving the application of novel technologies and methodologies in planning. This, in turn, will enhance work efficiency and the caliber of outcomes.

Hence, to facilitate the participation of geological exploration enterprises in land spatial planning within the framework of ecological civilization construction, it is imperative for the government to fortify policy support and establish close collaborative mechanisms. Simultaneously, geological exploration enterprises must enhance their technical expertise and professional capabilities. By undertaking these measures, challenges and issues can be surmounted, enabling geological exploration enterprises to assume a more substantial role in planning and furnish effective support for ecological civilization construction and sustainable development.

6 Conclusion

The participation of geological exploration enterprises in land spatial planning demonstrates both feasibility and significant importance in the context of ecological civilization construction. By leveraging their scientific and technological support and providing reliable data, these enterprises can effectively promote rational land use, resource development, and environmental protection within the planning process. With their extensive geological exploration techniques and specialized equipment, geological exploration enterprises can acquire essential geological information, offering necessary data on internal land structure and resource distribution for planning purposes. Additionally, their professional capabilities in geological environmental assessment and risk assessment enable them to provide recommendations for ecological environment protection in the planning process. These enterprises also contribute to resource investigation and evaluation, providing scientific evidence that facilitates optimized land use and industrial layout, ultimately leading to sustainable resource utilization. However, the feasibility of involving geological exploration enterprises in planning necessitates overcoming various challenges. The government should strengthen policy support, establishing a favorable policy environment and institutional safeguards for these enterprises. Furthermore, a close collaboration mechanism between geological exploration enterprises and planning departments should be established, fostering information sharing and collaborative work to ensure the scientific rigor and efficiency of the planning process. Geological exploration enterprises should continuously enhance their technical expertise and professional capabilities by emphasizing talent cultivation and technological innovation to effectively address the complex and ever-changing demands of the planning field.

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