Top Ten Key Issues in the Development of Urban and Rural Planning (2024-2025)

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Abstract： For four consecutive years, the "Top Ten Keywords in the Development of Urban and Rural Planning" have been presented at the China Urban Planning Discipline Development Forum, becoming an important barometer of the discipline's future trajectory. The 2024-2025 keywords return to the core concerns of urban and rural planning and are further distilled into ten key issues that directly address major frontier challenges and emerging opportunities, while outlining critical pathways and a practical agenda for disciplinary development. Derived from three dimensions—disciplinary foundations, current research hotspots, and innovative frontiers—the ten issues are: artificial intelligence and AI-enabled planning; new quality productive forces and spatial adaptation; resilient cities and the integration of routine and emergency functions; spatial governance and multi-actor collaboration; disciplinary development and the renewal of planning education; territorial spatial planning and its implementation and supervision; urban renewal and central-city vitality; urban-rural integration and factor mobility; historic heritage, culture, and innovation; and the consolidation and iteration of urban planning systems. These issues respond to pressing contemporary needs and signal profound transformations in urban and rural planning amid technological, social, and ecological transitions, thereby providing a strategic and forward-looking agenda for the discipline.

Keywords: AI-enabled urban and rural planning; resilient cities; urban-rural integration; urban renewal; territorial spatial planning

Planning as a discipline requires a robust theoretical foundation, while planning education must remain closely connected to innovation and practice. Against this background, the 2024-2025 keywords return to the essential concerns of the discipline and focus on the most salient current research topics.

The selection followed two principles: a rigorous process and authoritative expert judgment. Research trends in leading domestic and international journals over the preceding year were continuously tracked across three dimensions—disciplinary classics, research hotspots, and innovative frontiers. The research team initially identified 305 keywords from 1,956 articles published in 18 high-impact international journals, including *Nature Cities*, the *Journal of the American Planning Association*, *Urban Studies*, and *GUIHUA: Frontiers of Urban and Rural Planning*. It also identified 112 keywords from 657 articles in six influential Chinese journals: *Acta Geographica Sinica*, *Urban Planning Forum*, *City Planning Review*, *Urban Planning International*, *Planners*, and *Acta Ecologica Sinica*. Monthly keyword analyses were consolidated into more than 30 frontier themes encompassing over 300 subfields. Following nominations and voting by 90 leading experts—including editorial-board members of *Urban Planning Forum* and *GUIHUA: Frontiers of Urban and Rural Planning*, as well as editors-in-chief and editorial-board members of major international journals—the ten keywords for 2024-2025 were finalized. On this basis, the paper presents the following ten key issues, ranked by vote share.

Key Issue 1—Artificial Intelligence: AI-Enabled Planning

Since 2016, breakthroughs in deep learning have substantially advanced artificial intelligence (AI) research and attracted broad attention in urban and rural planning. In 2022, generative pretrained models such as ChatGPT demonstrated their potential for content creation. The application of AI to planning is intended to improve efficiency, accuracy, and sustainability and to support more effective and sustainable urban and rural development. This process may be termed AI-enabled planning.

AI-enabled planning is already evident in at least three areas. First, in planning administration, AI applications have moved well beyond conventional data analysis. The Public Works Department of Contra Costa County, California, partnered with Ecopia to digitize public rights-of-way at scale and establish a geospatial database covering lanes, medians, sidewalks, and related features. This initiative improved planning accuracy and created a rich data foundation for future planning work [1].

Second, AI has significantly increased the intelligence of planning workflows. Urban planning involves data collection, analysis and forecasting, scheme design, decision-making, implementation, and evaluation. The authors' research team has used AI to learn planning capabilities from previous plans, simulate alternative schemes, construct scenarios in virtual urban environments, generate and iteratively optimize multiple options, and ultimately improve spatial-use efficiency beyond conventional expert-only approaches.

Third, AI is increasingly capable of assisting planners with complex tasks. MIT's Senseable City Lab has used AI to simulate urban-development scenarios, helping planners and decision-makers assess the long-term implications of alternatives and anticipate their environmental and social effects [2]. Over the past two years, the research team has evaluated more than 16,000 AI tools, matching an AI toolbox more precisely with

research on the laws of urban science. These tools now support functions ranging from data-driven decision assistance and real-time optimization to the execution of complex planning tasks, making AI an increasingly indispensable component of urban planning [2].

At least two research directions require urgent attention:

1. **AI-driven integration of multi-source heterogeneous data and real-time decision support.** AI should be used to integrate geographic, transport, economic, and other heterogeneous data efficiently and to provide accurate planning recommendations in real time.

2. **Innovative and standardized use of generative AI in planning and design.** Research should determine how generative AI can be applied efficiently and responsibly to urban spatial design while ensuring that generated schemes remain feasible and comply with laws, policies, and sociocultural requirements.

Key Issue 2—New Quality Productive Forces: Spatial Adaptation

New quality productive forces refer to advanced forms of productivity characterized by innovation, high technology, high efficiency, and high quality. Their rapid development requires urban and rural planning to provide flexible spaces that can support increasingly complex technologies and diversified user needs. Such spaces should facilitate interaction, collaboration, and systemic support while promoting the circulation and allocation of innovative factors. Planning must also respond to the varied demands of innovation actors through differentiated spatial units, accommodate uncertainty, activate innovation spaces through an appropriate combination of rigidity and flexibility, and use big data and AI to improve scientific rigor and precision. These measures are essential for meeting the spatially diverse demands of new quality productive forces [3].

Through extensive research in spatial economics, the team examined 84 global industrial chains and clarified relationships among industrial systems and the spatial-distance logic underlying them. This work can help planners understand the development patterns of strategic emerging industries, allocate industrial spatial chains more precisely, connect space with productivity, and advance economic and social development.

Two research directions merit particular attention:

1. **Mechanisms through which new quality productive forces shape differentiated urban and rural development.** Research should examine how changes in modes of production, labor mobility, and industrial-chain restructuring affect differentiated spatial development and regional coordination.

2. **Flexible spatial planning under uncertainty for high-tech innovation.** The characteristics of high-tech industries should be analyzed to design spatial models that combine a stable structural base with adaptive flexibility and thereby support the continuing evolution and growth of innovation.

Key Issue 3—Resilient Cities: Integrating Routine and Emergency Functions

A resilient city is capable of adapting to and recovering from natural and human-induced disasters. Planning must therefore sustain everyday vitality and prosperity while enabling rapid response and effective emergency management. This concept reflects recognition of urban complexity and a commitment to sustainable development. Resilience operates at multiple levels, including disaster-resistant infrastructure, adaptable social systems, diversified economic structures, and environmental sustainability.

Integrating routine and emergency functions requires planners to consider disaster risk from the outset and to design multifunctional spaces capable of switching between everyday and emergency uses. Parks and schools, for example, may function as shelters or rescue centers during disasters. Such integration is a core concern of contemporary planning and is essential to urban sustainability and quality of life.

For this issue, the research team simulated changes in China's 800 mm annual precipitation isohyet and projected that by 2035 this major geographic boundary may shift northward toward the Yellow River Basin and Northeast China [4]. Current planning responses to climate change remain insufficient. Further research is required on how detailed design can respond to large-scale climatic change—for example, by coordinating stormwater detention with extreme rainfall and topographic runoff.

Three additional directions are urgent:

1. **Urban spatial planning for coordinated responses to multiple hazards.** Integrated spatial layouts and functional optimization should strengthen coordinated responses to different hazards and enable seamless transitions between ordinary and emergency conditions.

2. **Community-based resilient infrastructure planning.** Research should address adaptive design and redundancy in community-level infrastructure so as to enhance local self-recovery capacity under both routine and emergency conditions.

3. **Urban monitoring and early-warning platforms based on big data and intelligent technologies.** Such platforms should support accurate pre-disaster forecasting and rapid response.

Key Issue 4—Spatial Governance: Multi-Actor Collaboration

Spatial governance is a complex social process centered on collaboration among multiple actors. Urban spatial governance requires the participation of governments, businesses, enterprises, scholars, neighborhood committees, residents, the media, and other stakeholders. Multi-actor collaboration improves communication and interaction among groups, ensures that diverse interests are considered in policy formulation and implementation, and supports more balanced outcomes. It can optimize the allocation of urban spatial resources, advance social equity, increase policy transparency, and strengthen public participation.

Collaboration also makes governance more flexible and adaptive, enabling rapid responses to social change and emerging challenges and promoting sustainable urban development. Effective implementation requires not only robust communication mechanisms but also consensus-building throughout policy formulation and execution [5].

Two research directions are particularly important:

1. **Digital-platform-enabled information sharing and collaboration.** Research should explore how digital platforms can facilitate information exchange and joint action among governments, enterprises, and social organizations, thereby improving the transparency and implementation efficiency of spatial-planning decisions.

2. **Allocation of authority, responsibility, and benefits under multi-actor collaboration.** The roles, responsibilities, and rights of different stakeholders should be clarified so that collaborative planning can balance competing demands and be implemented efficiently.

Key Issue 5—Disciplinary Development: Renewing Planning Education

As urbanization enters a period of structural transition, urban and rural planning faces historically significant opportunities and challenges. Admissions to planning programs became a central concern at the 2024 Annual Conference on Urban and Rural Planning Education in Chinese Universities.

Although a small number of institutions have maintained undergraduate enrolment through joint admissions, the overall decline in applicant numbers persists. Some universities are considering changes to program duration in response to labor-market demand. Local institutions face less severe enrolment pressure, but the entrance scores of applicants have continued to fall. At the postgraduate level, some institutions remain in a relatively favorable position, yet doctoral recruitment is difficult and the training of high-level talent is under strain. Other institutions have reduced enrolment, with many students entering planning through program reassignment rather than direct application.

Beyond admissions, curriculum reform and the formulation of professional standards demand urgent attention. Planning education must respond to the talent needs of the urban-renewal era, diversify training pathways, and improve adaptability and flexibility.

Five research directions are proposed:

1. **Diversified educational pathways.** Personalized teaching and multi-dimensional support systems should address the needs of students from different backgrounds and help them identify suitable professional trajectories.

2. **A new educational ecosystem.** New models should connect undergraduate, master's, and doctoral education while integrating international cooperation and emerging technologies to create an open and flexible educational environment.

3. **Institution-specific models of planning education.** Universities should build differentiated educational models around their own resources and strengths to cultivate competitive planning professionals.

4. **Regionally oriented curriculum design.** Educational content should be closely aligned with local development needs so that graduates can adapt rapidly to regional practice.

5. **Stability of core planning theory and interdisciplinary linkage.** While preserving the coherence of the discipline's theoretical core, planning education should expand its field of application through interdisciplinary integration and respond dynamically to social and professional change.

Key Issue 6—Territorial Spatial Planning: Implementation and Supervision

In 2018, work began on the *Territorial Spatial Planning Series*. Expert teams from leading universities and research institutions—including Tsinghua University, Peking University, Southeast University, Tianjin University, Tongji University, Huazhong University of Science and Technology, and Renmin University of China—contributed extensive knowledge and experience. The series responds to the requirements of Chinese modernization, including high-quality development, optimization of territorial spatial organization, stronger national governance, and the cultivation of professionals with systems thinking and innovative capacity.

The series is China's first specialized higher-education textbook system in territorial spatial planning. Its 21 volumes cover the field from foundational theory to applied practice and from macro-level strategy to micro-level management. Printed books are combined with digital resources; each volume is accompanied by online

knowledge graphs, core-course materials, and practical teaching modules. Digital platforms thereby provide more flexible learning content suited to contemporary modes of education.

The China Spatial Planning Observation Network (CSPON) has likewise become increasingly important [6]. Three questions must be addressed:

1. **Where will the professional team come from?** Training and recruitment should produce multidisciplinary teams of planners, geographic-information specialists, environmental scientists, and other professionals.

2. **How should procedures be strengthened?** A complete implementation-monitoring and evaluation process is required, covering data collection, analysis, feedback, and adjustment so that problems can be identified and resolved promptly.

3. **How can order and vitality reinforce one another?** Internal coordination and external communication within the monitoring network must maintain orderly plan implementation while stimulating innovation and creating constructive interaction among government, market, and society.

Key Issue 7—Urban Renewal: Revitalizing Central Areas

In the post-pandemic era, metropolitan central areas worldwide are experiencing commercial decline. Reduced pedestrian flows and vacant storefronts along Shanghai's Huaihai Road are a representative example. Such trends undermine urban vitality, city image, and residents' quality of life.

A response requires a deeper understanding of the historical dynamics through which global metropolises regenerate and flourish, together with more precise simulation of future urban revitalization. Core urban areas—here described as "blossoming zones"—play a decisive role in shaping development trajectories and driving urban progress. International cases such as Roppongi Hills in Tokyo and Clichy-Batignolles in Paris demonstrate the strategic importance of core districts [7]. These areas function as benchmarks and catalysts for wider transformation.

In Shanghai, the administrative division between the two banks of the Huangpu River should be transcended in light of the city's international-metropolis identity and its role as a continuing source of metropolitan innovation. Attracting more innovative young people to live and work along both banks, and providing space for young people from across the country to develop their lives and careers, would strengthen the Huangpu River as a core driver of a globally influential socialist modern international metropolis.

Three related research fields are especially important:

1. **Mixed-use organization and spatial regeneration of central areas.** Optimized functional mixes should stimulate interactions among people, goods, and information and enhance vitality and economic performance.

2. **Public-space design and social interaction.** Research should assess how public-space design affects social interaction and community cohesion and develop strategies to strengthen social attractiveness and livability.

3. **Data-driven dynamic monitoring and optimization of vitality.** Big-data-based monitoring systems should identify key drivers and support fine-grained renewal and optimization measures.

Key Issue 8—Urban-Rural Integration: Factor Mobility

The *Decision of the Central Committee of the Communist Party of China on Further Deepening Reform Comprehensively to Advance Chinese Modernization* calls for the coordinated advancement of new industrialization, new urbanization, and comprehensive rural revitalization, as well as equal exchange and two-way movement of factors between urban and rural areas. Long-standing urban-rural imbalance has resulted in the predominantly one-way flow of factors from the countryside to cities and large-scale rural talent loss, further widening development disparities. Two-way talent interaction is fundamental to coordinated urban-rural modernization. Young professionals should be encouraged to engage with rural areas, allowing returning talent and resources to support rural revitalization.

In rural planning for Huangyan, Professor Yang Guiqing of Tongji University applied the theory of "new ruralism," integrating historical culture with contemporary livability and promoting the revitalization of rural industry, talent, culture, ecology, and organization. In Shatan Village, Yutou Township, Huangyan District, Yang's team improved the living environment, facilitated the movement of talent and resources, and advanced sustainable rural development [8]. This practice shows that urban-rural integration concerns not only material resources but also the exchange of culture, knowledge, and talent. A people-centered model can promote more equitable urban-rural development and support Chinese modernization.

Three directions deserve priority:

1. **Urban-rural migration and spatial-planning optimization.** Research should identify mobility patterns and their effects on spatial structure and formulate integrated planning strategies adapted to migration characteristics.

2. **Spatial networks for efficient factor circulation.** The spatial organization and network structure of urban-rural factor flows should be optimized, including logistics and information infrastructure.

3. **Spatial strategies for capital allocation and efficient use.** The spatial effects of capital flows should be evaluated to improve investment patterns, resource allocation, and coordinated development.

Key Issue 9—Historic Heritage: Culture and Innovation

Historic heritage is a vital component of urban culture, and its conservation and activation have become central concerns in planning and cultural innovation. Amid urbanization and digitalization, heritage conservation is shifting from the narrow task of "repairing buildings" toward the activation of social, cultural, and innovative life through heritage.

The WUPEN Shaoxing Ancient City Innovation Competition vividly illustrates this approach. By encouraging innovative design and planning for the historic city, the competition explores new functions and values for heritage in contemporary society while safeguarding and transmitting historical legacy. Competition-based experimentation offers new perspectives and methods for conservation and injects fresh momentum into sustainable urban development.

Under the combined pressures of climate change and digital transformation, four research areas require attention:

1. **Technology-based strategies for heritage conservation.** Applications of digital surveying, virtual reality, artificial intelligence, and related technologies should be explored.

2. **Spatial adaptation between historic heritage and contemporary social functions.** Research should identify ways to preserve cultural value while integrating heritage with modern urban functions.

3. **Climate-responsive planning for the sustainable development of heritage.** The impacts of climate change should be assessed and adaptive conservation and use strategies formulated to support the coexistence of heritage and environment.

4. **Public-participation-driven conservation and communication.** Education, outreach, and community participation should strengthen public recognition of and responsibility for heritage conservation.

Key Issue 10—Urban Planning Systems: Consolidation and Iteration

The absence of a distinctly Chinese planning theory remains a major constraint on domestic practice. Many apparent practical difficulties stem from an insufficiently clear theoretical core. Consolidating and iterating the urban planning system means continuously updating existing theory to meet new challenges.

For a considerable period, planning practice in China has faced arbitrary and short-term decision-making, fragmented plans, and uneven resource allocation. These problems reflect the lack of a modern planning-theory system suited to China's national conditions. Western planning theories often fail to account adequately for the complexity, historical and cultural characteristics, and distinctive needs of Chinese cities, contributing in some cases to spatial fragmentation and loss of vitality. Constructing a localized theory of modern planning with Chinese characteristics is therefore both urgent and necessary.

China is now well positioned to undertake this task. National strategies and policies, rapid urbanization and regional coordination, technological progress and smart-city development, the demand for green transition and sustainability, and a rich body of local practice rooted in distinctive cultural and social conditions provide a strong foundation for theoretical construction.

Three breakthroughs are required:

1. **Localized testing and innovation of existing Western planning theory.** The applicability of Western theories in Chinese practice should be systematically assessed and revised in light of China's social, economic, cultural, and policy contexts, leading to a theoretical framework with Chinese characteristics.

2. **Problem-oriented theory building for China's development needs.** A modern planning-theory system should focus on solving the key practical problems facing national and urban development.

3. **Innovation in planning theory and practice in the digital-intelligence era.** Research should examine the profound effects of big data, AI, and other technologies and establish planning paradigms suited to digital and intelligent transformation.

This paper has presented ten key issues in the development of urban and rural planning for 2024-2025, including AI empowerment, resilient cities, urban-rural integration, and heritage conservation and innovation. Together, they identify the discipline's central challenges and future directions and provide a reference for academic research and practical innovation. Scholars and practitioners are encouraged to investigate and apply these issues in depth, sustain innovation in planning knowledge and practice, and guide sustainable urban and rural development.

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