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EDITORIAL

Navigating the Complexities of Land Management and Utilization for Sustainable Development

Shiliang Liu

State Key Laboratory of Water Environment Simulation, School of Environment, Beijing Normal University, Beijing 100875, China

As the inaugural Editor-in-Chief of the "Land Management and Utilization" journal, I, on behalf of our editorial board members, would like to introduce to you the inaugural editorial of our publication. Land Management and Utilization aims to publish the latest research findings and innovative research that explores the complex dynamics of land use and its impacts on environmental, social, and economic systems. As pointed out in the journal's aims and scope, we call for papers encompassing a wide array of geoscience and planetary science disciplines, including, but not limited to: 1) theory and policy of land management, 2) land resource survey and evaluation, 3) land protection and ecological restoration, 4) land informatization and remote sensing technology, 5) rural land system reform and rural revitalization.

Land is the material basis upon which humanity relies for survival and development, providing living space, natural resources, and ecosystem services. It is a crucial factor in social production, and an essential element for economic and social development, which is related to national security, ethnic survival, and the well-being of the people. Land management and utilization face multiple challenges, including intensifying resource constraints, rapid ecological degradation, there is an urgent need to optimize land spatial development patterns, and to improve land development quality [1]. Studies have shown that approximately 24% of the terrestrial area is affected by land degradation [2]. Overdevelopment and utilization of land resources have led to severe damage to land ecosystems, resulting in issues such as soil erosion, soil

*CORRESPONDING AUTHOR:
Shiliang Liu, State Key Laboratory of Water Environment Simulation, School of Environment, Beijing Normal University, Beijing 100875, China; Email: shiliangliu@bnu.edu.cn

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nutrient imbalance, soil fertility decrease, and soil contamination, posing threats to ecosystems and ecological security [3]. Additionally, due to urbanization and industrial development, the area of arable land is continuously decreasing, and food security cannot be guaranteed. The protection of land resources and the contradiction between land supply and demand are increasingly prominent, and land utilization faces severe challenges [4]. At the same time, in some regions, abandoned farmland has expanded due to issues such as population aging and labor force transfer [5]. Also, the needs of humanity and the development of the socio-economy lead to more diversified land uses, such as the development of wind and solar energy in desert areas [6]. There are also land use conflicts, leading to disharmony in land use, which restricts sustainable development [7]. Therefore, how to implement optimized land resource strategies, optimize land resource allocation, reduce land resource vacancy, repair land resources, protect the ecological environment, ensure food security and ecological security, and achieve carbon neutrality and sustainable development at the national and regional levels requires in-depth research [8].

Research related to land management and utilization represents a sophisticated interdisciplinary exploration that applies theoretical frameworks and methodological approaches from land sciences and related disciplines to practical applications. Land management and utilization encompass the interplay between land resources and ecosystems, economic systems, and social systems (**Figure 1**). Land resources and ecosystems constitute the fundamental research domain, while contemporary land systems are subject to multifaceted pressures, including accelerating urbanization, increasing land use transformations, rural structural reconfiguration, and emergent environmental challenges [9]. These pressures impact land resources and ecosystems, and land management and utilization respond to these challenges through land use pattern optimization, land use evaluation, and land use allocation. The supply and demand of land resources are influenced by various factors. On the land resource supply side, measures such as ecological restoration, land integration, land improvement, and ecological protection are needed, and these measures are crucial for increasing the area, quality, and productivity [10]. On the other hand, land demand is intricately related to population growth, urban expansion, food requirements, regional spatial coordination, and infrastructure construction. Land management strategies must strategically address these multifaceted needs while simultaneously enhancing soil quality and ecosystem integrity [11]. Therefore, comprehensive research is imperative to elucidate land use patterns, understand land use processes, and predict land use dynamics. Furthermore, an in-depth investigation of land use patterns, ecological processes, and land use dynamics is crucial. Advanced methodological approaches, including precision agriculture, remote sensing (RS) technologies, and Geographic Information Systems (GIS), offer innovative strategies to optimize land management efficiency. On this basis, optimizing, evaluating, and allocating land management are key to achieving sustainable development [12]. Through systematic and interdisciplinary research, land resources can be more effectively planned and managed to address both contemporary and prospective societal requirements.

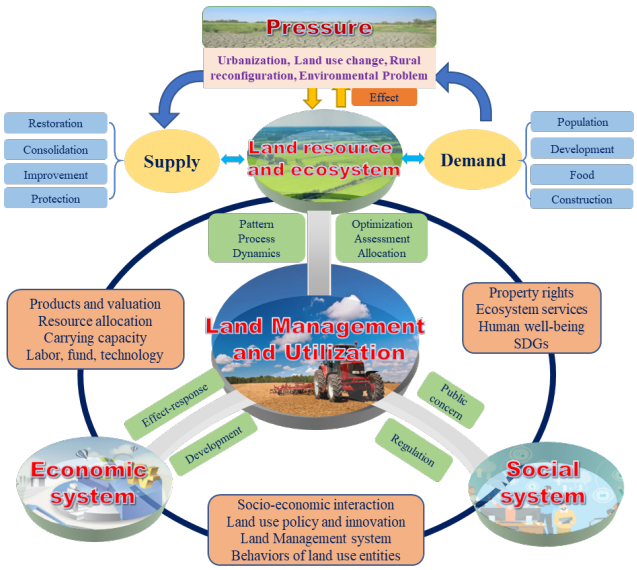

Figure 1. The socio-economic and ecosystem interaction mechanism in land management and utilization.

Economic and social systems constitute pivotal determinants in land management and utilization. The two systems are inseparable, involving products and values, resource allocation, property rights, ecosystem services, and human well-being. Relevant research also

emphasizes the importance of sustainable land management for economic growth and how to achieve sustainable ecosystem goals through market mechanisms and policy incentives [13]. Socio-economic interactions are key to the success of land management strategies, involving land use policies and innovations, land management systems, and the behavior of land use entities [14]. Researchers systematically incorporate socio-economic factors to enhance the effectiveness and fairness of land management policies. Therefore, strategic public engagement and comprehensive educational initiatives are crucial for improving the acceptance and effectiveness of land management policies.

In terms of the economic system, attention needs to be directed toward product and value generation, resource allocation efficiency, and land carrying capacity. These elements are essential for ensuring the economic benefits and environmental sustainability of land use. Consequently, it is necessary to consider the role of labor, capital, and technology in land use, which are key factors in driving land management innovation and improving land use efficiency [15]. In terms of the social system, the clarification of property rights, the protection of ecosystem services, the improvement of human well-being, and the achievement of Sustainable Development Goals (SDGs) [16] are current issues that need to be emphasized. The achievement of these goals requires guiding and regulating land use behavior through policies and regulations, while elevating public consciousness of the importance of land management [17]. In the development of the new era, land management and utilization need innovation in terms of laws and regulations, resource allocation, market reform, ecological governance, informatization, and supervision. Only by continuously improving the land management system, promoting the increase of farmers' income, and promoting the integrated development of urban and rural areas, can the efficient use of land resources be achieved. Scientific land utilization is critical for ensuring national food security, maintaining ecological environment security, reducing carbon emissions, and promoting the construction of ecological civilization [18].

We are dedicated to establishing a comprehensive scholarly platform that facilitates interdisciplinary dialogue and knowledge exchange among researchers, practitioners, and policymakers across diverse domains. Our primary objective is to catalyze collaborative advancement in the field of land management and utilization through rigorous academic discourse and innovative research methodologies. We encourage scholarly submissions that reflect interdisciplinary approaches, integrating perspectives from ecology, economics, sociology, and policy analysis, to address the complex challenges of land use. Such holistic research frameworks are essential for comprehensively addressing the multifaceted challenges inherent in contemporary land use systems. Through interdisciplinary research and innovation, contributions can be made to the sustainable use and protection of land resources. We look forward to your participation and contribution. Together, we can advance knowledge, develop innovative solutions, and promote the sustainable utilization and conservation of land resources.

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Conflicts of Interest

The authors declare no conflict of interest.

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